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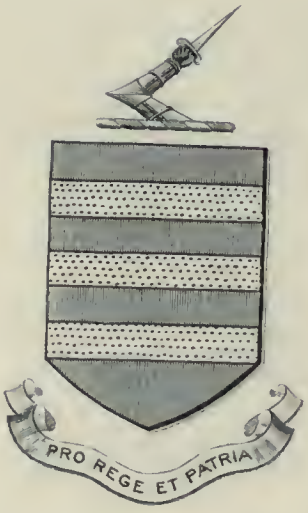

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HYSTERICAL SYMPTOMS:

MODES OF INDUCTION IN WAR AND PEACE; SUGGESTION IN NORMALS, IN CONFUSED, AND IN MYTHOMANIACAL SIMULATORS.

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THERE are three important types of pithiatism, which it is advantageous to differentiate and keep in mind in dealing with individual cases, for although the mechanism is fundamentally one of suggestion in each case, yet the management must differ in accordance with the contingent conditions. These three types are: (1) produced by suggestion; (2) post-confusional autosuggestion; (3) suggestion in mythomaniacs.

I. *Produced by suggestion,* direct or indirect. In practice these need not be distinguished, the direct being the exception.

Spoken.—In times of epidemic disease, if the symptoms become known, they are experienced by many persons who are not suffering from the disease. This illustrates the spoken suggestion.

By Imitation.—The effects of suggestion by imitation are seen in the comparatively common instances of a paralysis acquired by some one in sound health through association with a paralytic.

Starting at a noise has been the basis of many a phobia of "shell-shock." This applies particularly to men who have not suffered from the effects of severe explosions. It cannot be too widely known that to start at a loud noise is an exceedingly common and natural reaction and has no especial significance whatever. All of us start at noises when our nerves are on edge. Some people habitually do so. It is very wrong to permit soldiers to believe that there is any special significance, that they in particular start at noises and that such a practice is the least indication of pathological instability.

CASE I.—*Phobia of Wild Animals with Impulsions to Flight.*—A boy eight years old had developed hallucinations, which occurred only when he was alone, and whenever he was alone. The hallucinations were accompanied by a loud cry and a twisting backwards of the neck and contortion of the body, so that a distinguished professor regarded him as epileptic. His father and maternal uncle are declared to have had similar attacks in childhood. The mother was overanxious about the boy and hysterical and uneasy when he was out of her sight, and it was this anxiety on the part of the mother of which the boy was well aware, that brought about this unhappy condition in the little fellow. Examination showed no physical signs of disease of the nervous or any other system. In an amnesis, I found him to be a very sensible little boy. My questioning soon showed that the hallucinations were not true ones and that the little fellow never actually saw, felt, nor heard what he feared.

Treatment.—Since he clearly recognized that he had actually never seen anything to be afraid of, it was a simple task to convince him that the wild animals he feared were only imagined, that, in fact, there was nothing to fear and that he was quite safe even when alone. It was impressed upon him that he must learn to be a manly boy and to depend upon himself. To learn not to be so timid, firstly he was told to go out alone every day. First, half a block, then a whole block and finally around the corner, all the time remembering the need of manly behavior; secondly, that he must go to sleep alone so as not to be such a trouble to his parents; thirdly, he was shown exercises to suppress the wriggling tendencies of his body.

Having convinced the child of the unreasonableness of his fears, the parents, especially the mother, were dealt with rationally. It was explained to them that his trouble was phobia against fear—an affective state induced by the idea that something dreadful might happen to a little boy unprotected by grownups—an idea induced by the foolish anxiety of his mother. His morbid reaction had become a habit, which with practice in self-reliance as outlined could be overcome. As a result no further attacks have occurred for 8 years.

Management.—The management of the symptoms which have occurred as a result of mediate or immediate suggestion in patients who have not been confused and are not of mythomaniac constitution is, as a rule, very simple. The chief measures, according to the cause, are:

1. Direct suggestion by means of the spoken word with strong affirmation.

2. Direct suggestion combined with persuasive explanation of the condition, according to the patient's means of understanding.

3. Indirect suggestion by (a) In the case of locomotor difficulty, causing the patient to be trotted round the room by relays of assistants until he becomes so fatigued that he automatically falls into normal progression. (b) Medical measures, such as electricity. (c) Imitation, such as by the watching of the improvement of other patients under treatment. (d) The indirect suggestion of the milieu and discipline to which the patient is subjected in the special surroundings of the neurological center. (e) Deprivation of pleasures or privileges, such as liberty, food, etc. (f) Isolation. (g) The discomforts to which the patient finds himself subjected under a special regime of severe discipline, or painful treatment.

4. Rational persuasion with or without suggestion in the more intelligent patients. In some cases combined with or followed by

5. Special re-educative measures designed to overcome vicious attitudes or defective movements.

II. *Post-confusional autosuggestion.* — With re-

gard to this second type, post-confusional autosuggestion, the following points are of importance. When the first obnubilation begins to cease and while inertia still reigns, there is marked suggestibility due to a lack of synthesis of impressions of the new with the old. This over-suggestibility varies from time to time in accordance with the metabolic condition of the organism. Any toxic cause may aggravate it, as may any further traumatism. But it is also aggravated by the repercussion of a strong impression, such as may be produced by bad news or fear, which prevents attention to other matters and thereby impedes synthesis. This is a phenomenon which occurs not only in the confused but in the normal individual. Familiar examples are examination fright, social embarrassment, dominance by prestige or impressive surroundings. In addition to the psychological trend induced by the powerful stimulus demanding attention, there are to be considered modifications of the reactions of the vegetative nervous system, which modify the cenesthesis and thereby still further deviate attention.

Case II.—*Psychoneurosis after illness; writer's palsy of tremulous type.* A naval paymaster after undergoing an operation for appendicitis returned to work before having fully recovered his strength. An uncontrollable trembling of the hand ensued making the signing of checks, which was part of his duty, almost impossible.

Examination one month later showed that in drawing or lettering there was scarcely a tremor, that the trouble was confined entirely to writing. This disability to sign his name was traced to the fact that the bank had refused one of his checks on account of his tremulous signature, this having been signed when still in his weakened condition after the operation. Thereafter, thanks to his overconsciousness, every signature was made under great apprehension. Here it was not the work itself which was the cause of psychosis, but the patient's attitude toward it, derived from his mental habitus, this being environmental from instances of his youth.

Treatment.—The role of mental prepossession in inhibiting the due coordination of muscular movements was explained to him, and illustrated by means of the strokes in lawn tennis, more especially that known as the drive. It was shown that fear of making an improper stroke is very likely to lead to lack of freedom and cramping the muscles, which are the very positions to be avoided. Still greater anxiety will create an uncertain, wobbling stroke, the incoordination of which is comparable to his writing.

A further illustration was used, that of Jastrow's investigation showing that the relative efficiency of two sets of employees using an enumerating machine in 1900 was in inverse proportion to the stress laid upon its complicatedness in the instructions received by them. Those who received no special training rapidly surpassed in amount of work those who were too conscientiously trained.

The relation of these facts to the episode of the refused check was discussed with him at length. When he had clearly realized the psychological mechanism of his condition, he was directed to entirely cease writing with purpose, and to begin exercises by making free-arm movements with chalk on a black-board, paying no attention to the forms he drew, but concentrating himself upon the attainment of freedom in action. At the end of a month's practice after only one interview he had almost entirely recovered. Two years later the trouble had not returned.

When to Avoid Psychotherapy.—Hypersuggestibility during toxic obnubilation should never be dealt with psychotherapeutically. Such efforts only do harm by making a demand upon the patient of which he is incapable. They will give him only confused, disorderly, and necessarily harmful impressions, which may perpetuate in his imagination the disquietudes he feels, and the vaguely uncomfortable ideas about the strange condition in which he feels himself. Such patients should be let alone to the utmost as regards any attempt at re-education, and psychotherapy should be confined to the simplest of assurances and more especially to those conveyed by gesture and manner; for it should be remembered that these means of communication are more fundamental and easy of apprehension than is the more highly elaborated artifice of the spoken word. It must also be remembered that a considerable number of people, just as do children and the lower animals, gain most of their important impressions, especially about the character and intentions of other people, from the gesture and manner of these people rather than from their words, and this is especially the case where the degree of education has not been very high.

Hence, extreme solicitude before such patients is most harmful, in that it is very likely to give rise in their minds to the notion that they are very sick indeed, a notion which produces depressing emotions which will still further interfere with good metabolism. Whereas an affectation of indifference before the patient will tend to make him think that the doctor would surely pay him more attention if he were really as sick as he feels. Hence, though uncomfortable, he will be contented in feeling that if his case demands so little attention it must be one which will soon recover. The spirit of hope thus engendered will go far to help him both to enjoy his food to digest it well, besides accelerating the metabolism by favorably affecting the vegetative nervous system.

The mechanism differs in *psychic shock*, which does not produce actual but only seeming inertia, by deviation of energy from the mental synthesis needed for the situation to be adapted toward the preoccupying thought to which mental energy may be given. The extreme of this is seen in paranoia, where it has led to almost complete absorption, without, however, necessarily any morbid suggestibility; but this is because the delusions have become adapted to, indeed *are* the life, and do not give constant emotion, and the patient is, when excited, hardly distractable at all.[2]

In post-confusional inertia, however, there is no mono-ideaism in the usual sense. The patient simply has not the psychic activity needed for synthesis—association is only rudimentary and so he cannot call upon resistances and criticisms. Hence, he is usually dominated by a single impression and becomes thus a fertile field for suggestion, either from without or from the rudimentary mental life within which usually assumes the character of what is known as onirism, namely, the dream-life. The patient wears the aspect of being in a trance, and his thoughts flow with the apparent incoherence

and confusion of a dream, which usually assumes the character of his profession or other main life interest.

This state is most commonly caused by cerebral intoxication, as is well known, more especially in that of febrile disease. But it is capable of being caused by trauma, and is typical of the condition known as cerebral commotion. See description in forthcoming book, also *Bost. Med. Jour.* (to appear)

The repercussion upon the organism of a powerful emotion, too, my cause a shock so severe as to make the patient incapable of complicated association, besides diverting his attention, whereby mental synthesis is greatly impaired, and suggestibility becomes exalted. Such emotion as sudden bad news, a sudden fright, or a long-continued strain as before an important ordeal, the emotion produced by social embarrassment, the dominance by impressive surroundings, the prestige of the person with whom one is dealing, are all factors which diminish synthetic capability, and add to suggestibility by creating a temporary confusion.[3]

III. *The Mythomaniac.* — The characteristics of this condition are: (1) Extreme susceptibility to immediate surroundings. (2) Lack of continuity of purpose. (3) The incapacity for accurate statement to the degree of pathological lying. (4) Often an exuberance of fancy and inventiveness. (5) A lack of stability or character, showing itself by erratic behavior. (6) Often immorality, especially as regards honesty and fidelity.

These characteristics date from early childhood. They are rooted in the character of the individual, and hence are not amenable to the kind of psychotherapy available in the army. They would necessitate a remaking of the character, a long and difficult process, requiring very special means and measures which are really available only under the best conditions. Even were every resource at our command, we could not be sure of success at a period of life when the character is generally definitely crystallized. Such patients while under care may seem to progress satisfactorily, but when they are again among the difficult problems of daily living, unprotected by relatives or friends, they quickly succumb to the evil influences which they are certain to encounter.

In the induction of the mythomanic syndrome, the common motive in civil life is vanity. In war there is often substituted the more fundamental motive of self-preservation. The desire for a "Blighty one" becomes very strong in certain temperaments. It is only the difficulty of doing so severely enough and in a likely way, in conjunction with the fear of being found out, which prevents men of this kind from mutilating themselves to escape danger.

The degree to which such motives can lead, even in peace, is familiar to medico-legal experts. A striking example is one related by Dupré, wherein a man caused himself to be laparotomized three times for a supposed tuberculous peritonitis which he simulated by means of abdominal tympanization, pains, digestive troubles, etc. The general opinion what that he was an hysteric. Dupré, however, studied him carefully, and many times caught him in intentional lying, and not only caused him to simulate at will the classic forms of hysteria, such as complete hemianesthesia, until an unexpected prick administered under the bedclothes revealed the fraud, but atypic and contradictory syndromes which he organized according to the traps which were set for him, for the pleasure of the deceit and to render himself interesting in the eyes of those around him. The patient was an accomplished mythomaniac, and can be quoted as a good example of simulation pushed for the love of it to the extent of repeated laparotomy.

Now, this man derived a certain esthetic pleasure from his conduct. It would not be too much to call it artistic. He was truly a mythomaniac of action.

Even, however, where no pleasure is received

Photograph of a soldier who has several convulsive attacks a day, during which he bites himself at the places on the arm. The marks on the legs and forehead he declares are made by knocking himself against surrounding objects. Notice the symmetrical distribution of the injuries. The patient has no stigmata of epilepsy. He is perfectly lucid. There is no irascibility, no dullness. After the attacks there is no somnolence and there is never involuntary micturition or biting of the tongue, and the attacks never occur during the night. The patient is a mythomanic, pseudo-epileptic.

from mythomaniac acts, a patient's desire to escape from danger or punishment may provide a motive strong enough to preponderate against the most cruel moral suffering, as in the soldier who simulated deaf-mutism for seven months, and who was so terrified that he would lose his voice that he would go into a dark passage in the evening in order to murmur words to himself, and who related after he had confessed, how intensely he had suffered (Sicard).

It is safe to say that, if an individual of this type has not been kept straight by the discipline and *esprit de corps* of army life, any time and skill spent upon his treatment will be at the ex-

pense of other patients to whom it might be more usefully dedicated.

Hence, the best military disposition of such cases is discharge from the service. Unless, indeed, it is considered wise to utilize their labor as auxiliaries in a corps under special discipline.

In the milder cases, however, where adaptation before the breakdown was not impossible, it is worth while for the psychiatrist to add his understanding and weight to the more impersonal and casual influence of troop morale. If re-education of attitude makes progress the man may become fit to be a soldier again.

It is from patients of these tendencies that malingerers and simulators arise. In many persons, good upbringing has dwarfed the antisocial inclinations of indifference to truth, and slovenliness toward obligation; the fear of consequences has restrained erratic ways; and the need to earn a living has given a certain appearance of stability which breaks down when without proper surveillance. Such individuals find too often the chance for the reassertion of these antisocial tendencies. The wise army doctor is on his guard against them.

Mythomania. — Mythomania, according to E. Dupré's definition, is the pathological tendency, more or less conscious or voluntary, toward falsehood and fabulation—that is, the power of creating imaginary stories. It differs from the ordinary untruth and from simulation. The states due to mythomania are more or less intimately related to hysteria, but must not be confused with it, still less with dementia.

Generally speaking, mythomania results from the lack of control which in normal individuals is constituted by intellectual criticism, moral sense, and voluntary inhibition.

It is generally associated with other psychic defects, such as vanity, malignancy, perversity actuated by vicious appetites and instincts.

Normal Mythomania in Childhood. — Wonder, fear, lack of experience, and a superabundance of creative spirit give to the ordinary child something of the mythical power which, of old, belonged to primitive men. Mythomania of the most spontaneous kind seems to be normal in childhood and corresponds to the period when the equilibrium of the faculties has not yet been reached.

In normal individuals this mythical tendency is conquered at the age of puberty. When it survives in the grown-up individual it may be considered as a pathological defect.

Experimental psychology has established as a fact that accuracy of testimony is quite exceptional in childhood. Veracity is difficult to attain and the causes are exaggeration resulting from the imperfect justness of precepts or from the activity of the creative imagination, and in many cases suggestion by others.

Sometimes children are impelled to lie by occasional causes, such as fear of blame or childish boastfulness. This last motive is sometimes the first step to simulation and fabulation. For intance, a boy of eight beat and bruised himself to make believe a struggle with thieves in which he would have been the hero. Another boy gives false news to get consideration and to have the pride of seeming better informed than any of his comrades.

Negation of the truth when produced spontaneously by some exterior motive leads frequently, by a process of autosuggestion, to a false affirmation, generally independent from the primitive factor of denying the truth.

Simulation is rare with the ordinary child; it is generally ephemeral and connected with another form of deceit.

Fabulation, which is the power of inventing romanesque situations and adventures and of dramatizing the child's own life, is the highest form of the mythical activity of his mind. Many instances occur of very young children relating with the utmost accuracy of details some facts that they could not possibly have witnessed.

Pathological Mythomania. — There is nothing pathological at all in such working of the undeveloped mind. Pathology appears when the excess of duration and intensity gives an abnormal character to these mythical manifestations. It is a sign of degeneracy and is generally associated with other symptoms of psychical disequilibrium.

In children, several classes of facts may be considered:

The first class derives from a kind of morbid vanity and is the exaggeration of the above-mentioned tendency toward becoming a hero. This inspires migrations, flights to the neighboring wood or to the seaports. It takes also the more dangerous form of autoaccusation of imaginary crimes.

The second class is malignant and is actuated by the destructive instinct, suggesting calumny, heteroaccusation, or more complex tales accompanied with simulation.

The young monsters supply deficiency of their minds and their debility by the qualities of the animal mentality, cunning, slyness, ferocity. They invent tales of martyrdom suffered by them, accuse their own parents with a great luxury of details, and seem to enjoy the sanguinary or salacious quality of the stories. They are happy to occupy public opinion and to accomplish mischief. False martyr children, little accusators, are recruited among them.

In some cases the only motive is so childish, and there is such a disproportion between the aim and the effort displayed that it reveals more weakness of mind than real moral perversity.

The best instance of that is a case quoted by Motet, of a little girl who started the most monstrous denunciation against an innocent man. When cross-examined by the judge and asked about her motive for such denunciation, she answered candidly that she wanted to sit in the beautiful armchairs which had been described to her by a young comrade.

Very frequent are false tales of rape.

Perverse mythomania is even more important in adults.

An important feature of these cases is the part played by suggestion, either parental or from strangers. Many morbid tales are directly inspired in children by the indiscreet and probing questioning of their parents—when they come back late from school, for instance. A very curious case showing the importance of suggestion in constructive imaginary power is related by Bourdin. A little abandoned girl of five was adopted by Mr. and

Mrs. X—— and admitted to live in the intimacy of the family. One day they read the paper aloud, and commented in her presence upon a most scandalous trial, supposing the child incapable of following their conversation. A few days later Mrs. X—— caught the child performing obscenities to her doll. In answer to her anxious questions, she said she was doing what had been done to herself and immediately built up a tale accusing her foster-brother, father, and grandfather. The medical examination proved the emptiness of the child's declarations, who finally confessed having been prompted to imitate "the ladies quoted in the newspaper."

Another instance is of a boy of nine who accused himself and other persons of having participated in erotic orgies. Finally, after the medical examination which proved his sexual inability and the falseness of his evidence, he confessed that nothing of the sort had ever taken place and that only obscene questions had pushed him to invent all these details.

This process of fabulation by suggestion may be attributed, first, to the extreme suggestibility of the child, stimulated by vanity or fear; secondly, according to the remark of Vibert, to sloth of his will, which dictates the easiest answers by yes or no; and, lastly, to the unconsciousness of the serious consequences of his accusations. The passive attitude of the child can bring him to a testimony entirely void of reality. There is commonly a mixture of inventive activity and passive suggestion of original creation and borrowing from the persons around.

The conclusion is that error more frequently than truth is found in the mouths of children.

Mythomania in the Adult.—The mythomanical syndrome, by its etiology and morbid associations, is the same in the child and in the adult, but it acquires a greater importance in the latter from the higher intellectual development of the subject and from the more complex social relations and interests. This tendency, as we have said before, is a survival of the childish mood. It is more frequent in youth, and the majority of cases are in young women or girls.

The same varieties of manifestations that have been analyzed in the case of children can be distinguished: Alteration of the truth, falsehood, simulation, fabulation. Simulation becomes a preponderant element.

Alteration of the truth is manifested not only by the lack of veracity in narratives, but also by variations and contradictions in successive accounts of the same facts. They are generally involuntary, unconscious and spontaneous. If discussed, they show in their author a partial amnesia of what he had said before and the lack of accuracy of perception and of criticism. In many cases, however, the fidelity of the first narrative is quite remarkable and convincing to jurists not aware of this quality.

Experiments made by L. W. Stern on subjects from 18 to 24 show that 11 per cent. of sworn testimony is false, and that correctness of remembrance is exceptional. These experiments throw a light on the embryonic form of mythomania.

More differentiated is the habitual tendency to falsehood, the motives of which are boastful impulses, malignant wishes, or different kinds of perverse desires.

Simulation of disease is an autonomous morbid process frequently associated with mental alienation or crime. It is also one of the favorite means used by the mythomaniac to strengthen the likelihood of his stories.

It may be considered as an "active fabulation" and betrays in simulators an extraordinary ability made of the aptitude to imitate, united to presence of mind, tenacity, and a voluntary domination of the organic plasticity.

The highest degree, the most differentiated form of mythomania, is fantastic fabulation, and its psychological and medico-legal interest is much greater in adults than in children.

This tendency arises from vanity, malignity, and perversity. Instances may be classified under these three headings:

Mythomania from Vanity.—A morbid appetite of vain story produces in the weakminded boaster real paroxysms of lying. The most frequent form is fantastical boasting or bragging, of which literary types have been given in "Tartarin de Tarascon," by Daudet, and "Le Menteur," by Corneille.

They are true virtuosi of falsehood, often without admixture of malignity in their motives.

Another variety of the same type, much more interesting from a medico-legal point of view, is criminal autoaccusation. The authors are either debilitated subjects of very poor originality, finding inspiration in the newspapers, or more intelligent people building up very complicated stories. The motives are the same as in the case of mere boasters; they want to attract the attention of people in order to arouse indignation or pity. Sometimes a grain of malice, of a puerile rather than a dangerous character, enters into their pleasure. They enjoy the fact that they are able to deceive dtoctors, judges, and public opinion. Many examples may be given.

Motet quotes the instances of a youth who pretended to be the murderer of his sister. According to his story, he had caused asphyxia by introducing carbon dioxide into her room through a rubber pipe adapted to an apparatus constructed by himself. He certainly prided himself on this complicated and quasiscientific scheme, the absurdity of which was a proof the debility of his mind. After being sent back a first time to his family, he accused himself a second time; but when he saw that no credit was given to his romance and that he had been kept in jail for five days, he confessed that he had committed no crime and that his sister had died of illness.

Dupré observed a young man of 24 who confessed to being the murderer of a man who had been found cut to pieces at Ménilmontant. His parents declared that he was a liar, a braggart, always planning absurd and impossible things.

Arundel quotes the case of a young girl who cut herself above the left breast, and tried to persuade people that she had been assaulted in a train. The result of the inquest was negative, and it was discovered that the knife used by the imaginary murder had been bought by the victim herself a month before.

This kind of mythomania compels some subjects

to automutilations and sometimes to simulation of illness.

In the same category may be placed simulations of criminal attempts made without malicious intention.

In one case, Baroness de X. simulated a swoon and to persuade her husband that masked men had come during the evening, threatened her and robbed her of 2,000 francs. The facts seemed highly improbable, and after a few days she avowed that there had been no criminal attempt and that she could not give any reasons why she had simulated aggression and burglary. It is interesting to remark that a few days before the newspapers had published details about a burglary committed by masked men in Belgium and that suggestion had probably inspired the drama imagined by Baroness de X.

Dupré relates the cases of a maid found by her mistress gagged and bleeding in a disordered apartment, and of a man who complained of having been run over by a cart and hurt seriously enough to necessitate laparotomy. No motive could be found for their accusations. In both cases inquiry showed hysterical stigmata, and it was found that two years previously the maid had already stimulated death in the presence of her lover and that the man had already pretended having been the victim of a railway accident in which he had suffered serious internal injuries.

These observations show a curious mixture of complicated fabulation with simulation of the setting of the drama. They show also that in such patients, submission to surgical operations may be included in their plan of deceit.

Malignant Mythomania.—This form is in many ways similar to the previous one, but a malicious intention is mixed with the other motives. Destructive instinct at all degrees manifests itself in the choice of means and in the choice of victims. It had been observed to be more frequent in woman. The instances range from mere hoaxing to the most dangerous forms of slanderous accusations.

Anonymous letters are often the tool used by these mystificators or accusers and this choice proves better than anything that vanity is overreached by maliciousness. They are often accompanied by simulation.

Dally quotes the case of a young girl who simulated death during three days and enjoyed thoroughly the efforts, threatening, and prayers of the people surrounding her. He relates in the same study the simulation of a blepharospasm by a young woman, who was believed to be affected by convulsive hysteria. This patient, who after a complete recovery has become a very intelligent woman and an excellent mother, confessed to her doctor her simulation, which, according to her, was an irresistible impulse.

Many persons taken for hysterial subjects are simply conscious and malicious organizers of spiritism or other manifestations of pseudo-occultism.

From these cases we pass to calumnious hetero-accusation. Numerous cases exist which implicate the innocent in crime. The motives are sometimes hatred, jealousy, revenge. But there is always a great disproportion between the intial motive and the maneuvers directed against the victim.

P. Garnier published a case of this variety of hetero-accusation with second offense. A weak-minded girl of 19, an hysteric, accused three persons of having drowned a man. She brought about a condemnation, which happily was revised in the court of appeals. Sometime after, she accused her own father of the same crime. The drama ended by an attack of convulsive hysteria.

In such a case suggestion counts for nothing and the foremost elements have a propensity to falsehood a morbid desire of injuring others, added to a violent and actual rancour.

The most curious variety of malicious fabulation in adults is genital hetero-accusation directed against innocent people. The informer accuses of rape, violence, mutilations, dramatic adultery, sometimes even a pregnancy and criminal abortion. All the classical characteristics of the so-said hysterical accusation are united: apparent lucidity and sincerity of the informer, plentifulness of details, mysteriousness of the drama.

Very often there is a double hero and the informer is also his self-accuser, hysterical people going so far as to immolate themselves for the sake of falsehood.

Examples abound in medicolegal literature of these criminal romances invented by mythomaniacs and generally imputed by hysteria because their authors have hysterical stigmata or accidents.

A classical instance is found in the indictment of Lieutenant de la Boncière in 1835. He was accused of rape by Mlle. de Morel, condemned to ten years of close confinement and was not rehabilitated until 1840.

A more recent one reproduces the same facts. A country girl of 22, an hysteric, was found one morning in her bed half fainting with a bloody cut across the neck, her feet and neck bound with a string. She related a scene of rape and accused of the deed a young man of the same village who had aroused her rancour by disdaining her. Later on she was brought by Garnier to confess her deceit, but she remained indifferent to the enormity of the lie she had told.

The choice of crime is almost always rape, although sometimes murder or robbery appears with a direct accusation.

Perverse Mythomania.—Perverse mythomania is actuated by vicious motives, most frequently cupidity or lust. It is generally the most complex of all the forms.

Cupidity is a very strong stimulus. Famous swindlers, stock-jobbers, discounters of future heirlooms or fortunes, are very often mythomaniacs of great spread. They cram their stories with figures and contrive to make them appear real. Such were the famous Therèse Humbert case in France, and the Chadwick case in America. All nations can present such adventurers, and Delbrück thought that such a type of pathological falsehood was important enough to be characterized by a special name, fantastical pseudologia.

The most interesting side of these inventions is the success they find with uncritical people, the security of the liar, the sincerity of the look, the strength of his own conviction impress people so much that he raises proselytes. These proselytes, in their turn, suggest the faith and confidence he was

clever enough to give and react upon himself. It is a curious instance of mutual suggestion and collective psychopathy, as seen in many pseudoreligious sects even in our own day.

The several forms of perverse mythomania create such types as polygamous husbands, who succeed in marrying different persons in different places, and professional seducers who make their way by feigned chivalrous manners.

Relations between Hysteria and Mythomania.— Both are constituted by simulation, either provoked or spontaneous, of a fact nonexistent in itself.

It is perhaps illegitimate to group under the same name facts as dissimilar as convulsive attacks, narrowing of the field of vision, hemianesthesia, and the tendency to falsehood. The disassociation of the hysterical block seems necessary.

There are, however, common characteristics of hysterical facts and mythopathic facts. Both are constituted by the stimulation, either provoked or spontaneous, of a fact nonexistent in itself. In the hysteric the simulated fact belongs in most cases to the pathological order, and objectives itself with a synergical participation of mind and body, under the form of a neuropathical syndrome.

In the mythomane, the simulated fact is of a more general sociological character. It is completed with the help of language, with a collaboration of other organic activities, and becomes a more or less complicated story.

Accordingly, the differentiation would be that in the case of hysteria, the facts are unconscious and involuntary and in the case of simulation they are conscious and partly voluntary. But in both cases, autosuggestion exists and whether its processus be active or passive, in both cases the clinical result is the same.

There is no accurate means of measuring or appreciating the intention or consciousness. In the majority of cases, the problem remains insoluble. Neurological clinics, as well as medicolegal and penitentiary records abound with these hybrid classifications. Hence the need of a separate category, mythomania, with the definition: "A constitutional tendency to falsehood, *more or less conscious and voluntary.*"

Some conditions, physiological or pathological, create a temporary state of mental disequilibrium presenting some similarity with the mythomathiac syndrome; oniric trancelike states, postoniric fixed ideas, and that form of senile dementia called by Wernicke presbyophrenia. Some intoxications, especially chronic morphinism, predispose also to falsehood and fabulation.

These different states are interesting to compare with mythomania proper, tothrow a light upon the pathogenic conditions of the most voluntary and conscious forms of fantastical fabulation. But the frontiers of conscious fraud are difficult to trace, they depend upon the cleverness of the mythomane and the want of criticism on the part of the observer.

Medicolegal Conclusions. — Such a study is important not only from the psychological point of view, but still more for the practical and social interests it offers to the medical jurist.

The testimony of a child ought always to be considered as suspect. There always ought to be a critical research of the part played by suggestion. The duty of the medical jurist is to enlighten magistrates as to this lack of reliability of children's testimony.

The medical study of adult mythomanes is also important in the light of justice. A number of the above-stated cases brought about the indictment of an innocent person, a legal inquest, and sometimes a condemnation. Slanderous auto and hetero-accusations ought to be detected. Magistrates, when in the presence of some well-known forms of accusation, emanating from certain types of persons, ought to have a suspicion of the danger and ask for the intervention of the medical expert. His study of the case is a valuable, and sometimes an indispensable means of information, and in many cases it is sufficient to give the medicolegal clue to a problem, apart from the legal inquiry.

In such cases there is more truth in pathological explanations than in the judicial interpretations of lawyers. The time has already come when modern psychiatry is substituting in the mind of the law its scientific conclusions for the superannuated principles of the old philosophy.

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THE VALUE OF LABORATORY EXAMINATIONS IN DIAGNOSIS AND PROGNOSIS IN OTO-LARYNGOLOGY.*

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The vital importance of the relationship existing between the laboratory technician and the oto-laryngologist is too well known to need emphasis or substantiation. This relationship well maintained means reliable, logical, scientific practice.

That the results of the laboratory may be trustworthy, it is necessary for the technician, in all but the simplest measures, to have had considerable careful training and a clear knowledge of the import of the examination made. This is becoming increasingly evident. It is no longer true that all men graduated since the colleges entered laboratory courses in the curriculum may become qualified laboratorians. There are those naturally fitted for this work as for any other human occupation.

The laboratory examination as an aid in oto-laryngology is given much less attention than it deserves. The practitioner must be sufficiently

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conversant with the methods used to evaluate properly the technician's report, for in the end the successful man is the one who balances the pathological return with the clinical findings and in the light of experience accepts or ignores it.

In the work of our office the laboratory has been a very great ally. We shall give the principal types of examinations made and discuss them in the light of our own experience.

Urine.—The urine examination is now considered almost necessarily a routine procedure. We are concerned here with albuminuria, glycosuria, acetonuria, and the microscopic presence of erythrocytes, pus cells and casts.

It is important that the examination be routine and frequently repeated in some conditions, notably following tonsillitis, and especially in its mild forms. Loeb has clearly pointed out this relationship. He was able to rule out scarlatina and diphtheria in four of the cases he presented; in fact it is interesting to note that in the latter condition the nephritis arises concurrently with the acute disease while it tends to follow the tonsillitis in the cases cited. In his papers he reviewed the findings of several workers and showed that the relationship has been recognized for some time. He referred to the work of Leyden in 1881, who drew attention to that form of so-called acute spontaneous nephritis following exposure to cold and wet, characterized by a slight fever, hematuria, and albuminuria, in which cases he was able to secure a history of tonsillitis very frequently, and he thought it the most important antecedent condition. Morse considered tonsillitis a dangerous disease and advised routine heart and urine examinations following it. Loeb found that the urine changes come on insidiously with very mild albuminuria, with only a few erythrocytes microscopically and with no symptoms except lassitude. The nephritic changes seem to follow mild as readily as severe tonsillitis. Many of the nephritis cases run a mild course to death and a third class have repeated acute exacerbations. One observer reported as high as 75 per cent. of his cases of tonsillitis followed by albuminuria.

The temperature changes which occur in accessory sinus infections can frequently be traced to the pyelitis which is set up as a metastatic process. This is true, too, of suppurative otitic disease. It has not been an infrequent experience to observe small children with an acute otitis, with a high temperature, when the question has arisen as to the necessity of a mastoid operation, in which a careful urinary examination has disclosed a pyelitis as the causative factor and not a mastoid complication. Let us emphasize that you insist upon a quantitative statement of the formed elements without which you cannot form a correct estimate of conditions.

The presence of glucose is important. Prognosis is markedly affected by it. Treatment is made much clearer. If the sugar content of the blood can be lowered, suppurative processes are relatively easily handled. Ordinarily, but not constantly, the rendering of the urine sugar-free is a good index. Occasionally the percentile sugar content of the blood may remain high, although no sugar appears in the urine. This rarely occurs in diabetes and it is here that the condition is most important, rendering infection of the wounds much more likely than in the healthy person, probably on account of two factors: the altered metabolism of the body renders the tissues less resistant to bacterial invasion and the presence of the added glucose in the serous fluids of the body makes them even better culture media despite the bactericidal substances present. In major operative procedures which are not of an urgent nature such as a mastoid of not a very acute type, laboratory control of the results of dieting and medication of the patient to determine the most advisable moment to undertake operation can be readily carried out and renders the prognosis of the case much better.

Acetonuria is of variable import. Whether an associated diabetes exists should be carefully determined. It may follow anesthesia. Its importance lies in the fact that it may indicate an acidosis so grave that it accounts for symptoms or contraindicates operative interference for the time. The determination of the carbon dioxide capacity of the blood plasma measures for us the gravity of an existing acidosis.

Blood.—The importance of determining the coagulation and bleeding time has been pointed out in a previous paper. It concerns those cases where there is any suspicion of the existence of hemophilia or purpura. Unless predetermined, an unwarranted risk is assumed. The methods in use, while open to some theoretical objections, are serviceable and give the information wanted. Each method has its own average time which should be known and which may vary considerably from other methods. Practically all of them are simple and rapidly carried out.

In the observation of some 500 patients, it was observed that the coagulation time might be prolonged and the bleeding time normal or vice versa; in fact, the authors were much impressed by the frequency of protracted bleeding time in individuals who showed a normal coagulation time. This brings up a most important point in connection with an operative procedure to be undertaken.

The chemical blood examinations are coming into greater and greater prominence. They will be treated later in this paper.

The value of the blood count is well proven. Both the total and differential estimates of the white blood cells are valuable and always will be so despite the frequent publication of cases where no help was derived. A further aid is secured by reducing the differential estimates to whole numbers rather than percentages or by applying one of the diagrammatic methods advocated by Gibson and Sondern. From time to time, the erythrocyte count and the hemoglobin estimation will prove of value.

In obscure suppurative conditions, as, for example, in a mastoid under suspicion, a progressive polynuclear count may prove to be the determining factor in advising operation. The leucocyte count forms a good index as to the resistance of the individual.

Sputum.—A sputum examination should mean a great deal more than it usually does and should be performed much oftener. Well does one of us remember facing a patient who had a mass on one vocal cord, who had been examined by four laryn-

gologists of repute, as well as a widely known surgeon, who could not agree in the absence of definite physical signs as to whether the diagnosis was syphilis, carcinoma, or tuberculosis. In five minutes a sputum examination settled the matter beyond doubt.

An examination should always give a good idea of the predominating organism or organisms as determined by smears; should include the gross characteristics, such as color, odor, sedimentation, elastic tissue, Curschmann's spirals and the microscopic presence of blood, cosinophiles, and so forth, and very frequently should employ cultures to check up the results of the smears. Such an examination would be a real aid in determining pneumococcus types, in fixing asthmatic cases as bronchial in type, and in differentiating bronchial and pulmonary conditions.

Spinal Fluid.—The findings secured by lumbar puncture are of great help bacteriologically following otitic disease. The cytological examination should never be omitted, as it alone may determine a concurrent condition of importance. The test for reducing-substances is of some aid in indicating whether an inflammatory process exists. The globulin tests, of which Noguchi's is the more sensitive, give some information.

Oppenheimer has pointed out the important aid to diagnosis secured by lumbar puncture. While recognizing the dangers of the procedure he demonstrates its value in cases where doubt exists as to the process taking place. With a positive fluid the intracranial and intraspinal condition can be quickly determined and the prognosis possibly favorably changed by timely action. Changes discovered early make successful operation much more possible.

Only localized meningitis or abscess will give a negative fluid. In the face of negative findings, depending upon clinical conditions, one may wait and repeat the puncture later. High pressure of the fluid is very important. Normal or low pressures may mean nothing. The finding of organisms, especially the tubercle bacillus, is conclusive evidence. Normally six to eight cells per cubic millimeter are found and are almost all of the mononuclear type. Suppurative conditions yield a polynucleosis. Increased lymphocytes suggest tuberculosis, poliomyelitis, or lues. Brain tumors and brain abscesses frequently cause only an increase of the pressure.

Serological Tests.—Serological examinations of the blood, spinal fluid and the serous effusions are now so widely used and so numerous that their value needs no emphasis.

Despite the fact that the Wassermann test for syphilis has been severely attacked for the thirteen years of its life, it has steadily held and gained a following. Theoretically we know its weakness. Practically, above all opposition, it has proven of value. A great danger, however, lies in the unquestioned acceptance of its results. Conscientious serologists are urging a standardization of technique, rather than a development of modifications of the original technique. The method is not foolproof yet, and incompetent technicians are giving cause for much of the distrust of the test and should not be tolerated. Many of them seem to have no conception of exactness of working. In our work the test has undoubtedly proven a great aid in determining what certain obscure conditions may be due to.

In reviewing our case histories, having performed the Wassermann reaction as a general routine over the past two years, we find a series of thirteen patients whose blood sera gave a very strongly positive reaction, who showed no signs which would be suggestive of syphilitic lesions in the nose, throat, or ear. Another group of twenty-one cases was found whose complement fixation reaction was very strongly positive and who were suffering with the following conditions: One case of a tumor of the auditory canal, two cases of perforation of the nasal septum, four cases of suppurative ethmoiditis, two cases of leucoplakia, two cases of sound perceptive deafness, one case of ulceration of the mucocutaneous juncture of the nose, one case of optic neuritis, three cases of marked hemicrania, supposedly referable to the nose; one case of chronic suppuration of the maxillary sinus, and one case of fissure of the lip. One does not presume too much in making the statement that the great majority of these patients would not have had a proper diagnosis made if it were not for the fact that Wassermann tests were made as a routine measure.

The more recently developed serological tests for pertussis and tuberculosis are theoretically sound. As yet the latter can be considered only an aid because the reaction may be given by an arrested case. The result must be checked carefully by clinical observation and in doubt should not be accepted without reservation. The pertussis test gives results early enough in the disease in a fairly large percentage of cases to make it well worth applying.

Complement fixation tests are now being used for determining the specific proteins that asthmatics and hay-fever patients are anaphylactic to. The tests are performed with specific antigens prepared from the animal, vegetable, and bacterial substances which may play a part in a given case. Their value has not yet been established.

Almost all of these tests are open to the objection that they are not localizing in their results and therefore may not indicate what a particular focal process is due to.

Bacteriological Examinations.— Two principal types of study are applied here, the first by smears and the second by cultures.

Smears demand more care and attention than they are ordinarily given. They are in competent hands of the greatest aid and the oto-laryngologist who fails to make several on each case so that appropriate stains may be applied, fails to use a valuable method. The Gram stain, too often improperly applied, gives an abundance of information. Bennett points out its value as 'showing the type of predominating organism, where in culture the organism might be swamped by faster growing varieties; 'showing phagocytosis of a given organism, thus indicating the one for which a vaccine should be prepared; 'to indicate the effect of a vaccine in use. He found that the organisms could often be classed with accuracy by smear, all of his work being checked up by careful cultures. The

fusiform organism of Vincent's angina can only be secured by smear, as it does not grow on any known medium. He found the smear of value in prognosis also because of the ability to differentiate simple, easily yielding conditions as those due to *M. catarrhalis*, from more stubborn ones, as those due to the streptococci. The fusiform organism always meant necrosis.

The bacterial flora varies greatly with the part studied, its state, and the methods employed in studying it. Thus the nasal cavity of the normal healthy person contains very few organisms and those often in pure culture, seldom more than three kinds. Logan Turner has pointed this out and states that these are usually not virulent. The healthy accessory sinuses are most frequently found sterile. In catarrhal conditions the staphylococci, streptococci, pneumococcus, *Micrococcus catarrhalis*, *B. influenzæ*, meningococcus, Klebs-Loeffler bacillus, and tubercle bacillus are important invaders.

In the mouth a much greater variety is of course found upon the mucous surface, but when the tonsils are enucleated and the organisms of the depths of the crypts studied relatively few species are found and these in pure culture or small mixed groupings. Thus Maclay found that staphylococci, streptococci, and pneumococci occurred in a pure culture in that order of frequency in 87 out of 268 cultures. Negative smears meant nothing, as growths were commonly secured despite them. Moreover, the smear might show a certain organism predominating, while in culture another would promptly overgrow it. Tubercle bacilli were found by smear only once, and never by culture, for Guinea pig inoculation was not attempted. We know how often this last method has proven valuable in work of numerous investigators. Hemolytic streptococci were determined seventeen times, but the viridans only once, which Maclay thinks was an error which would be corrected by using proper blood plates.

Cultures.—Cultures are of great value when positive. When negative it is perhaps best to disregard them in most cases. At times they are of great help, for example, in tuberculosis, erysipelas, and acute rheumatic fever, in ruling out possibilities. These statements do not hold, however, in the case of blood cultures. Here, a positive or negative culture is always significant, as we have pointed out in a previous paper.

Lake distinguishes between a bacteriema, where living organisms are practically continuously in the blood stream, and a pyemia, in which their presence is casual. The clinical picture is usually clearly different. The prognosis depends largely on the basic condition. Bacteriema which is rare in other bone diseases is not so with mastoid conditions, but in our experience has not been seen unless a complicating sinus thrombosis existed.

Oppenheimer, after stating the necessity of early operation in lateral sinus thrombosis, points out the characteristic phlebitic symptoms associated with mastoid disease and advises operation in the presence of a positive blood culture, especially if of the streptococcus group.

In another paper, Oppenheimer has pointed out the value of blood cultures in metastatic complications of suppurative otitis media, especially in conditions due to streptococcus simulating acute rheumatic fever. In five cases, in which the otitic condition had been somewhat lost sight of in the presence of an acute polyarthritis, blood cultures were positive and a sinus thrombosis was found. In one of the cases later blood cultures were positive despite the fact that the jugular ligation and exsection had been performed. At autopsy vegetations yielding the same streptococcus recovered from the ear and sinus were found upon the heart valves. In this case streptococci were recovered by aspiration from the knee joint. The routine employment of blood cultures in many acute febrile conditions would undoubtedly clear up many an obscure, unsatisfactory diagnosis and probably would render the prognosis also more obvious in many of them.

The information which is derived from the laboratory in the taking of blood cultures in a case of otitic disease cannot be overestimated. The negative findings, as well as positive ones, offer much guidance to the clinician.

The detection of a bacteriemia should be possible in every case of sinus thrombosis at some time during the course of the disease, although it is possible that as the result of various causes such as a sterile thrombosis situated below the infected clot, for a time at least, might prevent a bacteriemia from becoming evident; or the culture may be taken before the bacteria are thrown off into the circulation; in the latter instance, if the culture were taken a few hours later, the organisms would be found. It is also possible that the powers of hemic resistance are greatly increased, and all of the circulating bacteria might be caused to disappear within a comparatively short time by a highly developed bactericidal power of the circulating fluid or it is possible that there may be such a small number of organisms in the blood that in the minute quantity examined, they may not be found.

Following a mastoid operation where a sinus thrombosis is suspected, but where symptoms are not sufficiently definite to warrant opening the sinus, and a blood culture has given negative results, it is most essential that subsequent cultures be taken. This method will be found of great value in clearing up an obscure case that might not be relieved by operation until a much later period. The rule can be laid down that in the presence of streptococci in the blood stream there is a septic focus and that further operative measures are necessary.

In the case where the sigmoid sinus has been attacked but the jugular vein has not been ligated, the persistence of a possible blood culture is an imperative indication for the ligation of the jugular vein. Should positive cultures remain after the jugular ligation, it would be suggestive of a bacterial infection of the endocardium or a metastatic process in the lung.

In our experience, dealing with approximately 150 cases of sinus thrombosis we have never observed an infection due to any organism other than the *Streptococcus mucosus*. This point has proven of very great value in forming an opinion in many instances, and shows the importance of making a

culture from the pus contained in the mastoid process at the time of the operation. For example, we have seen a number of cases where the infection in the mastoid was of the pneumococcus type and where, after the mastoid operation, symptoms presented themselves which were suggestive of a complicating sinus thrombosis. The blood cultures were negative.

In counseling against operation upon the sinus in these cases, our patience was rewarded by seeing subsequently developed pneumonia, erysipelas, or some other complicating condition which explained the symptomatology so much akin to that found in sinus thrombosis. One can see, therefore, the significance of the negative blood culture in conjunction with a nonstreptococcic type of infection.

In conclusion, we may say that cultures from nasal or tonsillar secretion or otitic pus, blood, spinal fluid, and the like, give a great deal of valuable information which, carefully studied, makes the prognosis clearer, and in addition may form the starting point for the preparation of autogenous vaccines which, properly prepared and administered, provide us with one of our best methods for combating infection.

Tissue Examinations.—Joseph Beck of Chicago has repeatedly emphasized the value of the examination of material from mastoid operations. He is able to distinguish two types of acute mastoid involvement which he classified as (*a*) the cell route type, which bleeds freely on operating, is soft, has most of the septa destroyed, the bone appearing as chips in the swollen mucous membrane, and heals rapidly; and (*b*) the vascular type, which bleeds little, is firmer, but otherwise appears the same in the gross, the bone undergoing slow necrosis because of a minute thrombosis in which healing is much delayed by the necessity for the necrosed parts to separate. The streptococcus and *Micrococcus catarrhalis* are the commoner organisms in the latter type, as against the staphylococcus, pneumococcus, and *Bacillus influenzæ* in the first. Here then the etiology is of great importance. The laboratory aids in diagnosis and prognosis.

In chronic conditions the examination is equally important in distinguishing fibrous from cholesteatomatous, tuberculous, neoplastic, and other conditions, while serological tests clear up the cause for the sluggish healing of the luetic cases.

Likewise many workers have found examination of the lymphoid tissue of the nasopharyngeal and faucial regions of great help in diagnosing tuberculous conditions.

Cutaneous Tests.—Certain cutaneous tests have now been developed which play an important part at times. The von Pirquet is the oldest of the group. In children it is undoubtedly of value whether negative or positive; in adults it is so seldom negative that one is tempted to ignore it completely. It is so simple and so quickly done that in appropriate puzzling cases it should be applied with due allowance for its limitations. The less sensitive tuberculin tests, such as the Moro test, may prove more valuable in adults in the long run.

The luetin test is rarely used because of the cost and the readily available Wassermann test.

The Schick test is of the greatest value in prognosis. Care must be exercised in applying the test. The diphtheria toxin is readily secured and with care will keep for about six months. When diluted it should not be kept over twenty-four hours.

The specific proteins have recently come into use for diagnosing the particular causative agent acting in a case of pollen disease or bronchial asthma. Packets may be secured which contains extracts in powdered form of the specific proteins of many substances, both animal and vegetable. These are put in solution and applied to scratches on the skin where reactions to one or more of them may occur indicating some or all of the proteins which affect the patient. This gives opportunity for greater exactness in diagnosis and if desensitization can be carried out, prognosis is improved.

Renal Functional Tests.—The renal functional tests are the outcome of the work of a group of clinicians and physiological chemists, which tests have reached a stage of perfection which warrants their very wide application. *This statement especially applies to all who carry out surgical procedures under general anesthesia.* J. B. Deaver very recently presented some of his figures secured since using two of the tests—blood urea and phenolsulphonephthalein. Of 420 cases (tested) operated upon, 403 were considered suitable and only one died of uremia; 17 were reported unsuitable, and of these, operated upon only as a last resort, 7 died of uremia. The same general results have been secured elsewhere.

The tests referred to are the estimation of the uric acid, urea nitrogen, creatinine, and sometimes sugar, of the blood and the red or phenolsulphonephthalein test. Their use is indicated whereve the urine examination or history presents any suspicion of nephritis or diabetes. The blood chemical tests indicate the grade of kidney injury or the working capacity of the kidney, while the phenolsulphonephthalein test gives only the function of the moment. The blood chemical group is the more important, but the phenolsulphonephthalein test should not be neglected. When kidneys are injured, the uric acid content of the blood arises first and as the injury becomes more grave, the urea nitrogen and then the creatinine are found increased. A rise of the last is of great portent. These tests can now be carried out complete on 10 c.c. of oxalated blood by a very recent method devised by Folin and Wu. The tests should be done by only a well trained chemist, and then they are exact and relatively simple.

Whenever a major surgical operation is being considered and its need is not too urgent, a urine examination showing albumin, casts, pus, blood, or a specific gravity so altered as to arouse suspicion of the functional capacity of the kidneys, should lead one to have the blood examined chemically. If the uric acid or urea is moderately increased no special anxiety need be entertained on this basis, but if the creatinine or sugar or both be raised the prognosis becomes more grave, and especially if the creatinine content rise above 3 mg. per 100 c.c. No person having over 5 mg. has lived many months. These tests can be employed with a resulting much greater sense of security on the part of the surgeon.

We have presented those tests with which we

are most familiar and which have proven useful upon employment in our work. There are undoubtedly others which we have overlooked.

This does not weaken our contention that the practice of medicine, including our specialty, is uncertain enough even with every safeguard thrown about it for us not to ignore these very valuable aids. In the last analysis, as we have pointed out, the clinical picture is equally important, and in case of a conflict between the two, that man who studies and employs both thoughtfully is the one who will best be able to decide which to take as his guide at the critical moment.

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45 East 60th Street.

COMMENTS ON THE FUNCTION AND CLINICAL USES OF THE PINEAL GLAND.*

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THE anatomy of the pineal gland may be found in any of the standard textbooks. An exhaustive treatise on the morphology, evolutionary significance, pathology, and clinical relations of the gland is in course of publication by Tilney and Warren.[1] It is not my purpose to touch on the morphology here except to express the belief (reasons for which will appear below) that the gland, while relatively more active in early life, does not, as supposed by some, atrophy with sexual maturity. It evidently retains through life a fairly definite size, and any function it may possess in infancy is probably not altogether abrogated in adult years.

As a matter of some clinical and diagnostic interest we may note, parenthetically, the observation of Schüller of Vienna[11] that after calcification of the gland has occurred, pineal shadows will appear in profile *x*-ray photos of the skull—about 1 cm. behind and 3.5 cm. above the external auditory meatus.

The view was advanced in the last century that the pineal gland anatomically is only a vestigial remnant of a third eye, occipitally situated, and still to be observed in certain reptiles. Whatever be its evolutionary relations the opinion is constantly gaining ground among clinicians that physiologically it is a true organ of internal secretion. Supporting this conception there are both experimental and clinical data, some of which I shall now proceed in an entirely informal way to set forth.

My interest in the pineal body dates back a number of years, to a time when Dr. C. L. Dana of New York first called my attention to a case of pineal gland tumor reported by Von Hochwart[2] and suggested that some research work on the subject might prove fruitful. Von Hochwart's case was that of a boy of five years, who had projectile vomiting and choked discs—indicative, of course, of cerebral tumor. It was not, however, the presence of a cerebral tumor that was so noteworthy, but that the patient showed a physical and mental precocity far beyond his years. He was as large as a boy of fourteen, had a bass voice, a growth of pubic hair, and concerned himself much with ethical problems and immortality.

Von Hochwart's case has not remained isolated. A succession of tumors of the pineal gland has been subsequently reported in the foreign neurological journals, and by Bell, Warren, Tilney, Dercum, and others in the *Journal of Mental and Nervous Diseases* in this country. The symptomatology of them all has been similar; and nowadays signs of cerebral tumor in the region of the corpora quadrigemina, concurrent with abnormal growth of the body, early appearance of axillary and pubic hair, and remarkable sexual and mental precocity, are grouped definitely as the "pineal syndrome."

To recur, however, to Von Hochwart's case, the autopsy revealed a cellular tumor of the pineal gland. Von Hochwart and his colleagues advanced the view that the pressure of this tumor had inhibited the growth and secretion of the pituitary. But it seemed to Dr. Dana and myself simpler and much more probable that the pineal secretion itself by reason of its increased amount had brought about the extraordinary mental and somatic growth above described.

Working upon this hypothesis for several years, under Dr. Dana's constant and helpful supervision, and with some financial assistance kindly granted us by the Trustees of the Rockefeller Institute, I was able to show that preparations of pineal gland, gotten perfectly fresh from calves and young cattle, accelerated the somatic growth of kittens, rabbits, and guinea pigs to a marked degree, and that a number of backward children, without organic stigmata, to whom the gland was administered for a sufficient period—usually three to six months—

*Revised from an informal address before the Clinical Club, Yonkers, New York.

made an advance in mental age considerably in excess of any previous progress for a like period. The work with the children was conducted not only by Dr. Dana and myself, but by various other observers. Details of the research may be found in the paper finally published by us in the MEDICAL RECORD.[3] This account attracted more than usual attention, if I may judge from the numerous scientific discussions and experiments that have followed. Some (Ruggeri,[9] Biondi[10]) have touched only on the histopathology of the gland, and this will not be discussed here. McCord[4] was able to confirm fully, and to amplify our feeding experiments. Dandy,[5] operating on puppies, from the brains of which by a new surgical method he claimed to have successfully removed the pineal gland, reported that growth proceeded, and sexual maturity appeared as well without the pineal gland as with it. G. Horrax[6], who made extirpation experiments on rats and guinea pigs, claimed that pinealectomy accelerated growth and sexual development in the animals operated on. Fenger[7] extracted pineal glands, and with his extracts was unable to get results of any kind distinguishing his subject animals from the controls.

As regards Fenger's work the chemical details of his extraction processes are not clear enough to admit of a definite opinion being expressed; but it is plainly impossible that the observations of Dandy and Horrax should both be true. I am disposed to think that excision experiments, at all events those of the character so far adopted, involving a profound disturbance of the circulatory and anatomical relations of almost the entire brain, will have to be left out of the story, and that feeding observations and clinical experiences should be given exclusive attention.

Recurring, therefore, to the clinical study of the pineal body, I should like to report summarily that my later work with the gland in backward children in private practice, has continued to be gratifying and satisfactory. The only requirements are that the child should be properly cared for in an educational way, and that the remedy should be continued for a long period—perhaps years instead of months and weeks. There are some fathers and mothers who demand a cure for their abnormal children in a week; for such parents there is nothing ahead but disappointment.

I have brought with me here to-night (there will not be time to read them) notes of six cases of small boys and girls recently in my care who have done very well indeed on pineal gland, their mental progress, in the opinion of their parents, physicians, and teachers having been notably accelerated.

In the care of all such cases one must continually bear in mind that "mental backwardness" in a child is a vague term, covering an infinite multitude of unknown conditions. A careful and minute examination of every feature of each case must be repeatedly made; for outside of the cretins and Mongols, but few generalizations are possible. The prenatal history is often important, and, of course, the character of the labor, and the baby's nutrition and food must be carefully looked into. The child's mental age must be rather accurately determined, and the special senses, the tonsils and adenoids, the teeth (both present condition and stage of eruption), the skin, the blood pressure, the shape of the hands and feet, the quality and distribution of the hair, the relation of the weight and height to the age, are all very important. *X*-ray photos of the skull, showing up the pituitary fossa, and giving possible indications of cysts, neoplasms, or hemorrhages of the brain, are almost indispensable. And, of course, a serological examination of the spinal fluid should be a routine measure, where the parents can be got to consent to it.

When all this work has been carefully done, it will soon become evident to the attentive student—it is no discovery of mine—that glandular deficiencies often do not come singly, and pineal gland must often be tentatively combined with other secretions. Minor grades of hypothyroidism should be specially suspected, and a dry skin, cold extremities, obstinate constipation, excessive mental hebetude, irregular and imperfect eruption of the milk teeth, low blood pressure—one or all of these may be remarkably intractable till thyroid is added to the formula. When the physical as well as mental growth is retarded and there are changes in the size of the sella, or increased carbohydrate tolerance, or great obesity, or a systolic blood pressure below 50 mm., the anterior or the middle part of the pituitary, or both, should be added. When the patient is a boy and has very minute and soft testes (a common occurrence), testis should be given. Sometimes several of these conditions coincide, and a pluriglandular formula of pineal, pituitary, testis (or ovary for girls), and thyroid—all in minute doses—may be tried, often with the most gratifying results.

An important cautionary note should be added as to where such pluriglandular prescriptions—or for that matter prescriptions for any kind of internal secretion—should be procured. One young medical friend telling me recently of his ill success in a certain case said he had sent his patient's mother with the prescription to the nearest pharmacy, directing the pharmacist to "use the very best materials he had." This is something like asking the milkman's advice in making up a formula for a baby with a chronic diarrhea. There are now several New York wholesalers who specialize in internal secretions, and in properly prepared pluriglandular formulas; and if the medical attendant hopes for results in any wise commensurate with his thought and effort in diagnosis he should not be satisfied with any gland preparation unless he is sure it is absolutely fresh and obtained from a well-known and reliable source.

As a means of speeding up the sluggish cerebral chemistry of many backward children, I believe that pineal gland will ultimately become a standard remedy; but the cases must be selected with reasonable care; permanent organic damage to the child's brain is usually an absolute contraindication.

As a corollary to the clinical use of pineal gland in accelerating the chemical movement of the brain in the backward child, it has appeared to me justifiable to try it in premature decay of the mental powers in old people. I have found that while it will not make over hardened arteries or a dilated heart, it will quicken the slowed-down mental processes of old age, improve the memory, and pro-

duce a remarkable cheerfulness and sense of well-being. Some of my elderly patients have taken it for years, and decline to be without it.

In conclusion of this rather disconnected discourse, I must not omit to mention that W. Timme[8] has recently offered some interesting evidence toward proving that progressive muscular dystrophy is an endocrinopathy, and that the pineal gland is the organ at fault in such cases. The paper is too long to be quoted at length, but is worthy of serious consideration. The argument is based partly upon clinical signs, partly upon the appearance of pineal shadows in the *x*-ray photos of the skulls of the patients reported, the said patients being, it is claimed, all too young for calcification to have developed.

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HEREDITY AS A FACTOR IN THE ETIOLOGY OF NEOPLASMS.*

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It is not intended in this paper to review the theories concerning the cause of cancer or of new growths in general, nor the various conditions which may act as exciting or contributing causes. We will be concerned only with a presentation and discussion of the evidence which goes to show that hereditary tendency to neoplastic proliferation is an important predisposing cause.

Most of those here present can recall instances in their own experience which illustrate the tendency of tumors to occur more frequently in some families than the average percentage of occurrence per unit of population. I recently performed an autopsy on the body of a man who died of carcinoma of the bladder. His brother, father, grandfather, and one uncle had likewise died of carcinoma. In another instance I was requested by a man to make a post-mortem examination on the body of his brother who had died of pneumonia. His reason for the request was to find if the brother had cancer, as another brother, the father, and one uncle had each died of cancer. The deceased brother had given no evidence of cancer, but autopsy revealed a well developed carcinoma of the stomach. Such a family predisposition to tumors, both benign and malignant, has been noted so frequently that mere coincidence is not a satisfactory explanation of the occurrence.

While such a familial predisposition is recognized by many authorities in pathology and surgery, yet statistical proof is peculiarly difficult for several reasons. In the first place it is practically impossible to trace all the members of a given family through more than two or three generations. To realize this point one has only to try to get from a patient an accurate statement as to just what disease caused the death of each of his parents and grandparents and of the brothers and sisters of those parents and grandparents. Obviously unless all the members of a family can be traced through a number of generations accurate conclusions are not possible. In the second place accurate diagnosis of cancer has been possible during only about one generation. Prior to that time, and even, we regret to admit, at the present time, many cases of carcinoma were diagnosed "stomach trouble," "gallstones," "tuberculosis," "inflammation of the bowels," etc. One has only to make an autopsy examination upon a few hundred cases dying from all causes in a public hospital to realize how frequently the presence of a malignant tumor escapes undetected. For the reasons just stated statistical evidence from death returns and from cancer surveys of a whole community or population is necessarily fragmentary, and while such evidence cannot be regarded as conclusive, yet some very interesting and suggestive features of malignant disease have been shown by statistical study.

A number of investigators have collected figures on this subject, but these must be regarded as representing the minimum rather than the maximum of familial cancer occurrence because of the difficulty of obtaining complete family histories with correct cause of death stated, and because of failure in former years to recognize cancer in every case. In other words it is probable that if the exact truth could be known many more cases have family history of cancer than these figures indicate.

Williams reviewed the histories of 370 female cancer patients and found a family history of cancer in 83, or 22.4 per cent.; 136 cases of mammary cancer had a cancer family history in 24.2 per cent.; 142 cases of uterine cancer had a family history of cancer in 19.7 per cent. Butlin found a family history of cancer in 37 per cent. of his cases, Nunn found such a history in 29.3 per cent., and Lemp in 23 per cent. Warthin, in commenting on these figures, agrees that "In certain families the cancer chances are greatly increased, 15 to 20 times those of individuals of the general population. If the chances of cancer for the individuals of certain families *are* 15 to 20 times greater than for the individuals of the general population, we must concede the existence of a family tendency to cancer, since such high percentages of occurrence in certain family lines cannot be explained on the grounds of environment, infection, or mere coincidence."

It is seen from a chart representing the Mendelian law of heredity that in hybridization of individuals with different hereditary characters a so-

*Read at the twentieth annual session of the Ohio Valley Medical Association at Evansville, Ind., Nov. 11 and 12, 1919.

called recessive character will occur in approximately 25 per cent. of the offspring after the second generation. Levin made a study of the influence of heredity on the occurrence of cancer in a number of cancer families or so-called cancer fraternities. He found that with a cancerous ancestry the percentage of cancerous members corresponds closely with the Mendelian percentage above cited. In eight such families studied the percentage of cancerous members ranged from 10 to 33 per cent., which is a fairly close approximation to the Mendelian ratio of 25 per cent. for a recessive trait in hybridization after the second generation.

I have mentioned the difficulties of securing definite statistical proof of the influence of heredity on cancer occurrence in the human species. Experimental studies on this point are confronted with insurmountable difficulties, because in the human species selective mating is not practicable, and were it possible to control the mating of individuals, the length of time which must elapse before the offspring of even the first generation should arrive at the cancer age would make the problem impossible from the standpoint of experimentation. Fortunately this phase of the problem can be investigated by animal experimentation and if we admit that the same laws of heredity apply to all species the results would seem conclusive. It is found that spontaneous tumors, both benign and malignant, occur in various animals with a fair degree of frequency when the animals are allowed to attain sufficient age. This statement applies to fowls and mammals, both carnivorous and herbivorous. This fact provides a suitable starting point for investigations on the influence which heredity may have on the occurrence of spontaneous tumors in animals.

The most extensive series of observations on this point thus far reported are those of Maud Slye of Chicago, with reference to the occurrence of tumors in mice. A number of reports have been published detailing her observations which are of a most illuminating character. She found that certain strains of mice, kept pure by inbreeding, developed cancer in a high percentage, while other strains, also inbred, never developed tumors of any kind. Her early experiments were concerned with hybridizing or crossing these strains and observing the occurrence of tumors in the offspring. Genealogical records were kept of all the individuals of each strain, and an autopsy was performed on each mouse at death. At the time of her fifth report her experiments had covered a period of more than ten years, and her mouse colonies had a population of more than 12,000 living members. She had performed more than 14,000 autopsies among which occurred more than 2,500 individual primary tumors. Her stock contained three original cancer-bearing families, from which by inbreeding she derived strains which developed cancer in 100 per cent. of all members which lived to cancer age. These cancerous strains and their offspring furnished continuously a supply of from 50 to 100 living cases of cancer. It will be seen from these figures that the quantity of material for observation and experimentation was ample. She had strains of mice which never developed tumors when tested by prolonged inbreeding, and by hybridization with other noncancerous strains. When such nontumorous strains were crossed with cancerous strains she was able to separate from the offspring strains on the one hand which never produced cancer, and on the other hand strains which regularly produced cancer, and which in turn carried cancer occurrence into every strain with which they were crossed. In other words, she was able at will to breed cancer occurrence into a strain of mice which for many generations had been observed to be free from cancer. Also by selective breeding she was able at will to eliminate cancer occurrence from cancer-bearing families whose parentage on one side produced cancer in 100 per cent. of its family members.

She noted that the occurrence of cancer in the offspring of hybridization between cancerous and noncancerous strains paralleled closely the occurrence of a Mendelian recessive trait in similar hybridization. She stated that cancer-bearing mice carry cancer occurrence into strains with which they are hybridized as inevitably as an albino mouse carries albinism into a pigmented strain with which it is hybridized, and with parallel occurrence of the trait in the later generations. So close was this parallelism that she was able to predict with accuracy the percentage of occurrence of cancer in resulting strains from hybridization, and to have the predictions verified as successive members of the strain arrived at cancer age, died, and were examined at autopsy.

Observations on the transmission of cancer from one to another, as by direct contact, were also made but with negative results. Mice of noncancerous parentage, caged with cancerous mice, never developed cancer. The young of noncancerous parentage were allowed to suckle from females with well developed cancer of the mammary glands with uniformly negative results. Noncancerous mice were fed with fresh cancer substance from other mice but without result. Miss Slye concludes as a result of these and other observations that the transmission of cancer has nothing in common with the transmission of infections.

The interpretation which Miss Slye places upon her observations is not that the disease itself is inherited, but that the tendency or potentiality to proliferate in the lawless fashion of neoplasms is transmitted through the germ plasm to the tissues of the offspring. In her hands this has occurred in exact accordance with the laws governing the transmission of any hereditary trait. She believes that the laws of heredity operate with the same inevitability in humans as in mice; that the evidence of its action in humans is obscured by the difficulty of obtaining the facts. In the human species heredity is a highly complex problem because it represents continuous heterogeneous hybridization. Each individual is a heterogeneous complex of hereditary tendencies, both active and latent, which tendencies are transmitted to the offspring in accordance with the same laws which can be demonstrated as operating in other species where experimentation is possible.

It seems probable, in view of the statistical data on the familial occurrence of human neoplasms, and of the experimental data concerning the hereditary occurrence of cancer in animals, that tumor-pro-

ducing potentiality is an hereditary trait. If so, the conditions which are assigned by pathologists as possible causes of cancer probably act merely as exciting or determining factors in individuals who have received a tendency to the neoplastic type of growth as a heritage from their ancestors.

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DETERIORATION OF OUR CARDIOVASCULAR STIMULANTS; MEANS OF PRESERVING AND OF INCREASING THEIR THERAPEUTIC EFFICIENCY.*

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In daily practice we often are disappointed in the extent of our therapeutic results, and whilst such an experience acts as a stimulant to our thoughts to detect the reasons of our failure, we are apt to put the blame on the patient for his or her lack of cooperation or we blame the nature and extent of the pathological changes. Mindful of the strictly observed regulations regarding the preservation, preparation, and dispensing of drugs, as laid down in the recent editions of the pharmacopeia, in only a few instances we are certain that the unsatisfactory therapeutic results can be ascribed to deteriorated drugs or to an improper administration.

Natural science in its further progress has become a vast field of accumulated knowledge, difficult to be grasped and assimilated by the medical man, who, however, would profit by such additional information in many years.

Invited to talk on my own observations as to how to improve our methods of treatment, it gives me great pleasure to bring before the audience a few facts which may prove of value to the medical profession. Bearing in mind the necessity of omiting a number of interesting details and reviewing shortly the principal facts, let us first consider the following questions: (1) the possibility of deterioration of drugs; (2) the tests applied for the detection of such changes apt to interfere with the therapeutic efficiency of pharmaceutical products. (3) the means of prevention of such a loss and deterioration.

1. Do drugs deteriorate? With reference to organic matter we must admit the marked changes which necessarily follow the cessation of life, tending toward disintegration and dissolution. Can we apply this law to the vegetable cells, which, once function has ceased, shrivel up in a process analogous to desiccation? This may be only one interpretation of one phase of a process which reaches beyond our present recognition. Whilst using vegetable drugs, the active principles of which are still inclosed in a bulky substratum, we may be sure that the process of disintegration is not likely to affect the alkaloids proper. Subjecting the vegetable drugs to the different methods of extraction and maceration and digestion we hope to obtain in the solution prepared the active substances in a therapeutically effective form. Practical experience utilized in the pharmacopeia points toward a disintegration, since certain rules are adopted to exclude drugs from therapeutic use after a certain time of storage has elapsed. We see this in dealing with atropine, digitalis principles, and others. Such rules were probably the result of careful observations demonstrating the therapeutic inefficiency of older preparations, as compared to fresh products. Although in the case of organic compounds a change in the physical and chemical properties is not always evident, in inorganic compounds we are well aware of the change in aspect, crystalline or amorphous form, present after the elimination of the water of crystallization. Such changes may be due to dehydrating or oxidizing processes, may be partially due to yet not fully known alteration in the molecular or atomic structure. My former investigation work leads me to the conclusion that inorganic (1, 2, 3, 4) as well as organic matter (4, 5) is subject to constant changes, which to a certain extent may interfere with therapeutic efficiency. Though matter will never perish, it may undergo certain changes which can be demonstrated.

2. Methods of testing for such changes. It is not the purpose to review the tests applied for the detection of changes in the chemical and biological qualities of drugs, but I would like to call your attention to the physical qualities of drugs observed in cardiovascular remedies. Part of my results have already been published, whilst the present facts refer to newer research work of mine.

The apparatus used for the study of the physical properties of drugs was the fontactoscope, used for the purpose of detecting chemical rays, identical or similar to the alpha, beta, and gamma rays produced within and sent forth from the *x*-rays tube or radiating from radioactive substances such as radium, thorium, etc.

The proper reading of the curves to be shown later requires the explanation of a few technical terms as well as a few remarks concerning the technique for a radioscopic test. For comparison the tested substance must always be compared with the radiation present in normal air, which readings are represented by the *normal loss*, charted as a dotted line. We remember that normal air is a mixture of gases—O, N, H, H_2O with the addition of some of the rarer gases such as helium, argon, etc. Physically speaking this mixture of gases consists of ions, positively or negatively charged electrons. They may be free or neutralized or the positive particles united with the negative particles may have become bodies without any electric charge. This process of neutralization becomes more evident in the course of observation. One of the essential parts of the fontactoscope is formed by the electroscope, the leaflets of which may be of gold, silver, or aluminum foil. Suppose we charge the electroscope with positive electricity, the leaflets will fly apart as far as possible, the distance between them being noted down after reading the scale through the eyepiece. The support of the electroscope is in direct connection with the condenser or drum, and consequently carries the same electric charge as the electroscope itself. From the former surface the negatively charged electrons are attracted and with the neutralization of the positive units by the negative units of the air, the electric

*Paper read before the General Practitioners Medical Society, Columbus, Ohio, May 23, 1918.

tension existing between the leaflets of the electroscope is lessened, therefore a fall of the leaflets is noticed. The rapidity of the fall of the leaflets is dependent upon various factors: first, the amount of radioactivity present in the air or substance to

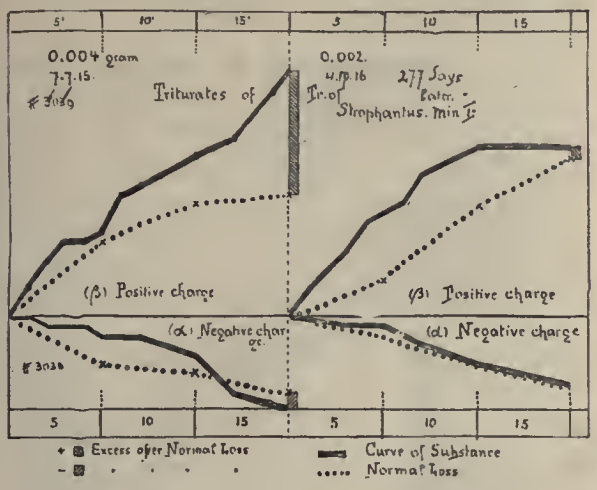

CHART I. CHART II.

be tested, but also dependent upon the size of the condenser drum, expressed by an individual factor determined by the manufacturer of the apparatus. In the air tested we may have a different amount of positive and of negative electrons, one of which being present in excess will necessarily retard the fall of the leaflets; or the case may happen where at first the negative loss is predominating, consequently a different form of the radiation curve is the result. What do we learn from the charts? Starting from the zero point, the readings with a positive charge of the instrument are seen above the zero line. From the study of radioactive bodies we remember that the beta rays carrying a negative charge are neutralized by electropositive electrons, consequently we can speak of the beta line above the zero line, whilst the line below represents the readings with a negative charge of the fontactoscope may serve for the demonstration of alpha rays.

It is not necessary to discuss the methods of separation of these various rays; complete information will be found in the literature.

In former communications I demonstrated the curves of electric discharge observed on samples of various digitalis preparations such as the powdered leaves of digitalis, of triturates of fluid extract of digitalis containing 1 minim of triturates of tincture of digitalis, corresponding to 10 minimis. The result of successive determinations of the same sample of substance made after a lapse of 323 and 459 days in the first instance, after a lapse of 69 to 277 days in the second instance showed that in either instance the positive ionization curve steadily diminished, finally being behind the normal loss. The negative or alpha curve, however, revealed a gradual increase over the normal loss, particularly in the instance of the powdered digitalis leaves. In the same paper I referred to a process which increases the height of the electric discharge curve which tests show the greater ionization in such treated specimens.

In the further pursuance of my experiments I found the following results for strophanthus preparations as illustrated in curves.

Chart I represents in the dotted line the normal loss above the zero line with a positive charge of the fontactoscope. The heavy line represents the curve obtained by the examination of 0.004 gram or 1/15 grain of a crushed tablet triturate of tincture of strophanthus containing 1 minim of the drug. This amount of substance spread in a thin layer and placed within the fontactoscope, then observed for the period of 15 minutes, gave a steep ascending curve, which exceeded considerably the curve of the normal loss. A glance at the alpha curve below the zero line, under a negative charge of the instrument, reveals a normal loss which is less marked. The substance curve at the onset of my observations remains behind the normal loss, but finally exceeds the normal loss. But compared with the positive excess over the normal loss the last observed value stays far behind the first observation.

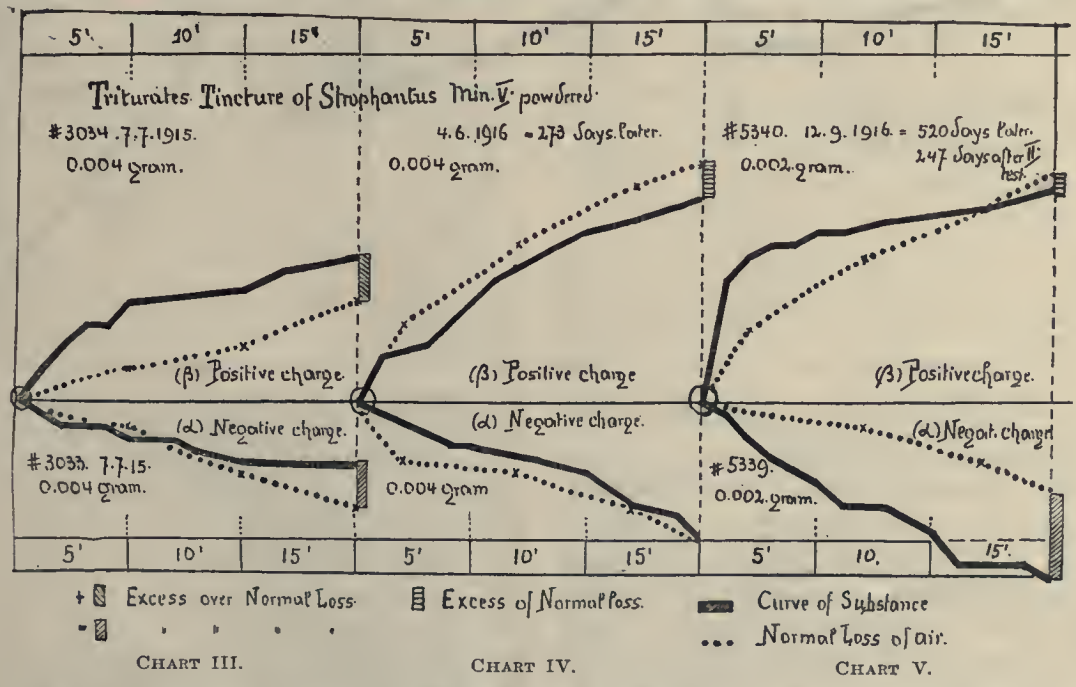

CHART III. CHART IV. CHART V.

Then the sample of the same tablets was stored away, properly protected from light and humidity, and kept at an equal temperature. At the end of 277 days, or more than 9 months later than the first observation recorded, a further examination under identical precautions is represented in chart II, the weight of the tested substance being 0.002 gram or 1/30 grain. Considering the beta curve above the zero line we see quite a steep ascent of the dotted normal loss discharge. The substance curve, however, after a primary steep ascent within the first 10 minutes without any further increase afterward, shows only a slight excess over the normal loss, representing only a minimal activity, or 88.46 per cent. less than 9 months previously. A glance upon the alpha line below the zero line demstance tested, in other words, the smaller the weight of the substance tested, the thinner the layer of the substance, the greater the radiation will be found. This law applied to the present instance the same amount of substance tested—1/15 grain—would yield a still smaller difference from the normal loss.

Chart III demonstrates the readings obtained with 0.004 gram (1/15 grain) of a tablet triturate of tincture of strophanthus, representing a strength of 5 minims. The first test made on July 7, 1915, reveals similar facts, namely the beta curve above the zero line gives for the substances curve a moderate excess radiation over the slowly rising normal loss, which excess stays behind (69 per cent., 23 per cent.) the readings obtained with the 1 minim

CHART VI. CHART VII. CHART VIII.

strates the same course for the normal loss curve as well as for the substance curve.

The difference in the height of the normal loss curves will not escape attention. In the course of my investigations, which extend over a period of 6 years, this difference in the normal loss is dependent upon diurnal and seasonal influences, and partly these readings are influenced by climacteric factors, such as humidity; but especially the actinic strength of the atmosphere will change the readings considerably. We usually are inclined to think that the greater amount of substance tested the greater the effect will be. In my radioscopic tests, however, the constant observation was made that the radiation is inversely proportionate to the amount of subtablet triturate, determined on the same day. For the negatively charged instrument the alpha substance curve remains behind the normal loss. This difference may be attributed to a still persisting inhibition of beta particles which interferes with the continuous discharge of alpha electrons.

In Chart IV we see the result of a test of the same substance, stored away under identical conditions mentioned above, 273 days later. With 0.004 gram (corresponding to 1/15 grain) we notice that the positive normal loss leads over the radiation of the substance curve, a percentual loss amounting to 123.7 per cent as compared with the former reading 273 days previously. The negatively charged instrument shows for the alpha radiation the same

readings for the normal loss and for the substance proper. In other terms, 273 days later the sample tested reveals the absence of beta radiation.

Chart V shows the fontactoscopic readings of the same substance, or 520 days later than the first determination, in the last experiment 0.002 grams, or 1/30 grain, being subjected to the test. The beta radiation sent off by the substance tested after a rapid initial rise within the first ten minutes leads over the normal loss curve; later, however, 15 minutes after the onset of the experiment, the positive normal loss is higher than the electric energy emitted by the substance itself. Compared to the initial readings, the change into negative values in the course of 520 days is quite considerable. For the negatively charged instrument, however, we notice a slow slanting nórmal loss, which remains behind the alpha radiation sent out by the substance itself, with the highest negative excess of electric wave energy at the end of the observation period of 15 minutes. This negatively charged excess compared to the first determination is quite striking, being 75 per cent. higher than 520 days before.

In a comparison of these charts we notice in the one-grain and five-grain samples of triturates of tincture of strophanthus the same tendency to a gradual loss of the radiating qualities. Examined with a positively charged instrument, this radiation appears nearly or completely extinct after nine months. Beyond that time the radiation tested with a negatively charged instrument seems to take the lead.

Having thus determined the loss of radiating energy in digitalis and strophanthus preparations it was of interest to test other cardiac stimulants. A sample is given of fresh specimens of *spartein* sulfate, as seen in charts VI, VII, and VIII. The triturates corresponding to ¼ grain (0.015 gram) were subjected to similar tests as recorded above, the curves being obtained by examining 0.004 gram (1/15 grain) of the powdered substance.

The first curve, seen in chart VI with a positive charge of the fontactoscope, demonstrates a sharp initial rise of the curve, which rise, though less pronounced after the first five minutes of observation, is still in excess at the expiration of 15 minutes over the lower normal loss. This excess, also measured in volts, corresponds to 23.8 volts. For the negative or alpha curve the normal loss is not very different from the beta normal loss, the substance alpha curve, though steep at the onset, reaches a lower level, and after 15 minutes of observation reveals an excess substance loss of 13.1 volts. Considering the scale divisions of the instrument the alpha discharge of the substance is 53.8 per cent., or taking into account the voltage the substance is 44.9 per cent. weaker than the discharge of beta radiation.

Under the identical conditions mentioned, the tablets were stored away, well protected from light, heat, and humidity, and kept at an even temperature until the next test was started 31 days later, July 8, 1915. The results are expressed in chart VII. Notwithstanding the high normal loss on that day, the reason of these variations being still under investigation, the steep curve of beta radiation displayed by the substance remains predominating. At the end of 15 minutes an excess of 37.9 volts over the normal loss was ascertained. A glance upon the alpha radiation curve below the zero line reveals a lesser normal loss which increases after the 7th minute of observation. The substance curve, however, shows a steep fall for the same length of time, which curve is less inclined afterward, but still a negative excess of 23.4 volts remains at the end of the observation. The amount of positive and negative discharge compared with each other shows the negative alpha radiation curve only 25 per cent. less than the beta radiation, by figuring on the scale divisions of the instrument, a comparison of the voltage shows a difference of 38.3 per cent. from the beta radiation. These results, in comparison to those observed 31 days before, reveal a gain of 23.07 per cent., scale divisions, or 37.2 per cent. in volts over the former readings. For the alpha radiation we have a loss of 32.3 per cent., scale divisions, or, figured in volts in the last test, a gain of 78.6 per cent. can be noticed. In other words, in the course of storage the tendency of a leading alpha radiation is manifested which radiation after a certain lapse of time becomes predominant.

Chart VIII illustrates this gradual disintegration representing the readings of the same substance, 0.002 gram (1/30 grain) in powdered form of spartein sulphate being tested—457 days after the first reading, or 426 days after the second.

For the beta curve above the zero line we notice a steep ascent of the normal loss and of the substance curve as well. With an observation period of 15 minutes we notice an excess of the beta radiation over the normal loss, which amounts to 30.4 volts. The alpha radiations of the normal loss and of the substance itself are quite considerable. The substance curve pursues quite a steep curve right from the start, finally to dominate over the normal loss curve, with a result of 60.25 volts in excess Both these curves compared with each other show a gain of 250 per cent., scale divisions, or of 49.5 per cent. in volts, over the beta radiation. Compared to the former readings, obtained from the same substance, we may say that in the course of time the beta radiation may increase for a short while within the first month. After that a gradual loss sets in. The alpha radiation reveals a steady increase, finally being predominant over the beta radiation.

This phenomenon of physical disintegration appears to be general in these investigations in the past 6 years on various pharmaceutical and chemical substances in individual tests lasting from a few minutes to several hours, and in over 6,000 tests including also cardiac stimulants. In the study of radioactive substances we are familiar with the term of the "life time," which expression means the period during which radiation persists. In my investigations I have found that in other medicinal substances also a period of "life time" can be ascertained.

How long does such a period of radiating activity persist is another interesting question under personal investigation; what are the factors at the basis of such a phenomenon? What are the causes of such a decomposition, which may be closely related to the molecular and intramolecular structure? Some of the views regarding that interesting change mentioned in my former publications cannot be fully discussed tonight.

Physical changes relating to the electric radiation being admitted, the question arises as to a possible relation between these physical phenomena and therapeutic efficiency. Personal, clinical, and experimental studies speak in favor of such a relation.

Passing to the third question of this paper, what are the recommendations to be proposed for the preservation of the physical and therapeutic properties of cardiovascular remedies?

1. Whenever possible, use fresh drugs; freshly prepared, they will serve our purpose better for securing help and improvement to the patients. The old and shopworn preparations, after a more or less prolonged existence of oblivion in the drawers or in the form of old solutions, will be called upon in vain to save a patient's life.

2. Proper instruction of the wholesale and retail druggists ought to be encouraged on the subject of this practically important deterioration of chemicals and pharmaceutic preparations. My information, based upon personal experience, as yet incomplete, upon a new field of research, would suggest that the disintegration may be retarded by proper storage, the substances being kept dry in dark containers, protected from light, humidity, and evaporation, at an even temperature. In my experience, fermentative processes in the organic drugs cannot be entirely discarded as possible cause of the changes related above.

In my experimental work I incidentally detected a possibility of increasing the therapeutic efficiency and electric radiation of drugs by a short exposure of various remedies to the passage of electric waves. The practical methods of such a process are still a subject of studies and experimentation, but this much can be said, that the "life period" of the drugs can be raised to several months, and even years. Equally, there seems to exist a possibility of imparting to dead pharmaceutical preparations and compounds new life, and by doing so to restitute and increase pharmacodynamic activity.

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PRICE HILL.

Medicolegal Notes.

Expense of Treatment Before Notice to Employer.—A servant of a state hospital did not immediately notify his employer of injuries which he received, but obtained the services of his family physician, and was taken to another hospital. In a proceeding for compensation it was held that the employer was liable for such reasonable medical aid as was received by the servant after notifying the employer as to where he was located and his need for medical aid, where the employer, after such notice, did not offer to furnish it. The more serious question in the case was that of the expenses incurred in the claimed emergency prior to notice. It was held that such an emergency existed, the claimant's family physician finding him suffering from a strangulated femoral hernia, as to warrant the servant in obtaining medical aid without first notifying the employer. The court said that while the rule is sound which requires notice and opportunity to the employer to select the physician and furnish the needed service during the prescribed three weeks before the injured party can secure it at the employer's expense, still, in the many complications which arise in industrial activities it is not an unreasonable or strained construction of the statute, in view of its purpose, to recognize as inferable exceptions in extraordinary cases where the surrounding circumstances and critical condition of the injured person present emergencies or exigencies demanding prompt action, which reasonably warrant the injured party in securing the then needed service at the employer's expense without first giving notice and opportunity to furnish or offer the same. Such cases are, of course, distinctly exceptional, and consequently rare. Where such exception is claimed, the question of a pressing necessity demanding and excusing prompt action before reasonable time for notice and opportunity thereafter for the employer to act becomes primarily an issue of fact.—Gage v. Board of Control, Michigan Supreme Court, 172 N. W. 536.

Good Will of Physician's X-Ray Practice.—The business of a physician who specialized in *x*-ray pictures as an aid to physicians, and who had a high reputation in his specialized field, and had made many improvements and inventions in the art, is held to have no "good will" transferable after his death, which could be subject to transfer tax, since any good will was personal to the physician and not to the place of business or to any trade-mark or trade-name, especially where the business was not afterwards conducted under his name. The question whether the good will of the practice and business of a man who has attained eminence in his profession has, upon his death, a value that is capable of ascertainment or computation, does not seem to have been decided in the reported cases. It has been held that a doctor may sell the good will of his business and that the courts will recognize the right of the purchaser to the good will. But there seems to be a distinction between the business sold by a doctor during his lifetime and the value of that business after his death. If sold during his lifetime, he could introduce the purchaser to his patients and friends as a prudent and reliable physician, and such introduction would immediately give the purchaser a reputation and standing which otherwise might require years to establish. As the profitable business conducted by the deceased in the present case was the result of his superior knowledge and skill, and the business was not conducted under his name after his death, it was held there was no good will subject to a transfer tax.—*In re* Caldwell's Estate, 176 N. Y. Supp. 425.

Cause of Death—Accident Hastening Disease.—A night watchman at a foundry went to work as usual on April 18, 1917. The following morning he was discovered at the foundry in a state of collapse He developed pneumonia and peritonitis, and after a few days died. His dependent claimed, under the Maine Workmen's Compensation Act, that his pneumonia was traumatic, and that the injury causing it was due to an accident sustained by the deceased while alone at the foundry on the night of the 18th. When he was discovered, on the morning of the 19th, he said, "I got hurt," and then or afterward indicated where he was hurt. The employer claimed that the death was not due to injury, that when deceased began work on the 18th he was "coming down" with pneumonia. The court held that this, if true, was not decisive. Evidence that an existing disorder reaches the point of disablement during employment, of course, does not prove accidental or other injury arising out of such employment. It is sufficient, however (assuming other elements proved), if by weakening resistance or otherwise an accident so influences the progress of an existing disease as to cause death or disablement. Was the disease caused by, or was its fatal result due to trauma? If the Supreme Court had been the trier of the facts, it indicated it might have decided that issue in favor of the defendant. But the commissioner found the issue for the plaintiff. There was some evidence that on the deceased's body a mark or marks were observed which turned black when blood poisoning set in. There was some medical testimony to the effect that the symptoms were more consistent with traumatic pneumonia than with illness otherwise caused. The spontaneous exclamation of the suffering man, "I got hurt," clearly admissible for this purpose, showed that he sensed the shock of a hurt rather than the prostration of illness. It was held that it could not be reasonably said that there was no evidence that the deceased's illness was traumatic, and the award was affirmed.—Mailman v. Record Foundry etc. Co. (Me.), 106 Atl. 606.

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HYPODERMIC INJECTIONS OF PURGATIVE DRUGS.

FOR some time past attempts have been essayed to exhibit purgative drugs by the hypodermic route. Some have experimented with purgative salts in particular, others with extracts and the active principles of plants, as well as purgative roots. Of late some success has been derived from a synthetic purge, phenolphthalein and its derivative, sodophthalyl. Many physiologists have endeavored to ascertain the action of injectable purgatives when given subcutaneously, from which has resulted a large number of special procedures which have led to radioscopy, radiography, and the method of intestinal perfusion.

Braillon (Thèse de Paris, 1913) has experimented with rabbits and dogs with the view more particularly of testing the toxicity of those purgatives which can be given subcutaneously. He employed sodium citrate and sulphate, magnesium sulphate, infusions of cascara, senna, and rhubarb, the bark of black alder in infusion and maceration, aloes in a tepid solution, and, lastly, phenolphthalein.

Injections of sodium sulphate are painful, causing an induration at the site of the infection which may result in sloughing. This salt produced frequent and abundant stools but never liquid ones. The citrate is extremely painful when injected subcutaneously and should be rejected in practice regardless of its excellent results as a purge. Magnesium sulphate (20 per cent. solution) gave no result, but rather constipated the animals and occasionally produced a considerable reduction in the weight of the feces. The infusions of senna, rhubarb, and cascara given subcutaneously produced in the rabbit stools softer than usual while at the same time the weight of the feces was increased. The same results were obtained with the bark of black alder. A 4 per cent. solution of aloes was toxic for the rabbit, but dogs supported it well and the purgative results were distinct. In rabbits phenolphthalein did not produce liquid stools but an increase of weight of and a softer consistency of the dejections. In a dog with an intestinal fistula a distinct purgative effect was noted, as well as an increase of the intestinal secretion.

In their experiments with intestinal perfusion, Carnot and R. Glénard used the same drugs as Braillon. They found that sodium sulphate increased or exaggerated peristalsis but did not appear to influence greatly the secretion. Sodium citrate paralysed the intestine, which became filled with a large quantity of transuded fluid, which, because the gut could not expell it, ruptured the intestine. Magnesium sulphate arrested intestinal peristalsis and checked the evacuation of the stools. Senna was found to exaggerate peristalsis and the intestinal output and it also had a very distinct lymphagogue action. The bark of black alder possessed the same properties. Aloes energetically increased the movements of the gut and produced a vasodilatation of the mesenteric vessels, while the intestinal output appeared to be slightly increased. Phenolphthalein exaggerated peristalsis and increased the intestinal secretion, but the contractions were not so energetic as those obtained with aloes, senna, and especially sodium sulphate.

Clinical observation leads us to believe that subcutaneous or intravenous administration of purgatives is possible, and all the drugs above mentioned have given clinical results. Injections of sodium sulphate or citrate and the solution of aloes are to be rejected, either because of the pain produced or by reason of their toxicity.

The question of subcutaneous injections of purgatives is sufficiently interesting, as well as important, for continued research, because in practice this method of exhibition unquestionably has important therapeutic indications where prompt purgation is required, as in coma, incoercible vomiting, etc.

THE STUDY OF CRIMINOLOGY.

THE science of criminology has increased greatly since the days of Lombroso and Nordau. A new view is now taken of the subject and the criminal or the potential criminal is not judged exclusively by physical characteristics or abnormalities.

Dr. Charles Goring, of the English prison service at Manchester, was one of the first to regard the matter from this novel aspect, and for several years was engaged on a great statistical study of criminals from almost every conceivable angle. Goring died last May from pneumonia at his post in Manchester and his remarkable work on criminology has been issued in an abridged edition by an English Government Department. This edition is also notable for an introduction by Professor Karl Pearson. It may be stated that Goring made the first attempt in Great Britain or any other country to reach results in criminology by the statistical presentation and analysis of facts. He was responsible for the detailed examination of 3,000 convicts, making 15,000 observations himself. Incidentally by the cold logic of facts, he appears to have destroyed for all time the long held theory that there is a definite criminal type. The Bill Sykes type of burglar, as limned by Dickens, with low

beetling brow, with large ears, coarse jaw, and general mien of truculence and ferocity, is not really synonymous with the burglar type. Indeed, there is no burglar type, and the successful house breaker and safe cracker is perhaps most frequently an unassuming, inoffensive looking little man, who resembles a church deacon or a college professor. To rise to great heights in the burglary profession, it is not well to bear on one's person the earmarks of the burglar of fiction. In the same way, as Goring points out, it is foolish to distrust a woman with pale face, red hair, or green eyes. With reference to the size of the head or frontal development as a criterion of criminal propensities, Goring has shown that such a belief is untenable. He measured the heads of 800 criminals and reconstructed the typical criminal head. He then compared this head with the head obtained from the examination of 118 men of the Royal Engineers. The difference was found to be slight.

Karl Pearson sums up the results of the Manchester man's investigations very aptly when he says, "The criminal is not a random sample of the population, either physically or mentally. He is rather a sample of the less fit moiety of it."

The moral to be extracted from Goring's studies is the large part that mental defect plays in the drama of crime, and the fact that a large proportion of the mentally defective are not defective at all from the intellectual side. Pearson says that, to use a biological expression, they have never possessed, and never will possess, the instinct of the gregarious animal, the instinct which compels them to observe the rules of the pack. They feel no social nor moral responsibility, no instinct of the herd, without which any society, either of man or of beast, must cease to exist.

After emphasizing that the need of the moment is apparently the fuller study of mental defect, Pearson goes on to show that in this study the criminologists of America are ahead of those of Great Britain. They are putting into practice and developing the facts that Goring spent his life in accumulating. It has been recognized in America that the criminal in most cases is a mentally sick man, suffering from a more obscure disease and one more difficult to treat successfully than a disease of a physical nature. For their own good and for the protection of the public, it is necessary to isolate them, but prisons and reformatories should be looked upon as asylums for the mentally defective and as laboratories for the study of criminology, and not merely as penal establishments.

ORAL INFECTION AND MENTAL DISEASE.

Infection of various kinds is not infrequently associated with mental disturbances, generally temporary in nature. But it has not been generally recognized that more chronic forms of mental disturbance, actual mental disease or some of the forms of insanity, might also be due to infection and, further, might be successfully treated by the removal or cure of that infection. Evidence in support of this latter statement is submitted by Henry A. Cotton in a recent paper (*Jour. Dental Research*, 1919, i, 269). The author, in brief, submits the histories of a number of patients who were admitted to the New Jersey State Hospital and in whose cases the diagnoses of various types of mental disease were confirmed by clinical study. After the failure of other forms of treatment, the removal of teeth with infected roots and of infected tonsils, and the treatment of gastric conditions apparently associated with local infection, was followed by remarkable improvement and in many instances the patients recovered as permanently as could be determined by observation for from one to three years after discharge. These statements are startling and yet on mature consideration need not remain so. It is quite apparent that many instances of mental disease are manifestations of some form of toxemia and it is not essentially difficult to reason that if the cause of a toxemia be removed its effects will cease. The clinical and therapeutic aspects of this report may be accepted as a noteworthy contribution whose exact value will naturally be determined by other investigations. The bacteriological theories proposed are much more difficult of acceptance. The author rightly says that "members of the medical profession are skeptical as to the validity of the theories discussed." That this skepticism is justified must be acknowledged when one theory claims the identity of the Gram-negative "Connellan-King" diplococcus and the Gram-positive *Streptococcus viridans*. The author also places much more dependence upon the complement fixation test for the non-hemolytic streptococci than is usually done by laboratory men. It seems to us a little extreme to say "The use of this test would remove all doubt as to the advisability or necessity of extracting impacted molars, when the patient is apparently healthy and the infection has not reached dangerous proportions. When the test is positive the impacted molars should be extracted." It may be that with greater perfection in the technique, the complement fixation test will command greater confidence than it has at present, but it is well-known that in many types of known infection the results are apt to be unsatisfactory. Further the author describes achylia gastrica as he has observed it, as due "to the presence of streptococci in the stomach wall and in the peptic glands, where they interfere with the secretion of HCl." This statement also will require much evidence to support it. But in spite of all the criticisms which we may make of his theory, the results of his practice are apparently remarkably satisfactory and after all that is the essential thing. If he can pull teeth and enucleate tonsils and thereby restore the mentally diseased, he will accomplish much and will deserve much honor.

An Echo of Influenza.

Echoes of the pandemic as compiled from official records appear to be coming in from all parts of the world, and will doubtless lead to a revision of

the history of this experience as we now understand it. In a recent Paris thesis on Grippe in the St. Antoine Hospital during 1918-19, by Barbier-Jacob, an abstract of which occurs in the *Journal de médecine et de chirurgie pratiques* (October 10, 1919, xc, 19), it is stated plainly that the disease had visited the institution in April, or at least a month before it first broke out in Madrid, and the malady has never died out there, for cases have occurred continuously ever since. The stages of its sojourn are not given and we do not know how virulent were the early cases. The general statement is made that the mortality of the grave pulmonary cases was around 50 per cent. and that these cases suggested the possibility of the lung plague. In certain cases the signs of adrenal insufficiency were marked, and the collapse, algidity, enteric symptoms, etc., suggested cholera, and also other disease pictures, such as dysentery. Siredey, the senior physician, employed a variety of remedies as camphorated oil, strychnine, adrenalin, caffeine, wet cups and venesection, abscess produced with turpentine, and intravenous injections of colloidal silver. The benefits of the treatment were apparent, for the cases represented the very worst in Paris, and the total mortality of 19 per cent. is regarded as a triumph. The most striking feature of the reports is the early and long-continued incidence. This is to be explained with great difficulty unless we assume that it illustrates the impossibility of distinguishing between the pandemic and influenza nostras.

Helium.

Although helium has no direct application to the practice of medicine it is a product of radioactivity and of value in aerostatics, while it is now prepared in large quantities from petroleum gas, especially from the newly discovered supply of the Southwestern States. According to a writer in the *Gazette hebdomadaire des sciences médicales de Bordeaux* for September 21, this gas was first discovered in the solar spectrum by the Frenchman Janssen in 1868. We learned nothing more about it until Ramsay discovered its presence on our own planet. While it is formed in the disintegration of radium it has natural sources in the gas produced in warm springs and natural illuminating gas which occurs in petroleum fields. Many years ago a French business firm extracted 200 liters of it from the thermal springs at Bourbon-Lancy. However, in recent years it has been found in such quantities in the natural gas of Kansas and Texas that the United States will supply the growing demand for it as a substitute for the more dangerous hydrogen in balloon gases, it being both light and incombustible. The oil wells of Petrolia, Texas, alone yield daily 700,000 cubic meters. There are several methods and processes for obtaining it, and the price per cubic meter has been reduced from 20 francs to 4 or 5. Just before the armistice was signed it is said that a large shipment of several thousand cubic meters was about to be made to the American army in France by the United States Government. For the purpose of inflating aerostats it is claimed that this gas is reasonably cheap as well as effective and safe.

News of the Week.

Insane Patients Missing in Hospital Fire.—Eight patients of the Connecticut Hospital for the Insane at Middletown are believed to have lost their lives in the fire which completely destroyed one of the frame buildings of the hospital group on the night of December 22. Of the fifty-three patients in the building only forty-five had been accounted for at midnight. The patients were all cases of the milder types of insanity. When the flames were discovered they assisted the "bucket brigade" in rescuing clothing and furniture. The missing patients are believed to have been burned to death when the interior of the building collapsed.

Vital Statistics for New York State.—According to the statement issued by State Health Commissioner Hermann M. Biggs, while the birth rate per thousand inhabitants for the State as a whole was slightly higher in October than that during the summer months, it was lower than for the year 1918, and was lower than the average five-year rate for any month during the period of 1913-1917. The general death rate of 10.3 per thousand inhabitants for the State as a whole for October was identical with that for September, and was a fraction lower than that for June, July, and August. The death rates for the five months from June to October, inclusive, of 1919, were the lowest monthly death rates ever recorded for the entire State. The infant mortality rate of 70 for October was 20 points lower than the average rate for that month during the five years of 1913-1917. The 49 deaths from typhoid fever during October were less than half the average for that month during the 1913-1917 period, and less by 8 than the number for September of 1919. Diphtheria showed a slightly higher mortality rate in October than the five-year average. Deaths from automobile accidents increased from 79 in September to 128 in October.

The American Congress on Internal Medicine, in conjunction with the American College of Physicians, will meet in Chicago February 23 to 28, 1920. The sessions will comprise daily clinical and laboratory demonstrations in many of the leading hospitals and teaching institutions of Chicago, and special evening meetings. Dr. Frank Smithies, 1002 North Dearborn Street, Chicago, is the Secretary-General.

Nearly Two Million Dollars in Charitable Christmas Gifts.—According to press notices, Mayor James Couzens of Detroit, Mich., distributed approximately two million dollars, chiefly to institutions for the care of crippled children and orphans, all of the city of Detroit. The sum was apportioned as follows: Annex for Michigan Hospital School for Crippled Children, $450,000; endowment fund for school, $650,000; total for school, $1,100,000. Nurses' Home, Harper Hospital, $650,000; Children's Free Hospital, $125,000; St. Vincent's Orphan Asylum, $75,000. These sums total $1,950,000.

New Medical Swindle.—The Newark, N. J., police have asked the authorities of other cities to look for a suave, tall man, wearing a fur overcoat, who posed as "consultant" in the case of a patient of a Newark physician, collecting a three-dollar fee for his "services." Soon after the physician left

the home of the patient, the "consultant" arrived, expressed surprise that the doctor did not wait for him, explained his mission to the patient's husband, and proceeded to make his "examination" of the patient. With dignified solemnity and a muttered grave prognosis he proceeded to "make notes" on the case, after which he collected and departed.

New Hospital Ship Launched.—The United States Hospital Ship *Relief* was launched at the Philadelphia Navy Yard, December 23. Mrs. William C. Braisted, wife of the Surgeon General of the Navy, was the sponsor. The ship is of 10,000 tons displacement, and is 483 feet long, with a speed of 16 knots. Congress appropriated $3,250,000 for this ship, which is said to be the first of its kind ever constructed. The work was begun in 1917, but was abandoned during the war. The vessel has a capacity of 500 beds, with complete operating rooms and field hospital equipment. She is divided into wards for the segregation of various diseases. She will carry, in addition to the crew, a complete medical staff of officers, nurses, and hospital corps men.

Return of Sick Soldiers to Civil Life Opposed.—National Headquarters of the American Legion at Indianapolis opposes the recent War Department order calling for the release to civil life of service men who have been under treatment in hospitals for more than twelve months. Officers and enlisted men confined in hospitals receive full pay, but when returned to civil life tuberculous and other incurables will receive but $6 to $30 a month. The Legion wants such action by the War Department postponed until provision will have been made for these men by Congressional legislation. The War Department order would throw on public charity the responsibility of caring for a large number of these sick.

Trained Nurses Developing the Strike Germ.—The five hundred New York and Brooklyn nurses who constitute the Trained Nurses' Association, Local 16,461, American Federation of Labor, have begun a Campaign to include in its membership the rest of the 3,500 nurses employed in this city, and to secure for all an eight-hour workday. Circulars setting forth the alleged grievances of the nurses have been distributed. As recently noted, the pay of nurses doing private work has already been advanced from $5 to $6 a day.

Shell-Shock Patient Shoots Doctor.—Dr. John F. Rooney of the Public Health Service was shot three times, December 20, by Walter S. Holbert, a former soldier and patient at Providence Hospital, Washington, D. C., where Dr. Rooney had attended him. When captured the ex-service man declared his act was prompted by the belief that the doctor had not given him the attention his condition warranted. The soldier was wounded in the Argonne fighting.

Changes in Sanitary Code.—A number of changes, effective January 1, 1920, have been made in the Sanitary Code of the City of New York as it affects the removal of unidentified bodies to and from the morgue. The changes are the outcome of abuses of existing laws practised by certain undertakers, culminating in a recent glaring instance, in which a woman, who died of injuries received when she was struck by a taxicab, was hurriedly and mysteriously buried within thirty hours after the accident. Investigation by the woman's daughter revealed facts which caused the action by the Health Department.

Physicians Who Fail to Report Communicable Diseases to be Prosecuted.—The intention on the part of the Department of Health of the City of New York to enforce the sections of the Sanitary Code which make compulsory the reporting of communicable diseases by both physicians and institutions is evidenced in a statement issued in the *Weekly Bulletin*, under date of December 20. When the officers of the Department of Health, according to the statement, ascertain that the required information has been withheld by physicians, dispensaries or hospitals, it becomes their unpleasant but imperative duty to bring such delinquency to the notice of the Commissioner. The latter has no alternative but to make a thorough inquiry, and, if the facts warrant such procedure, to resort to legal action to enforce compliance with the regulations.

Medical Journals Merge. — The *Medical Herald and Electro-Therapist* of Kansas City makes the following announcement: Several years ago, the *Medical Herald* absorbed the *Kansas City Medical Index* and *The Lancet*. About the same time, the *Medical Fortnightly* of St. Louis took over the *Laboratory News*, which in turn had several years previously succeeded the *General Practitioner* and *The Clinique*. So in line with the spirit of the times, on January 1, the *Medical Herald* and the *Medical Fortnightly* will join forces, and thereafter will be issued as one journal, thus combining seven publications in the *Medical Herald and Electro-Therapist*.

Civil Service Examinations.—The New York State Civil Service Commission announces examinations to be held January 24, 1920. On the list of positions and requirements are the following:

Bacteriologist, Rockland County Tuberculosis Hospital. Salary $75 a month. The duties required are as follows: Uranalysis, blood, sputum, and stool examinations, examinations of stomach contents, complement fixation, preparation of vaccines, culture work including the preparation of culture media, clinical as well as bacteriological analysis of water and milk. A general knowledge of histopathological technique is also required. Subjects of examination: Written examination relating to the duties of the position, relative weight 1; education, training, experience, and personal qualifications, relative weight 1.

Bacteriologist-Pathologist, State Department of Health. $2500 to $3000. Age limits 25 to 45 years; preferred ages 30 to 40 years. Candidates should have a degree in medicine and a thorough knowledge of the principles of bacteriology, pathology, and immunity. They should have had considerable experience in both bacteriology and pathology. They will be rated on education, training, experience, and personal qualifications. They may be required to make a written statement of their conception of the duties of the position. Inquiry may be made as to their character and ability, and all statements of experience are subject to verification. An interview may be required. Open to non-residents and non-citizens.

Obituary Notes.—Dr. GEORGE E. CHAMBERLAIN,

formerly of Boston and later of South Newbury, Vt., died after an operation, December 16. He had been in ill-health for some years, and was not in active practice. He was graduated from Dartmouth Medical School in 1896.

Dr. JOSEPH J. CRONIN of Boston, Mass., died at the Peter Brent Brigham Hospital, November 30. Death was caused by blood poisoning following infection of the left hand during an operation. Dr. Cronin was graduated from Jefferson Medical College in 1885.

Dr. CHARLES ALBERT FOLSOM died at his home in Epping, N. H., December 12, at the age of 45. After graduating from Dartmouth Medical School, in 1902, Dr. Folsom practised for fourteen years at Manchester, N. H., retiring a year ago. He was a member of the New Hampshire State Medical Society, the New Hampshire Surgical Society, and other organizations.

Dr. J. H. GIFFORD of Fall River, Mass., died December 15, at the age of 61. He was graduated from Harvard Medical School in 1884. He was a member of the Massachusetts State Medical Society, and was associate medical examiner in his district.

Dr. GIUSEPPE DALLA-CHIARA of New York City died at the Presbyterian Hospital December 15 of cancer of the lungs and bronchial tubes. Dr. Dalla-Chiara, who was 53 years of age, was born in Italy, and practised medicine in Rome and Milan. He had been practising in this city for five years.

Dr. NELSON GREGORY HALL died December 15 in the house in which he was born, in 1833, at Nut Plains, Conn. He was graduated from Yale Medical School in the class of 1861, of which he was "the last leaf."

Obituary.

SIR WILLIAM OSLER, M.D., LL.D., F.R.C.P.,

OXFORD, ENGLAND.

SIR WILLIAM OSLER, Bart., Regius Professor of Medicine in the University of Oxford, died at his home in Norham Gardens, Oxford, December 29, in his seventieth year. He became ill with pneumonia in November. Pleurisy developed, necessitating thoracentesis, but he was thought to be making favorable progress. Three days before his death he cabled Christmas greetings to friends at Johns Hopkins Hospital, telling them he was making a good fight.

Dr. Osler was born in Tecumseh, Ontario, and received his preliminary education at Trinity College School, Trinity College, Toronto, and at medical department of McGill University, Montreal, Toronto University. He was graduated from the in 1872, receiving a special prize for his graduating thesis on pathological anatomy. After two years spent in study abroad he returned to Montreal. In 1874 he become professor of the institute of medicine, McGill University, holding this position until 1884, when he became professor of clinical medicine in the University of Pennsylvania, Philadelphia. Five years later he became identified with Johns Hopkins University, Baltimore, as professor of the principles and practice of medicine. He held this position until 1905, when he became regius professor of medicine at Oxford.

Dr. Osler was the recipient of many honors conferred by universities and scientific societies. In 1883, while he was still at McGill University, he was made a fellow of the Royal Society of Physicians. In 1895 he received the honorary degree of Doctor of Laws from McGill University; in 1898 from the University of Aberdeen, and the University of Edinburgh; in 1899 from the University of Toronto; in 1901 from Yale University; in 1904 from Harvard University, and in 1905 from Johns Hopkins University. The degree of Doctor of Civil Law was conferred by Trinity University, Toronto, in 1902, and by the University of Durham in 1913. He received the degree of Doctor of Science from Oxford University in 1904, Liverpool University in 1910, and the University of Dublin in 1912. In 1911 he was created a baronet of the United Kingdom by King George V.

Through his teaching Dr. Osler became known and loved by hundreds of students and physicians in Canada, the United States, and Great Britain, and through his writings he became the honored guide in the science of diagnosis of thousands more. He was a voluminous contributor to medical literature, as the 730 titles listed under his name attest. His "Principles and Practice of Medicine," and "Modern Medicine," of which he was coeditor. are his chief works.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Dec. 12, 1919.

Increase of the Fees of Medical Men.—The Council of the British Medical Association has recommended an increase in doctors' fees to the extent of 50 per cent over pre-war rates. The fact has been made public recently by Dr. G. C. Anderson, the deputy medical secretary of the association. Dr. Anderson said it was impossible to give any idea of what minimum charges were in different districts. The size of the fee depended entirely upon the individual practitioner, and varied in different neighborhoods. The sanctioned increase, however, referred to every member of the profession.

Appeals for London Hospitals.—In the course of a week dinners have been given under distinguished patronage to solicit pecuniary aid for three large London hospitals. The first of these dinners was presided over by the Prince of Wales, and was the first function he attended after his return from America. It was to help in raising $1,000,000 required to clear Middlesex Hospital from debt. The second dinner was held the following evening and was also presided over by the Prince of Wales, and was for the purpose of getting together a large sum to free the Great Northern Hospital from debt. The third dinner, which took place on the same evening, was under the chairmanship of Prince Arthur of Connaught, and had as its object the placing of King's College Hospital on a satisfactory financial basis. Hospitals in every part of Great Britain are laboring under severe pecuniary stress,

partly due to the effects of the war and partly owing to the fact that the working classes and poor of the country are beginning to appreciate the value and advantages of hospital treatment. The consequence is that the accommodation is woefully inadequate and that there are immensely long waiting lists. The hospital question is now acknowledged to be pressing and serious, and one that calls for immediate attention. It cannot be said that the voluntary system has failed, but it map be said that it is unable to cope with present conditions. It requires reconstruction and coordination and better organization. It does not seem at all likely that we are on the eve or even at all near a state controlled system. The Ministry of Health will not dream of adding to its already overburdened program, and the present mode of control, with certain greatly needed forms, will doubtless continue.

The Administration of Anesthetics by Unqualified Persons.—Owing to the lack of skilled and qualified anesthetists during the war, anesthetics were more or less frequently administered by unqualified persons. Indeed, if my memory serves me well, it was suggested in the United States that nurses should be trained to give anesthetics. However, in Great Britain the practice is frowned upon severely, and Dr. F. J. Waldo, Coroner for the City of London, is initiating a campaign against such a procedure. There have been one or two fatalities of late in cases in which the anesthetic was given by an unqualified individual. Dr. Waldo in 1908 contributed articles to the *Lancet* and *Medical Press* in which he asserted that available data as to deaths during anesthesia were so imperfect as to be useless for the purposes of formal investigation. It therefore followed that the so-called statistics and published figures regarding that class of mortality were worthless and misleading. Dr. Waldo made certain recommendations and the matter was brought to the attention of the Home Office, and a Departmental Committee was appointed in December, 1908. The committee reported in March, 1910, as follows: (1) No general respirable anesthetic should be administered by any person who is not a registered practitioner or dental practitioner. (2) Registered dentists should be confined to the use of nitrous oxide gas for dental operations, and should not employ the general respirable anesthetics of the longer duration. (3) Intraspinal anesthesia should be practised only by registered medical practitioners. (4) In the case of any death under an anesthetic in a hospital or other similar public institution there should be a scientific investigation into the actual cause of death conducted by the authorities of the institution. (5) A small scientific committee on anesthetics should be instituted under the authority of the Home Office. The report and recommendations were published nine years ago, and nothing has been done. It is an important matter, and it is in the interest of all concerned that the question should be reviewed.

Sale of Canadian Hospital.—Brig.-Gen. R. Manley Sims, C.M.G., D.S.O., Agent-General for Ontario, has sold on behalf of his Government the Ontario Military Hospital at Orpington to the British Ministry of Pensions for $400,000. This hospital, which has accommodation for 2000 patients, was the largest Canadian military hospital in England, and during the war it performed splendid work on behalf of the wounded. The hospital was built and equipped by the Government of Ontario. The buildings, with all the valuable equipment of a complete hospital, have been handed over to the Ministry of Pensions, who intend to use it for the care and treatment of convalescents and disabled soldiers transferred to the Ministry by the War Office.

Health of the British Forces.—The Chadwick trustees have resolved, under the powers conferred upon them by the scheme which they administer, to award next year a Chadwick gold medal and a prize of $500 to the naval and military officer respectively in the British service who during the past five years of war shall be deemed to have distinguished himself most in promoting the health of the men in the navy and army. The nomination to the trustees for such presentation will, as provided by the trust, be made by the directors-general of the naval and military medical services respectively.

Congress of the British Royal Institute of Public Health to be Held in Brussels in 1920.—The annual meetings of the Royal Institute of Public Health, which were in abeyance during the war, will be resumed in 1920. An invitation has been received from the Burgomaster of Brussels on behalf of that city, and from the Rectors of the University of Belgium for the next congress to be held in Brussels. The invitation has been accepted, and the meetings will take place from Thursday, May 20, to May 24, inclusive.

LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, December 1, 1919.

Modified Theories of the Treatment of Infections.—The latest work done in France in anti-infectious therapeutics and the discussions which have taken place in the medical societies on this subject, show that the various treatments advised of late possess a modus operandi about identical but that this modus operandi is quite different from what we had thought theoretically. The belief in the specificity of the various sera has, for this reason, received a severe shock. That it does exist is not questioned, but it is not looked upon as the primordial element of their efficiency. Likewise, it is no longer certain that the colloid metals, which have been so highly vaunted, act by the virtues which the metals themselves possess, or at least their specificity is no longer considered absolute.

Even the subcutaneous injections of turpentine given to promote the development of a fixation abscess are at present understood in a different light. In fact, it would seem that in all these modern therapeutic measures the principal element of success resides in the reactions provoked by the introduction of foreign albumins into the organism in the case of sera and in other cases simply the introduction of foreign matter. These reactions are considerably increased and provoked at the proper time; otherwise they are exactly the same as those which arise in the organism when an undesirable pathogenic guest enters it. Even infection gives rise to this kind of defense and

modern treatment reinforces it. This is why it seems possible to establish an antiinfectious treatment which does not take the nature of the infection much into account and, therefore, to resort indifferently to colloidal metals in influenza or puerperal infection, to utilize fixation abscesses in pneumonia and in all sorts of other morbid processes. Finally, streptococcic septicemia can be treated with antidiphtheritic serum when nothing else can be had.

Nevertheless, the very principle of the defense of the organism, be it spontaneous or artificially provoked, is invariably the same or at least constantly acts as the principal element by the formation of an imposing number of leucocytes which here play the famous part of gendarmes. Now, there is an old, simple and more practical method —and less brutal—for giving rise to this activity of the lymphoid tissue whose most important ultimate result is the development of the phagocytes. I refer to the fixation abscess, a method devised by Fochier, of Lyons, some thirty or more years ago, and whose excellent results in pneumonia were revealed to your correspondent when a student by that great master of clinical medicine, the late Prof. Revilliod, of Geneva. Fochier employed fixation abscess in puerperal infection, Revilliod resorted to it in medical infections, especially pneumonia. Having made this digression in medical history, let me say that fixation abscesses have their disadvantages, injections of serum are painful and cannot be indiscriminately given, the injections of colloidal metals are frequently followed by intense and brutal reactions which cannot be regarded with indifference and which are encountered in all the above mentioned therapeutic measures. Nevertheless, they have come to stay and when proper prudence is exercised in their exhibition ill results will be few.

Intolerance of Infants for Human Milk.—Some very good work has been done at Lyons by Prof. Weill in the treatment of intolerance of infants for human milk, a rare occurrence, it is true, but which is nevertheless encountered. Weill has also employed his treatment to infants brought up on either mixed or artificial feeding. The method consists of injecting subcutaneously maternal milk in the abdominal parietes in doses of from five to fifteen cubic centimeters. The milk must be collected with all due asepsis and may or may not be sterilized at 110° C. The child's temperature is unaffected by the injection, while locally there may be a transient edema.

Injections of cow's milk cause a rise in temperature lasting for forty-eight hours, but they are without danger, as has been shown by a sufficient number of clinical experiments. When it is necessary to resort to frequently repeated injections it is well to give the second and third injections in fractional doses, as is done in repeated seric treatment. The intensity of the local reactions may be foreseen by resorting to the intradermic test, which consists in introducing one-twentieth of a cubic centimeter of the milk being given to the infant into the deep strata of the dermis. A rather distinct reaction rapidly takes place lasting from one to two days, but will be absent in infants with a good digestion.

The disturbances presented by the infants treated by Prof. Weill consisted of vomiting soon after nursing. The vomiting was often preceded by very severe pain almost as soon as the child began to nurse, causing crying and insomnia. Now, in the cases treated these disturbances disappeared permanently, a single injection being often enough for obtaining this result. Weill is of the opinion that the treatment is a sort of vaccination against toxic substances which form in the stomach when the milk comes in contact with the gastric mucosa.

The Laennec Centennial.—A few weeks ago was the one hundredth anniversary of the publication of Laennec's immortal work: "Traité de l'auscultation médiate." Some speeches were made at the foot of the statue of the illustrious clinician, at Quimper, and a commemorative slab was placed on the house at Polaré, where he died.

Two men created the clinical school of France, namely, Corvisart and Laennec. In reality, the former only had the intuition, the general idea, so that his principal merit was unquestionably to have been the teacher of the latter. Corvisart was a physician of the highest type and justice has not been done him, but to bring medicine up to the point it reached, the pathological work and teachings of Laennec were necessary. Clinical teaching he had as physician to the Charité Hospital, and here he acquired a high degree of skill in clinical work which resulted in the publication of his book on auscultation, which did away with all the then existing false notions on diseases of the thoracic viscera.

A gift of unusual observation and analysis was necessary in order to classify the sounds heard and to interpret their significance, as well as to make out the bonds uniting the symptom with the lesion; to group together these scattered elements, to condense them into a universally applicable method, was accomplished by Laennec. His great glory is to have founded method in medicine upon the ruins of systems, and it is still the light of Laennec's work a hundred years ago that at present guides the practice of medicine in France.

Progress of Medical Science.

Boston Medical and Surgical Journal,

December 18, 1919, clxxxi, 25.

1. Address Given at the Public Health Convocation. Springfield, Mass., November 21, 1919. Alfred Worcester.
2. Tumors of the Anterior Surface of the Sacrum. Fred B. Lund.
3. Report of the Study of the Children of Roxbury by the Boston Child Welfare Committee of the Women's Public Service Committee.
4. Case of Pneumococcus Meningitis, with Recovery, A. G. Gould.
5. Conservative Treatment of Large Adherent Ovarian Cyst. E. B. Fitz-Gerald.

New York Medical Journal,

December 20, 1919, cx, 25.

1. Staphylococcic Bacteriuria. P. Nolf.
2. Observations on the Fasting Treatment of Diabetes. Henry S. Stark.
3. Gas Gangrene. Benjamin Jablons.
4. The Relation of Arteriosclerosis to the Eye. L. Webster Fox.
5. Industrial Medicine and Surgery an Integral Part of Industry. R. M. Little.
6. Rheumatism in the Light of Modern Research. Henry W. Freudenthal.
7. The Relation of Malaria to Pregnancy. Bernard Kaufman.

7. The Relation of Malaria to Pregnancy.—Bernard Kaufman holds that the presence of malaria during pregnancy, either early or late, need cause no great alarm so long as its presence is recognized and steps are taken to combat it. If allowed to remain untreated, however, it will sooner or later lead to abortion or miscarriage. The occurrence of pregnancy seems to relight into activity latent or chronic malaria which had remained dormant for long periods. This seems to be borne out by the total disregard to the seasonal incidence with which active symptoms of malarial infection develop in pregnancy. Whether discovered early or late in pregnancy, routine treatment with quinine is necessary to prevent abortion or miscarriage. After delivery it is necessary to prevent reinvasion; to hasten involution of the uterus and thus prevent postpartum hemorrhage and infections; to aid in permitting perineal wounds to heal better; to preserve normal milk conditions for the infant; to rule out malaria in the presence of other infections, as a therapeutic test; and to maintain normal mental equilibrium of the mother.

Journal of the American Medical Association,

December 20, 1919, lxxiii, 25.

1. Typhoid Fever in the American Army During the World War. Frederick F. Russell.
2. Three Cases of Aortic Aneurysm Treated by Wiring and Electrolysis. Hobart Amory Hare.
3. True Prostatic Calculi: Report of Two Cases. E. P. Merritt.
4. Chorio-Epithelioma of the Testis, with Report of a Case. Harry Jackson.
5. Drainage in the Abdominal Wall in Acute Appendicitis. Daniel N. Eisendrath.
6. The Prevention of Simple Goiter in Man: Third Paper. O. P. Kimball, J. M. Rogoff, and David Marine.
7. Treatment of Empyema. Ralph F. Harloe.
8. Effects of Hookworm Disease on Mental Development of North Queensland School Children. J. H. Waite and I. L. Neilson.
9. Complement Fixation for Tuberculosis. J. Stuart Pritchard and C. E. Roderick.
10. Intra-Uterine Intestinal Obstruction from Inspissated and Impacted Meconium. Jesse G. M. Bullowa and Robert Emery Brennan.

1. Typhoid Fever in the American Army During the World War.—Frederick F. Russell reviews and tabulates the statistics for typhoid and paratyphoid fevers for the period of the great war. From this study he holds that antityphoid vaccination, carried out as it was by a personnel which had not been carefully trained in its administration, gave a high degree of protection to our forces under the conditions of hurried mobilization and of warfare, and reduced the rate, not only below the rates for previous wars, but also below the rate found in civil life in some of the older states where the entire population is protected by all the sanitary measures of modern life.

9. Complement Fixation Test for Tuberclosis.—Pritchard and Roderick studied a series of 466 cases, in which the final diagnosis was: pulmonary tuberculosis, including suspects, 220; extrapulmonary tuberculosis, 13; nontuberculous, 233. All patients were first given a general examination by the internist who referred them to the writers. The clinical chest study consisted of a careful history, a physical and fluoroscopic examination with an interpretation of stereoscopic plates of the chest, and three sputum tests as well as a three days' pulse and temperature observation. The serologic study consisted of a Wasserman test with both cholesterin and acetone antigens, and a complement fixation test with two antigens for tuberculosis. The work was finished separately and charted. The physical findings were recorded before the roentgenographic interpretations were made. In no case did the laboratory have an information regarding the patient. The complement fixation was estimated in terms of +, ++, +++ and ++++, but all cases below +++ were considered as negative. With few exceptions, the blood was collected before breakfast. The collecting of a specimen after a meal will often give "fatty serum," which may bring about unreliable results. Fresh serum was used in nearly all the tests. The antigen used was the bacterial emulsion of Miller. Practically the same results were given by antigen obtained from a manufacturer and that made in the writers' laboratory. For complement purposes anesthetized guinea-pig were bled from the heart. The serums of three guinea-pigs were pooled and used in all cases within the first sixteen hours. Rabbit antisheep amboceptor, made and titrated in the usual way, was used throughout. The sheep's blood was obtained from the jugular vein and collected into 1 per cent. sodium citrate solution made up in physiologic sodium chlorid solution. The cells were then washed in salt solution from five to seven times at 3,000 revolutions per minute, or until the supernatant solution was free from albumin by the heat and acetic acid test. A 2.5 per cent. suspension of washed sheep cells was made and used. They used a 0.85 per cent. salt solution. On each day of the test the reagents were titrated for their respective values. Sheep cells, 0.5 c.c. of a 2.5 per cent. suspension, were added to each tube and incubated in the water bath at 37 C. The smallest amount which produced complete hemolysis was read and noted. The tubes were placed in the water bath for one-half hour at 37 C., at the end of which time one unit of amboceptor and one unit of sheep cells are added. The rack was again incubated in the water bath for one-half hour and a reading made at the lowest point at which hemolysis was complete. This amount of complement was then taken for the unit and used in the test. Six tubes containing, respectively, from one to six units of amboceptor, minus complement, were used as a control for that reagent, and the complement control arranged in the same way, omitting the amboceptor. All serums were activated at 56 C. for one-half hour; 0.15 c.c. of serum was used throughout. From their study of this series, in which the complement fixation reaction was used as an aid in diagnosis and not as a control in treatment, the writers consider that sufficient information may be gained by the application of this test to warrant its routine application. If their observations were reasonably accurate, and 69 per cent. of active moderately advanced cases give a reaction compared with 16 per cent. reacting in cases not proved tuberculous, they feel that the test is of value and should be included in the routine examination, but should not be relied on without additional and confirmatory evidence. A frank reaction calls for a careful study of the case to ascertain the presence or absence of an active tuberculous lesion. They found no tendency to cross fixation with the Wassermann reaction. In some open advanced cases of pulmonary tuberculosis no reaction occurred, probably because the cells had lost their power of reaction owing to their prolonged saturation with specific toxins. A Wassermann test should be made in all cases of suspected tuberculosis, as the two diseases may be present at the same time. The test is of the greatest help in differential diagnosis; it also acts as a stimulus to more careful clinical observation.

The Lancet.

November 29, 1919, ii, 22.

1. An Analysis of Physical Defects among the General Male Population. Based upon 10,000 Recruit Examinations. John D. Comrie.
2. A Clinical Lecture on the Treatment of Antral Suppuration. Delivered before the Fellowship of Medicine. Somerville Hastings.
3. Ophthalmic Physicians and the Advancement of Ophthalmology. Rayner D. Batten.
4. The Value of the Complement-Fixation Test in Gonococcal Infections. H. B. F. Dixon and A. H. Priestley.
5. The Late Complications of Gunshot Wounds of the Chest. John B. McDougall.
6. A Modified Operation for Scrotal Varicocele, together with a Local Anesthetic Technique. Samuel R. Meaker.
7. Notes on an Influenza Epidemic as it Affected Portland Prison and Quarters. M. Hamblin Smith and M. J. Saunders.
8. An Myalgic Pains. J. Madison Taylor.

5. The Late Complications of Gunshot Wounds of the Chest.—John B. McDougall, in order to study the later course of soldiers discharged after treatment for gunshot wounds of the chest ,sent out, at intervals, to the discharged man's next-of-kin, the form used by the Medical Research Committee, with the request that it be filled and returned. He was surprised to find that over ninety per cent. of the cases have been followed up at four to six monthly intervals. In some cases the symptoms complained of were grossly exaggerated, but on the whole, the answers were given concisely and well. Many of the cases were more fully investigated

by private correspondence. In this way he was able to compile a complete record of 139 cases from the time of injury, and to trace the clinical history of each case through field ambulance, casualty clearing station, base hospital in France, hospital and convalescent home in England, and, finally, to add notes on the subsequent history as it affected the original disability. The following summary is based upon the study of the correlation between the early clinical symptoms and signs and the late complications of chest wounds. Wounds of the chest wall, involving the muscles of the shoulder-girdle, give rise to much disability in the free movements of the arms. Fracture of the scapula is specially associated with impairment of function. If there is no intrapulmonary or intrapleural damage at the time of injury the men return to duty in the army in one to three months and are fit for service abroad. Collapse and contralateral collapse was found in 25 cases in the entire series. In 9 cases collapse occurred without perforation of the chest. Contralateral collapse, partial or total, was found in 10 cases. There is no evidence to prove that collapse, *per se*, is responsible for any of the after-effects of gunshot wounds of the chest, and in a study of the influenza cases infection is not found specially in cases which showed this phenomenon. The notes from the home hospitals show that in every case where the condition had been suspected in France no physical signs were present over the lung in question at the time of discharge from hospital in England. It is well known that even in the "acute" stages of collapse or contralateral collapse, localized or massive, there may be no symptoms beyond slight dyspnea and cough. Seventy-three cases come under the heading of hemothorax (sterile). If the effusion has been small three may be no physical signs in the chest three months after injury. When the effusion is large, however, there may be evidences on the objective side of limitation of movement of the lung on the same side, on the subjective side, of dyspnea on exertion and dull aching pain, probably due to fibrinous adhesions at the lower margin of the lung. Every case was able to return to duty in the army in two or three months, but 37 cases which had large effusions aspirated were only fit for light duty at home after an illness lasting three to five months. Five cases showed hemothorax (infected), 1 with encapsulated diplococci, 1 with a coliform organism, 2 with staphylococci, and 1 with Gram-positive streptococcus. In none of these was rib resection performed, the guiding principle being that the general condition, plus the physical signs, were of more value in coming to a decision in favor of operative interference than absolute reliance on the temperature chart and bacteriological examination. There were 17 cases of infected hemothorax in which rib resection was performed. In 4 of these a foreign body (visible to *x*-ray examination) was present in lung or pleura, and in 13 no foreign body was present. The disability in old cases of infected hemothorax is almost always the result of pleural adhesions. The breaking down of the adhesions in cases where a foreign body is retained in the lungs results in great relief. There were 26 cases in the writer's series who had evidences of a foreign body in the lung and yet who had no physical signs of infected hemothorax or septic pneumonia.

British Medical Journal,

November 29, 1919, ii, 3074.

1. Preventive Treatment in Influenza. A British Medical Association Lecture. Sir Thomas Horder.
2. Normal and Morbid Conditions of the Testes from Birth to Old Age in One Hundred Asylum and Hospital Cases (*continued*). Sir Frederick W. Mott.
3. Surgical Treatment of Facial Paralysis. George Fenwick.
4. Obstetrics: Past, Present and Future. Alexander Stookes.
5. Experiments on the Destruction of Lice and Nits: I. A. Bacot and George Talbot; II. A. Bacot and Captain L. Lloyd.
6. Radium in the Treatment of Tuberculous Adenitis. Echlin S. Molyneux.
7. Fatal Cerebral Hemorrhage at 34. Allan B. Fearnley.

1. Preventive Treatment in Influenza. Sir Thomas Horder considers the subject under four headings: 1. The Prevention of Epidemics. 2. Prophylaxis as it concerns the community. 3. Prophylaxis as it concerns the individual. 4. The control of the epidemic when it arrives. The first heading is dismissed with brief consideration because of the barrenness of results of a practical kind concerning the factors which determine epidemics of disease, and especially the factors which determine epidemics of influenza. Under the second heading, after discussing briefly the generally accepted view regarding the maintenance of a high standard of general health in the country as a safeguard against an epidemic, Sir Thomas Horder expresses the belief that, even if we succeeded in converting a country of C 3 citizens into one the great majority of whose members would pass the medical boards as A1 individuals, we would not thereby protect ourselves against influenza and its ravages. Some micro-organisms are prone to attack and to efect persons of low general resistance: tubercle and the more chronic pyogenetic infections are examples of this. But in another group of micro-organisms infection depends much more upon the virulence of their elements than upon the resistance of the host; the influenza virus certainly belongs to this group. As a barrier against the first class of micro-organisms there is no doubt that to keep the general standard of health at a high level is the best form of prevention: to provide air, light, exercise, rest and good food. But for defence against infecting agents of the latter class we seem to need a much more specific means of prevention. In the matter of prophylaxis in regard to the individual, the sound advice to keep himself fit, on general grounds, unfortunately does not really touch the root of the matter, any more than keeping the whole community fit is likely to ward off an epidemic. This leads at once to the biggest gap of all in our knowledge of the disease: we are still without any certainty as to the essential causative agent in influenza. In the present state of our knowledge the available materials for preventive inoculation "against influenza" are not very convincing in regard to their specific value. When the epidemic has arrived the question resolves itself into prompt and thorough isolation of the patient, quarantine at ports, early diagnosis and notification, and a proper and adequate system of hospitalization. The last condition, hospitalization, is discussed in considerable detail. The great need is organized research and organized hospitalization.

La Presse Médicale,

September 4, 1919, xxvii, 49.

Evolution of Syphilography in France.—Jeanselme lectured on this subject to medical students from the United States last June. He traces the presence of the malady in France to the edict of 1497 when Parliament ordered the deportation of all strangers of both sexes who suffered from the "great pox" from the city of Paris. The first syphilographer to write up the disease in France was Bethencourt whose book is dated 1527. He recognized both venereal and accidental transmission as well as hereditary transmission. He described the local and general infections and knew of visceral syphilis. At a later period Thierry de Héry, who is said to have been present when the army of Francis I was attacked by the disease in Italy, mentioned the characteristic induration of the chancre as the essential fact of diagnosis. In 1579 appeared the work of Fernelius of Amiens on the best treatment of the disease. Bethencourt had advocated mercury while the former preferred guaiac. No other prominent writer is mentioned until we come to Astruc who despite his great learning had more crude ideas of the malady than his predecessors and like others of the XVIII century confounded syphilis with gonorrhea. This confusion persisted until the time of Ricord, who isolated gonorrhea from syphilis and established the dualism of the venereal ulcers but who himself fell into the error of pronouncing against the contagion of secondary syphilis. The mistake was rectified by his pupil Bassereau, whose interest in the disease seems to have afterwar dabated while another pupil, Fournier, placed the finishing tuoches on the work of the Ricord school of clinicians and experimenters. An outgrowth of a different sort of activity, to-wit, animal experiment, row came along in the classic labors of the heads of the Pasteur Institute. While the merit of discovering

the spirochete does not belong to France, Bordet and Gengou laid the foundation for the Wassermann reaction. The use of arsenic as antisyphilitic belongs originally to France, for Gautier used cacodylates before the introduction of arsenobenzole.

La Presse Médicale.

September 18, 1919, xxvii, 52.

Etiology of Appendicitis.—Riff discriminates between the incidental involvement of the appendix in some general malady and the idiopathic and essential form which, however much it varies in expression, has a common pathogeny. He upholds the views enunciated long ago by Letulle and later corroborated and developed by Aschoff. These comprise the essentially cavitary origin, the autochthonous beginning—disposing of the doctrine of propagation from the cecum, and the origin in a minute cavitary abrasion of the mucosa. Given one or more slight defects in the cavitary epithelium, infection by pyogenic cocci is readily accomplished. Appendicitis never begins as catarrh of the organ as a whole. Simple as is this doctrine it is weak in one respect, for it is difficult to ascertain or imagine how the primitive abrasion arises unless from the activities of intestinal parasites and foreign bodies. Are the pyogenic cocci themselves able to cause these abrasions? This possibility would involve predisposing causes such as stasis in the organ. Aschoff accepts this view in his dictum "no stasis, no appendicitis." Stasis excites to virulence the microorganisms in the canal. Appendicitis as a result of serial crises is readily intelligible. for one attack by facilitating stasis and causing a deposit of mineral matter must pave the way for others. The sensible parasites, such as tenia, ascaris, and oxyuris, can readily supply the initial lesion. From this point on Riff takes up all the arguments in favor of the verminous theory and by reason of the great frequency of the oxyuris he makes it responsible for much of the disease as encountered today. Letulle and Aschoff were unable to find the oxyuris often, but this was not because of its absence. Systemic search will discover its presence. The author has worked in this direction for a number of years and has examined 152 appendixes subjected to every variety of inflammation and from patients of every age. Only 13 per cent. were quite without evidences of parasitism in the appendix, such as ova. Oxyuris, trichocephalus, and lumbricoids were all represented. The war interrupted his work, but since returning to the latter he has examined sixty-three more appendices and has found the oxyuris so omnipresent that he holds it responsible for most cases of appendicitis. He has evolved a complete "oxyuris theory" which explains the incidence of the disease in a very natural manner.

Correspondenz-Blatt für Schweizer Aerzte.

October 9, 1919, xlix, 41.

New Viewpoints on Obesity.—Gigon refers to the corpulence of the beer drinker as toxic in quality and not mere overnutrition. The like holds good for corpulence due to gluttony. It is extremely common and easy to treat. The type of sufferer is the plethoric, red-faced man who often presents alterations of the liver and pancreas or circulatory apparatus. He is likely to be hypertensive. The author believes that acute pancreatitis is almost limited to the corpulent. Perhaps akin to the toxic type is the corpulence which follows typhoid fever and pneumonia. This is not ascribed to compensation following emaciation and return of appetite, for the author sees it in syphilis and tuberculosis as part of the disease. As in the preceding there are apt to be changes in the liver and pancreas. A third group, the endocrinic, may be associated with several of the endocrine bodies as the gonads, thyroid and hypophysis. Of much interest are the nervous forms. Insanity at times begins by taking on weight and nervous influence alone can cause the putting on as well as loss of adipose. A fifth form is known as the atonic and is well known. To understand corpulence as a disease we must study pathological emaciation as well. The conditions which produce corpulence seem able to produce emaciation. Gluttony in a paretic treated by the author did not lead to corpulence, but to progressive emaciation. The author set the latter down to the influence of central nervous disease. The case is but one of many of the same type. In a case of emaciation in a beer drinker, study of the individual over some time led to the diagnosis of a pluriglandular syndrome. He not only drank much beer, but was gluttonous. He recovered his weight on a reduced diet and physical rest. It is evident that the fat man, like the thin man, is not always what he seems in that what seems physiological and natural is really pathological.

Gazette des Hôpitaux.

November 8, 1919, xcii, 68.

Proteinotherapy.—Cassan defines this subject as follows: It is a method of treatment in which one utilizes certain proteins in the management of diseases—chiefly infectious—and which is wider than the conception involved in proteose or peptone therapy in that it can include any substance which contains protein and is used in the treatment of disease. Thus whole blood treatment, as in transfusion, comes under the head of protein therapy. The subject goes back originally to Koch's tuberculin and includes the work of Wright on vaccinotherapy. For some reason unknown the author seems to ignore the use of antitoxins, perhaps because of the mode of action. Beginning with bacteriotherapy the next stage comprised the use of bacillary extracts which are technically albumoses and this precipitated the study of various proteins. Mixtures of bacteria with albumoses were used with great success in typhoid fever. Later albumoses were tested alone and one form was milk which having been boiled contained an albumose. Milk was injected and even transfused, but the danger of fat embolism led to its partial abandonment. Later Nolf devised his peptone injection treatment for typhoid, and other forms of protein therapy have continued to appear. At present the following have been used: Whole blood, plasma, serum; milk; substances classed as albumoses; substances classed as peptones; polypeptids. Blood, with or without preliminary treatment, is of course of value aside from its protein content as a reconstituent. The intravenous method is the choice in all proteintherapy. The infections thus far treated with good results are the typhoid group of fevers, typhus, influenza, tuberculosis, erysipelas, scarlatina, etc. Of noninfectious conditions hemorrhages are the principal ones to be treated in this manner. The most recent advances are along the lines of gonorrhea and polyarticular rheumatism. The former has long been treated with vaccines, but the author has of late obtained good results from the intramuscular injections of boiled milk with special reference to complications. Nothing is said of the use of vegetable proteins which are being as increasingly employed in America.

Is Influenza a Spirochetosis?—Blood studies of cases of the pandemic which occurred at Mentone, as well as sputum finds, having proved negative the urine was examined and a spirochete found in 8 out of 12 cases. Further tests appeared to show that this organism was quite constantly present. It differed from the known spirochetes, and was not pathogenic to guinea pigs. The article in question first appeared in 1918, and as nothing has come of the alleged discovery, it was presumably a false alarm.—*Revista Ospedaliera.*

Insanity Among the Jews.—It is stated by Becker that the Jew has a larger per cent. of insanity than other nations but less alcoholism and epilepsy. This excess is due simply to the fact that the Jew is a brain worker. That there is more congenital debility among Jews comes from the highly developed family sense. These children are carefully tended and live longer, so that the excess is not an absolute one. The excess of senile dementia also has a simple explanation. for the Jew lives longer than the Gentile and hence there must be more dementia due to advanced age. The excess in maniac-depressive insanity and dementia precox and in phobias, hysteria and neurasthenia is not so readily explained and inbreeding is rejected as a factor. It is here that we must invoke the fact already mentioned that the Jew is naturally a brain worker.

Book Reviews.

THE SOUL IN SUFFERING, a Practical Application of Spiritual Truths. By ROBERT S. CARROLL, M.D., Medical Director, Highland Hospital, Asheville, North Carolina, Author of "The Mastery of Nervousness." New York: The MacMillan Company, 1919.

THE book is well summarized in the Introductory Note: "It essays to bring a step closer the practical benefits....of medical science and the highest aspirations of our religion." It is conscientiously written, carefully thought out. Its style is its real drawback. This varies between the ponderous polysyllabic and the flowery. It was evidently written for the student, rather than for the patient.

THE MEDICAL TREATMENT OF CANCER. By L. DUNCAN BULKLEY, M.D., Senior Physician to the New York Skin and Cancer Hospital, etc. Philadelphia: F. A. Davis Company, 1919.

SOME day when it dawns upon pathologists and clinicians that, however much of a surgical disease cancer may be in its later stages, in its inception it is as purely medical as gout or diabetes, the names of Bell, Bulkley and a few other "cranks" will receive the honor that the profession of medicine gives, though sometimes tardily, to the discoverers of great truths. The author of this book is indefatigable in preaching this still unpopular doctrine, for this is the third book he has published on cancer as a medical disease. Dr. Bulkley's belief, shared in by an increasing number of medical practitioners, is that primarily cancer is due to a defect in metabolism and that, with the correction of this defect the disease may be arrested, although, of course, if the growth has attained such a size as to interfere with the functions of certain vital organs or is poisoning the system by its secretion, it must be removed by surgical means. Specific directions as to the dietetic and other non-surgical methods of treatment are given in this volume, which is full of interest and worthy of careful study by every practitioner, whether internest or surgeon, and whatever views he may entertain regarding the nature of cancer and its treatment. If he only reads it with the intention of refuting its arguments, he will have inevitably broadened his views thereby and will have learned something of cancer that he did not know before.

QUARTERLY MEDICAL CLINICS. A Series of Consecutive Clinical Demonstrations and Lectures. By FRANK SMITHIES, M.D., F.A.C.P. Augustana Hospital, Chicago. Volume 1. Number 2. January-April, 1919. St. Louis: Medicine and Surgery Publishing Company, Inc.

THE second number of this quarterly presents cases XVI to XXVIII inclusive in a volume of about 220 pages. Four "stomach cases" give an opportunity for a rather extensive discussion of the diagnosis, symptomatology, and treatment of gastric conditions, especially peptic ulcer and gumma. This opportunity is seized with such energy and the discussion is so ample and illuminating that a reader is sure to learn much from its perusal. The other cases are of equal interest and are discussed with a similar enthusiasm. This number is equal in every respect to the first and strengthens the opinion that this quarterly is to become a valuable item in medical literature.

A TEXT-BOOK OF PHYSIOLOGY. By MARTIN FLACK, C. B.E., M.B., B.Ch. (Oxon.), Research Staff, Department of Applied Physiology, Medical Research Committee, and LEONARD HILL, M.B., F.R.S., Director of Applied Physiology Department Medical Research Committee. Illustrated. New York: Longmans, Green & Co., 1919.

THE preparation of this text-book was begun before the war and not a little of the text prepared at that time required revision before the book was finished. Much of the advance which physiology has made during these past five years has therefore been incorporated. The authors "have avoided burdening the students memory with the names of authorities," a practice, the reviewer feels, that is not wholly undeserving of criticism. The presence of references at the bottom of a page is not necessarily a burden to the memory and often proves a great convenience when investigating some particular point. Besides, the presence of the reference may prove the stimulus to an investigation of the literature more pleasantly applied than the tiresome hunt through an Index. The book was written "primarily to meet the requirements of the medical student" but as a complete and modern physiology is ever a valuable aid to the practitioner both in diagnosis and treatment should "also prove of value to the general practitioner." The style is uniform throughout and the illustrations are profuse and often excellent. The work is altogether such a one as might be expected from its eminent authors.

PSYCHIATRIC-NEUROLOGIC EXAMINATION METHODS With Special Reference to the Significance of Signs and Symptoms. By DR. AUGUST WIMMER, Director St. Hans Hospital, Roskilde, near Copenhagen, Denmark. Authorized translation by ANDREA W. HOISHOLT, M.D., Medical Superintendent Napa State Hospital; Professor of Psychiatry, Medical Department Leland Stanford Junior University, San Francisco, California. St. Louis: C. V. Mosby Company, 1919.

THIS is a compendium of abbreviated outlines giving references to fundamental features in symptomatology and intended as a practical guide in making psychiatric-neurologic examinations; it also includes part of the general symptomatology belonging to psycho-neuropathology, with, in several places, short introductory presentations of the normal psychological or anatomo-physiological data. The work does not claim to be a complete treatise on diagnostics since, to make a clear diagnosis here as elsewhere in medicine, it is necessary to be acquainted with the special pathology and to be in possession of clinical experience, but it does provide for a methodical examination which is in itself a long step toward this goal. The three chapters deal with the Anamnesis, by schedule and symptoms; the Pyschic State, by a full examination schedule; and the Somatic State, by the examination scheme. There is a complete index, and apparently nothing is lost in the translation.

IDO Exhaustive Text-Book of the International Language of the Delegation and Fundamentals of an Artificial International Language. By Dr. MAX TALMEY. Author of "Practical and Theoretical Esperanto," "Defects of Esperanto," etc. New York: Ido Press, 1919.

IDO is the name of the new international language devised by the Marquis L. de Beaufort or Beaufront (it is written both ways in the author's preface) to supplant Esperanto, the good features of which it aims to preserve while avoiding its many great defects. It certainly, to the Ido-ignorant observer, has avoided the defect of ugliness which Esperanto presents to the eye, with its many js and ks and diacritical marks. This is the first book in English for instruction in Ido; it was ready for publication in the summer of 1914, but the World War has delayed its appearance until now. Those interested in these attempts to supply the world with a universal speech can do no better than study this manual, for of all the artificial languages thus far fabricated Ido appears to be the simplest and most practical.

OUR NERVOUS FRIENDS. Illustrating the Mastery of Nervousness. By ROBERT S. CARROLL, M.D., Medical Director Highland Hospital, Asheville, North Carolina: Author of "The Mastery of Nervousness," "The Soul in Suffering." New York: The Macmillan Company, 1919.

THE author of this book endeavors to depict in the form of short stories the causes of many cases of nervousness and worse, and to indicate in many of them the means whereby the sufferer may be restored to the normal. The protean forms of "nervousness" afford many subjects for interesting stories which de Maupassant or Poe could have made most thrilling. It is no disparagement to the author to say that he does not measure up to the genius of either of those mentioned as a story writer, but nevertheless he has made a most readable book which can do no harm to any, even the youngest person, and which might perchance give to the older ones, to those who may be already starting in the downward path of "nerves," a hint or a shock that will open their eyes to their danger and save them even on the brink of the precipice.

Society Reports.

THE AMERICAN PEDIATRIC SOCIETY.

Thirty-first Annual Meeting, Held in Atlantic City, N. J., June 16, 17, and 18, 1919.

THE PRESIDENT, DR. EDWIN E. GRAHAM, IN THE CHAIR.

President's Address: Foreign Bodies in the Air and Food Passages.—Dr. EDWIN E. GRAHAM of Philadelphia delivered this address, which he said was based on observations made on a comparatively large number of cases of foreign body in the air passages and a smaller number of cases of foreign body in the food passages. For the opportunity of seeing some of these cases he said he was indebted to Dr. Chevalier Jackson. Histories and bronchoscopic charts of a number of the most interesting cases were presented. In summarizing he said that it was reasonable to believe that foreign bodies in the air and food passages in children were much more common than was supposed. Statistics indicated that about 66 per cent. of the cases of foreign body in the air passages occurred in children. The fact that there was a period of latency of symptoms which followed the violent dyspnea and choking attack, and later the gradual onset and chronic character of the symptoms might lead one to fail to suspect the presence of a foreign body. A study of the histories of many of the cases showed that certainly foreign bodies were frequently overlooked. The symptoms varied greatly. The peanut kernel set up immediately a severe laryngitis, tracheitis, and bronchitis. In the peanut cases an older child might survive the acute symptoms, but would almost surely develop pneumonia. Metal objects remained in the lungs for a very long while and did comparatively little damage. There were some foreign bodies that did not cast a shadow on the *x*-ray plate. In such instances the presence of a foreign body might be diagnosed by allowing the patient to swallow a bismuth-filled capsule. The *x*-ray would then show the location of the bismuth capsule held in position in the esophagus by the foreign body. The patient should not be urged to cough with the hope of expelling a foreign body inhaled into the lungs, as foreign bodies were very rarely coughed up. The physical signs and symptoms varied according to the composition, form, shape, and size of the foreign body. One should suspect a foreign body if the following conditions were present: An unexplained leucocytosis, localized symptoms in one lung that did not clear up under treatment; no tubercle bacilli in the sputum, and a gradual failure in weight and strength. There were no contraindications to bronchoscopy except perhaps weakness in the patient, and when this occurred time should be given the individual to rally in part. Children did not require the administration of an anesthetic for performing bronchoscopy. The necessity of taking a radiograph of every case that gave a history of swallowing a foreign body could not be too strongly emphasized. The asthmatoid wheeze was a symptom of considerable importance as indicating the presence of a foreign body in the lung.

A Study of the Lactose, Fat, and Protein Content of Woman's Milk—Dr. FRITZ B. TALBOT of Boston presented this communication, giving the results of an investigation on the composition of milk at different stages of lactation. The estimations were made by the newer methods, which made it possible to quantitate accurately the fat, protein, and carbohydrate from small samples of milk. It was found that the average quantity of lactose in sixty samples of breast milk was 7.19 per cent. There was a general tendency for the strength of the lactose to increase throughout the period of lactation. The percentage of fats in the milk of different women varied within wide limits. The average amount of fat in the mixed samples was 3 per cent. The average amount of fat in thirty-five samples taken only from wet nurses was 4.18 per cent. It seemed more probable that the percentage of fat depended more upon how completely the breasts were drained and the amount of the late milk which got into the samples than upon the stage of lactation. As lactation progressed there was a general tendency for the amount of protein to diminish. The difference in the percentage of lactose from the beginning to the end of nursing rarely exceeded 1 per cent. There was a greater variation in the percentage of fat, but as a rule this was less than 4 per cent. The percentage of protein varied very little and was sometimes lower after nursing and sometimes higher. In studying the variations in the composition of milk taken at three-hour periods in the course of a single day, the volume of milk was shown to have a tendency to diminish as the day went on. After midnight the percentage of fat was found to be higher as a rule. The variation in the amount of lactose and protein, however, was very slight.

Dr. L. EMMETT HOLT of New York stated that Dr. Talbot's figures for sugar were about what they had found in their laboratory. Many disturbances of digestion were attributed to fat which in reality were due to sugar. A baby might be gaining in weight and yet have eight or ten thin, sour, green stools per day, and it could be shown that this diarrhea was due to the volatile fatty acids caused by the sugar. Clinically the way to handle these cases was to dilute the milk and change the frequency of feeding. An examination of the stools in these cases would reveal the presence of fat, and this led to the assumption that it was the fat in the diet that was causing the disturbance. The reason the stools contained fat was because the fermentation of the sugar caused diarrhea and interfered with fat digestion and absorption. If the child did not vomit the disturbance might be attributed to the sugar.

Dr. DEWITT H. SHERMAN of Buffalo said he understood Dr. Talbot to say the protein in the milk bore no relation to the high carbohydrate content. If that was so, would it not be possible to overcome these conditions caused by a large amount of sugar by the addition of some powdered protein preparation, thus changing the ratio of the food elements?

Dr. TALBOT said he wished to emphasize that these were normal figures. The children who, in later lactation were getting eight per cent. of sugar, were without watery stools, so they concluded that this was a normal ration for this period of lactation. In regard to the question as to whether sugar fermentation would be diminished by changing the relative proportions of the food elements by overbalancing the high carbohydrates with more protein, he thought the thing to do was to reduce the sugar.

The Pathogenesis of Certain Nutritional Disorders.—Dr. W. MCKIM MARRIOTT of St. Louis presented this paper. He said the first condition considered was the severe and acute toxic state observed in infants who had suffered from a severe watery diarrhea. The condition had been referred to as an "alimentary intoxication" because the administration of food resulted in an increase of all the symptoms. A more rational view was that the giving of food, especially easily fermentable carbohydrate, led to increased water loss from the body by way of the bowel, and that the symptoms may be entirely referred to water loss. The blood plasma of infants suffering from this condition was invariably greatly concentrated. The protein of the serum of normal infants averaged 6 per cent.; in those desiccated, as the result of diarrhea, the protein might rise as high as 9 or 10 per cent. This desiccation of the body explained the great loss of weight observed in these children. The decrease in blood volume brought about by desiccation led to a greatly diminished volume flow of the blood. This had been measured by the calorimetric method of Stewart and had been found to be decreased to as low as 15 per cent. of the normal. It had been demonstrated experimentally in animals by Gesell and by Almroth Wright that a decreased volume flow of the blood resulted in a decreased alkaline reserve of the blood, or, in other words, acidosis. The acidosis was evidently the result of suboxidation in the tissues. An additional factor was retention of acids in the body through failure of excretion by the kidneys. Renal activity was greatly decreased due to the concentration of the blood and the poor volume flow of the blood. The acidosis was the cause of the "air hunger" type of respiration observed in some of these infants. When blood volume was diminished arteriolar constriction occurred, and this might be considered as a compensatory mechanism to maintain blood pressure. Constriction of the arterioles resulted in a piling up of red

corpuscles in the capillaries, and this explains the peculiar gray color of these infants. The corpuscular counts on the capillary blood were distinctly higher than in venous blood. Dehydration of the blood resulted in a disturbance of the heat regulatory mechanism and fever occurred. The temperature fell when normal conditions in the blood were restored. In experimental anhydremia in animals and in the infants under consideration vomiting was a frequent symptom. It ceased in most instances when sufficient fluid was introduced into the body. The diminished volume flow of the blood rendered conditions in the intestinal tract unfavorable for digestion and absorption of food. The whole clinical picture presented by these infants resembled closely that seen in "wound shock." In both conditions there was a diminished blood volume and volume flow, and the resulting arteriolar constriction, low blood pressure, and frequently acidosis. The cause for the diminished blood volume was quite different, however, in shock and in the infants, but the end result was practically the same. The term "anhydremia" or "anhydremic intoxication" was accurately descriptive of the condition here considered and was preferable to the undesirable term of Finkelstein, "Alimentär-Intoxikation." Anhydremia occurred from other causes than diarrhea. Diminished fluid intake or vomiting from any cause might lead to the condition. Fever and high external temperatures greatly increased the loss of fluid from the body and, unless this loss was made up, anhydremia would result. The symptomatology of anhydremia was the same, no matter what the original etiological factor. The treatment was also the same. In treating the condition fluid in large amounts must be administered. The usual methods were often ineffective, and intraperitoneal injection of normal saline must be resorted to. The injections must be repeated at frequent intervals. A small infant might receive as much as 1500 c.c. of fluid in this way in the course of 24 hours, before the blood was restored to its normal concentration. In some instances it was impossible to restore normal conditions; when this was the case the infants invariably died. When it was possible to introduce sufficient fluid and have it absorbed and retained, a rapid cessation of all the symptoms occurred in the majority of instances. The intravenous injection of 10 per cent. glucose solutions at frequent intervals was often a valuable adjunct to the saline injections. The second nutritional disturbance to be considered was also often the result of a severe diarrhea, although it might result from any cause which led to the ingestion and absorption of less food than was necessary to maintain activity and growth. The condition referred to was the one known as "Marasmus," "Atrophy," or "Dekomposition." The condition was analagous to anhydremia; it was the result of insufficient food, whereas anhydremia was the resudt of insufficient water. The term "Athrepsia" was accurately descriptive.

In athrepsia the protein of the blood plasma was somewhat diminished, and it had been shown by Bayliss that when the colloids of the blood were diminished it lost its power to retain water. A diminution of blood protein as the result of partial starvation led to a decreased blood volume. The blood atrophied as well as the rest of the body. The volume flow of the blood was decreased in this condition although rarely as greatly as in anhydremia. There was the same constriction of the arterioles, the same color of the skin. Such infants, with a volume flow of the blood already greatly diminished, could not withstand even a moderate loss of water without succumbing to the more serious manifestations of decreased volume flow. This explained the fact that it was the poorly nourished infants who most readily fell into the severe toxic states. The obvious treatment of athreptic infants was the administration of considerable amounts of food. Unfortunately the tolerance to food was low, probably on account of the poor circulation of the atrophied blood in the mesenteric vessels. If food could be taken the blood was gradually restored to normal but the process might be a long one. The period of repair might be somewhat shortened by artificially increasing the colloids of the blood. This might be done by a transfusion or almost equally well by frequently repeated injections of gum acacia, a harmless colloid. The best results in feeding with artificial food had been obtained with whole lactic acid milk to which a mixture of carbohydrates was added. The most suitable carbohydrates were dextrin and glucose; maltose was also serviceable. Commercial "Corn Syrup" was such a mixture as had proven most effective in his hands. It was often necessary to feed over 200 calories per kilo of body weight. Unless sufficient food was given all other means of cure were useless. The acacia injections were an adjunct, not a substitute for food.

Dr. Oscar M. Schloss of New York said that, while pediatric literature contained many references to the digestibility of fat, protein, and carbohydrate, very little was said about water. It seemed that a proper proportion of water was a most important factor, as Dr. Marriott's paper had illustrated. Those children who were suffering from intoxication were always recognized as being in a state of dehydration. He had a number of times seen acidosis disappear without the administration of sodium bicarbonate, the explanation being as Dr. Marriott had shown.

Dr. Isaac Abt of Chicago spoke of the possible impression Dr. Marriott's paper might have on the pediatrist. He said that many attempts had been made to classify intestinal disorders, both by clinicians and bacteriologists, and they all knew how futile such attempts had been. The most valuable classification they had was based on food disturbance. It seemed that by noting the effects of certain foods in various conditions of health and disease the most important basis for the classification of nutritional disturbances would be furnished. Dr. Marriott had not referred to this side of the question and, while he had made an important addition to the chemistry and pathology, the important question was how to prevent pathology.

Dr. Marriott, in closing, said that in the paper no attempt had been made to discuss the etiology of diarrhea. He felt that the prophylaxis of these conditions which he had discussed was the prophylaxis of diarrhea, which he considered as a local condition in the intestinal tract and merely the end result produced by any cause whatever.

A Study of the Relationship of Convulsions in Infancy and Childhood to Epilepsy.—Dr. John Lovett Morse of Boston presented a study of 107 cases in which the primary cause for attendance was convulsions. No cases were included in which there were any evidences of acute or chronic cerebral disease. The objects in the study were, first, to determine what proportion of the children, otherwise apparently normal, having convulsions had epilepsy or developed it later; second, to find out, if possible, whether there was anything in the history or in the manner of the development of the convulsions to show whether or not they were manifestations of epilepsy, or whether they would be followed by or develop into epilepsy later. Ten of the cases showed evidences of spasmophilia. The convulsions ceased in all cases, but one of the babies became feeble-minded. It was possible that in this instance the convulsions were due to some other cause than the spasmophilia. It would seem, therefore, that convulsions which occurred in babies with spasmophilia and which were presumably a manifestation of spasmophilia were not likely to lead to the development of epilepsy later. In three instances the convulsions occurred in the course of whooping-cough. Epilepsy developed in one of these children. Convulsions occurring in the course of whooping-cough must, therefore, be regarded seriously. There were 39 cases in which there was a single convulsion or a series of convulsions at the onset of some acute disease or with an attack of acute indigestion. Thirty-five of these children recovered; two became epileptic and feeble-minded, and a third had petit mal; a fourth might or might not be epileptic. There were 55 cases in which there had been repeated convulsions during a considerable period or in which there had been repeated attacks suggesting petit mal. Taking seven years as an arbitrary standard, only 21 of these cases could be considered normal at present. An attempt had been made to determine if there was anything in the history or character of the convulsions which would aid in determining in a given case whether epilepsy was likely to result in the future or not. The results of this attempt, however, had been rather unsatisfactory. It was impossible to tell from the nature

of the early attacks as to the nature of the attacks when epilepsy developed later. The longer the attacks had persisted the more probable was the diagnosis of epilepsy. When there was no apparent etiology or when the cause of the attacks was apparently an injury or severe labor, epilepsy was far more likely to develop than when the apparent cause was a disturbance in the digestive tract. The longer the attacks had persisted the more probable was the diagnosis of epilepsy. General impressions which could not be explained had a certain value in diagnosis. There was no way to determine immediately when a baby or child had a convulsion, or had repeated convulsions, or repeated attacks suggesting petit mal, whether or not it had epilepsy or would develop it later.

Dr. HENRY KOPLIK of New York said that in the main he agreed with Dr. Morse. In the vast majority of spasmophiliacs epilepsy as that term was understood did not occur later in life. If a child was otherwise normal one should be cautious in making a diagnosis of epilepsy. It was well to remember that spasmophilia might occur later in life. He had recently seen a child who had convulsions for the first time at the age of five years. Another point was that one should be careful about making a diagnosis of epilepsy during the early years of childhood if there was no history of epilepsy in the family.

Dr. L. R. DE BUYS of New Orleans asked Dr. Morse if he classed children who had spells of "holding the breath" as spasmophiliacs, and whether or not he had met children of that type who had epilepsy later.

Dr. J. P. CROZER GRIFFITH of Philadelphia agreed that it was practically impossible to make a diagnosis of epilepsy early in life. In the newborn convulsions might be due to lesions caused at the time of birth and these might result in epilepsy. Pertussis might be the cause of convulsions but these children did not as a rule develop epilepsy. Convulsions due to indigestion did not as a rule result in epilepsy.

Dr. HENRY HEIMAN of New York said he had seen children develop coma and convulsions a few days after birth, and in such cases these symptoms might be due to venous apoplexy due to injury at the time of birth. The venous apoplexy was the result of blood oozing from the cortical area. The consequences in such a case depended upon how much of the blood clot would be absorbed and how much would organize. Possibly the early treatment of spasmophilia might prevent epilepsy.

Dr. L. EMMETT HOLT of New York said that it had been his experience that a large number of children who were expected to have epilepsy did not have it. The general practitioner and the neurologist were more apt to regard these children as prone to have epilepsy than was the pediatrist, because the pediatrist saw convulsions so often and the great majority of the children having them did not develop epilepsy. Recurring convulsions with a sharp rise of temperature, even if there was not indigestion present, were not serious in relation to epilepsy, but when a baby developed convulsions without rise of temperature and without assignable cause, they should be regarded with suspicion. Dr. Morse's assumption that convulsions during whooping-cough might lead to epilepsy later were based on insufficient data. Unless there was some underlying peculiarity of the nervous system epilepsy was not likely to follow the convulsions of whooping-cough. In reference to prognosis, the pediatrist should be taught the importance of prognosis. The tendency at present was to lay undue emphasis on diagnosis, and the student was likely to think that when he had made a diagnosis he had done all that was necessary.

Dr. ROWLAND G. FREEMAN of New York called attention to a point that had been considered of value by some, namely, that children under two years of age who had marked evidence of rickets were less likely to develop epilepsy.

Dr. SAMUEL S. ADAMS of Washington, D. C., agreed in the main with Dr. Morse. He said the most important point was to avoid casting the stigma of epilepsy on a child. Many of these cases of convulsions had some of the appearances of epilepsy, but he always made it a point to teach his students to be very careful about calling it epilepsy. In some children the onset of the infectious diseases was usually ushered in by convulsions but after the period of infectious diseases was passed the children no longer had convulsions.

Dr. HENRY L. K. SHAW of Albany said there was a tendency for the laity to take the position "Once an epileptic, always an epileptic." He had had several cases of undoubted epilepsy that to all intents and purposes recovered.

Dr. HENRY F. HELMHOLZ suggested that possibly acute conditions, particularly gastrointestinal disturbances, might be a factor in changing a latent into an active spasmophilia. The main point seemed to be that if there was temperature at the onset of illness, convulsions associated with it were not of great importance so far as the diagnosis of epilepsy was concerned.

Dr. FRITZ B. TALBOT emphasized the fact that in considering this whole question they were dealing with a symptom and not with a disease. If this symptom was due to spasmophilia they might expect to find some change in the blood calcium. They had determined the blood calcium in a small number of spasmophiliacs and found it lowered.

Dr. MORSE, in closing, stated that he had never considered breath holding as a symptom of spasmophilia. As to the birth hemorrhages, he had left those out as he had included no cases in which there was a sign of injury to the brain. He did not think that when a child had a convulsion, say only one a year, that it could be due to spasmophilia, for spasmophilia was present all the time and it did not seem that such being the case it would show itself so rarely.

Certain Aspects of Cutaneous Hypersensitiveness.—Dr. E. C. FLEISCHNER of San Francisco made this presentation. He cited experimental proof that cutaneous hypersensitiveness was not present in sensitized uninfected guinea pigs. He discussed the value of cutaneous hypersensitiveness in the diagnosis of chronic diseases of guinea pigs, including tuberculosis, abortion disease, rodent paratyphoid, and undulant Malta fever. The conclusion was reached that cutaneous hypersensitiveness was always an indication of the presence of a focus of infection. There was no evidence of its being an indication of immunity. He also demonstrated the similarity of *B. Militensis* infections in guinea pigs with those of the *Bacillus abortus*, giving conclusive evidence based on pathogenicity, apparently identical microscopical findings, gross changes in the viscera, cutaneous hypersensitiveness, and a certain amount of evidence of a positive serological relationship.

Quarantine and Disinfection in Scarlet Fever.—Dr. J. CLAXTON GITTINGS of Philadelphia, Lt. Col. M. C., U. S. A., read this paper, in which he stated that the first assignment of patients to the U. S. Army General Hospital No. 9 consisted of 139 cases of scarlet fever, transferred in February, 1918, to relieve the pressure in nearby camps. The hospital functionated in a hotel of the regular double "L" design, so well suited for quarantining two entire sections, isolating completely the sick from the healthy. The patients were admitted to the hospital in every stage of the fever, from the second to the thirty-fifth day, 20 per cent. being within the first five days of the disease. There was much chance for contagion from contact, and five cases developed in this way, two among attendants. A case was cited in which contagion resulted, presumably, from being dressed in the same dressing room with and after a patient who had a post-scarlet fever submaxillary adenitis. A minimum length of 42 days' quarantine was enforced. On the 40th day each patient was carefully examined by the assistant chief of medical service. Those who showed any abnormality in the throat, nose or ears were inspected by the throat and nose specialist, who decided whether the patients were potential carriers of contagion or not. At the end of the quarantine period 59 per cent. of the patients were ready for discharge; 41 per cent. required more or less treatment. The average period of quarantine was, therefore, 47 days, but this extension was due partly to several cases of mumps. At the end of quarantine each patient was given an orthodox bath, shampoo, change of clothing, and was then sent to a clean ward in another part of the building. All soiled

linen was soaked for two hours or more in 2 per cent. liquor cresolis solution before going to the laundry. Shoes, hats, and leather belts were exposed to formaldehyde gas in sealed closets a day. Blankets and woolen clothing were sterilized in the autoclave. After the evacuation of the ward, carpets and paper wadding were spread out in the air for two days, and were then brushed and stored. The floors, halls, beds, furniture, woodwork, and all flat surfaces were wiped and mopped with much of the 2 per cent. solution of cresolis. The mattresses and pillows were left on the beds and all windows were opened for three days. Within two weeks these wards were again occupied. Until February, 1919, there had not been another case of scarlet fever in this hospital. So far as could be learned none of these patients carried the contagion to any one in Lakewood or elsewhere. Of the 144 patients, 56 showed no defects of any kind; 10 showed defects which were ample cause for rejection from military duty, among these being gastric ulcer, valvular heart disease, hysteria, chorea, tuberculosis, and Graves' disease; 11 showed serious complications; 37 showed mild complications; and 13 suffered from cardiac disorders. Until the infecting organism of scarlet fever was demonstrated the proper length of quarantine was always open to argument. In accounting for the spread of this disease, the chronic carrier would seem to be the most likely agent, as in meningitis and diphtheria. *A priori* the unhealthy nasopharynx and throat might be under suspicion. Examination by throat specialists might enable us to retain the potential carrier and hasten the discharge of a healthy person. In mild cases 35 days at most might cover the danger period. The factor of the human carrier in contagion was being accepted to such an extent as to make it questionable whether anything but thorough cleansing was necessary. Formaldehyde gas with sufficient moisture would probably destroy the organism of scarlet fever, but that this optimum result was obtained was very doubtful. Disinfection and removal of dust from linens and woolens, floors and furniture, followed by thorough sunning and airing, appeared to be the real requirements for safety.

Dr. D. J. MILTON MILLER of Atlantic City asked what was to be their belief in reference to quarantine if they thought that desquamation from the epidermis was not contagious. If desquamation continued indefinitely, of course they could not continue to keep a patient under quarantine. The catarrhal symptoms, on the other hand, could not serve as a guide to the period of quarantine. He felt that until they had more definite information as to the period during which scarlet fever could be transmitted quarantine should be continued until desquamation was complete.

Dr. J. P. CROZER GRIFFITH of Philadelphia recalled that people used to believe that scarlet fever could be carried in clothing for many years. They now believed that scarlet fever was transmitted by personal contact. He did not think that desquamation was a reliable criterion as to the period of time during which scarlet fever was contagious. It was well to bear in mind that there were other skin diseases besides scarlet fever in which desquamation occurred and such a disease might be coexistent with scarlet fever.

Dr. HENRY HEIMAN of New York said they were to be congratulated in getting away from the time-honored superstition that scarlet fever was carried in clothing. A person in order to acquire the disease must come into contact with another person who had the disease or with a carrier. The disease was conveyed more easily by a person actually having the disease than by a healthy carrier. The susceptibility of children to measles was 90 to 95 per cent., while the susceptibility to scarlet fever was only 30 to 35 per cent.

Dr. J. MASON KNOX of Baltimore said he would like to know if anyone had data as to how long scarlet fever patients continued to have sore throats. The sore throat appeared before the eruption, and he had seen epidemics started by early cases before the eruption appeared. If there was any suspicion of the presence of scarlet fever it was more important that the patient should be isolated early in the course of the disease than later.

Dr. GITTINGS, in closing, said that he thought thirty days' quarantine was probably sufficient, but in the camps a period of six weeks was required. If there was any possibility that a child or susceptible person would come into contact with the convalescent patient it was better to continue the quarantine for six weeks.

A Study of the Cholesterol Metabolism of Infants.—Dr. K. D. BLACKFAN and Dr. J. L. GAMBLE of Baltimore presented this contribution, in which they stated that cholesterol, an important constituent of tissue cells, might also bear important relations to certain physiological processes. Cholesterol or substances very nearly identical were present in all natural foods. The difficulty of finding a food free from cholesterol or cholesterol substances had prevented satisfactory proof by animal feeding experiments as to whether or not cholesterol synthetized within the body. If cholesterol was not synthetized, an adequate amount must be provided in the food in order to maintain the chemical structure of the tissue cells and provide for growth. In the food of an infant the amount of cholesterol was roughly proportional to the amount of fat present. It had not been possible to detect any coptosterol in the stools of infants. Apparently none of the cholesterol excreted by an infant underwent reduction in the intestinal tract. This fact made it possible to study the "cholesterol balance" in infants. They had used the assumption that the finding of a consistently negative cholesterol balance in normal or gaining infants would indicate cholesterol synthesis. It had been necessary to modify considerably an existing colorometric method for measuring cholesterol in order to determine with accuracy the cholesterol content of milk and stools. The cholesterol balance of several infants had been determined. With one exception a large negative balance was found. It was proposed to obtain further data on this point. The results so far obtained suggested that cholesterol was synthetized within the body. The relation of cholesterol to maintenance and growth apparently did not depend on the amount of cholesterol in the food.

Certain Nutritional Disorders in Infants Associated with Proteolytic Intestinal Flora.—Dr. LANGLEY PORTER of San Francisco made this presentation. After reviewing the results of the investigations of Eserich, Moro, and others, who had established the knowledge of the stool flora of infants, he referred to the recent work of Kendall, Herter, and Torry, more particularly the recent demonstrations of the latter that it was possible to change the intestinal flora of dogs by feeding large quantities of dextrin or lactose. The charts presented, drawn up after the investigation of many stools evacuated by healthy children, showed that there was a standard flora in the intestines of healthy babies and children. Other charts based on the study of stools of children who suffered from different types of nutritional disturbances demonstrated that in such cases the flora in the intestines had departed from the normal. The normal stool showed a flora composed almost equally of aciduric and protein-splitting organisms. Normally, an antagonistic balance was maintained between these. In the groups of nutritional disorders studied, the flora all showed a predominance of proteolytic types of bacteria. These children all exhibited clinical disturbances evidenced by symptoms of toxemia. They all responded to the limitation of milk, meat, and egg-white, together with a diet high in lactose and dextrins, by a swing of the intestinal flora to a predominance of fermentative forms. With this change there occurred coincidentally an amelioration of the clinical symptoms. On a rational diet well being had been maintained and the stools had remained at a floral balance approximating the normal standard. The types of alimentary disturbance studied were the following: A type corresponding to the balance disturbance of Finkelstein, a similar unbalance in older children, acute alimentary intoxications, and subacute and chronic conditions of alimentary disturbance with symptoms of intoxication. In all of these the proteolytic organisms dominated the fecal flora. In all the patients the return to health was coincident with the establishment of a normal flora in the intestines. While they made no claim to having established an etiological relationship between these alimentary intoxications and the flora of the intestines, they held that the possibility of such a relationship could not be ignored and should be made the subject of further and more intensive investigations.

Dr. Henry Koplik of New York reviewed the principles of the Czerny and Finkelstein schools and stated that unless protein milk was properly made it rather hurt the baby and might cause a bloody diarrhea. Finkelstein had insisted upon this point and had installed his own plant for preparing albumin milk. Again, the milk must not be stored too long before it was prepared, but here they were in the hands of the purveyors of milk. Dr. Porter gave lemonade in these conditions while he eliminated all sour food and also sugar from the diet. Dr. Porter had obtained good results by his method and he (Dr. Koplik) had obtained good results with his method.

Dr. E. C. Fleischner of San Francisco thought it was much better to have a method based on a logical foundation than to proceed in an empirical way, and he felt that Dr. Porter had given them such a logical basis for the treatment of this type of infants. Where butyric acid fermentation was concerned it was better to leave the fat out of the diet, and he thought that was the method Dr. Porter had followed. If the etiological factor was the proteolytic anaerobes, as it frequently was, then to get at the root of the evil the protein element must be considered, and both fats and proteins must be eliminated, at least temporarily.

Dr. Porter, in closing, said that during the discussion allusion had been made to the Czerny school. The Czerny school had been of great value as a guide in the study of alimentary disturbances, but it was not like the law and the prophets, beyond criticism. He thought they had all recognized the fact that they could not feed high fats when the protein was low. This was shown by soapy stools when this kind of a diet was employed. He had been asked to discuss the butyric fermentation of the anaerobes. They were now at work on this subject and were very much at sea as to the rôle of the anaerobes. He believed it would be shown that the blood non-protein nitrogen would be increased when the anaerobes were high.

Transfusion in Infants and Children: The Indications and Dangers.—Dr. Henry Koplik of New York presented this communication to the effect that the application of transfusion in the new-born was as follows: (a) In cases of uncontrollable hemorrhage from wounds, umbilicus, or scalp hematoma. (b) In forms of frank melanemia with hemorrhage from the intestines, the subcutaneous and gastric hemorrhages. (c) Concealed melanemia in which the outward objective signs of hemorrhage were slight, such as occasional ecchymosis on the surface, but in which the evidence of internal hemorrhage was great, for instance, the critical loss of weight, intense anemia, amounting to the phenomena of exsanguination, very slight signs of hemorrhage from the intestine, with marked hemorrhage into cavities such as the subarachnoid space. (d) In cases of severe and continued hemorrhage among the new-born from surgical wounds, as circumcision, hemorrhages which were of parenchymatous character, and were exsanguinating to a degree. In these the conclusion, as in the hemorrhage beneath the scalp, was that there was a congenital condition present, a hemophilia. The best success in hemorrhages of the new-born was attained by prompt transfusion in a positive manner by the direct introduction of blood or citrated blood into the circulation. They had two methods from which to choose, and the time was scarcely ripe for a decision in favor of either. The direct introduction of full blood from donor to patient was the first method, and was called the Unger or syringe method (Lindemann); the second was the so-called citrated blood method (Lewisohn). The advantage of the first method was evident if in every case one could test the donor and recipient for hemolysis. The advantages of the second method were, first, that the blood could be transported at some distance, and that in an emergency the tests for hemolysis were unnecessary. He had used both methods and had found them both applicable. He felt that failures in many cases were due to the lack of delicate skill in the technique of the surgeon, and that a decision as to which method was best could be made only by an operator who had handled both methods. He had never seen a failure due to full normal blood or citrated blood; the technique had always been his criticism. He had seen cases in which the subcutaneous introduction of serum or even whole blood had absolutely failed to control hemorrhage. A single definite transfusion succeeded in combating symptoms in these cases, if they lived. Improvement in the patient's condition took place even where symptoms of sclerema, often looked upon as the beginning of a fatal issue, set in. Temperature was not a contraindication for transfusion; congenital syphillis with melena did not contraindicate transfusion, as was shown by the case cited. After comparison of methods in the new-born, he felt that many cases were lost by simple subcutaneous infusion of blood or serum which might have been saved by more radical methods, though in some emergencies the subcutaneous introduction of blood did well. The histories of such cases were related. Transfusion was uniformly successful in combating the hemorrhages in hemophilia in late infancy and childhood, even where much blood had been lost. In a bad case of anemia, very rare in childhood, two transfusions of 140 and 120 c.c. of citrated blood were initiated with improvement and recovery; the child was now four years old, and perfectly normal. In this case the hemoglobin was reduced as low as 15 per cent. at one time, and rose to 44 and 34 after each transfusion respectively. The spleen was enlarged, but after much consultation its removal was rejected. In acute diseases with tendency to hemorrhage transfusion was useful. Transfusion did not permanently benefit acute and chronic leucemia, and neither did it benefit purpuras of all varieties. Henoch's purpura was particularly rebellious to treatment. Transfusion was unsuccessfully used in several cases which had a low temperature with endocarditis crises due to an infectious encarditis. The hemoglobin index in these cases improved immediately after transfusion, but rapidly fell to the initial index, and the patient sank more quickly than one would expect had transfusion not taken place. There was one form of streptococcus invasion which by intensive and repeated transfusions might improve after the introduction of new blood, and this form of blood sepsis did not affect the heart itself. Eight repeated transfusions by the Lindemann method were used in one case of sinus thrombosis resulting from ear infection, and these held the patient over repeated crises, bringing recovery in spite of complications in the pleura and joints. In certain septic infections he had advised the removal of blood to make room for new blood in large quantity, thus avoiding the danger of overloading the circulation. In postinfluenzal nephritis cases the writer had transfused blood when the patient was fast sinking, and the urine showed blood. The transfusion caused not only a stoppage of bleeding but the nephritis recovered completely. Yet in similar cases many with the same trouble were transfused without success; the physician waited too long. Transfusion, performed in a rational way, might be a life-saving operation in a variety of infant and childhood conditions. Indiscriminate transfusion and its use as a last resort were impractical. There should be a very definite idea or indication to the performance of transfusion if the whole method of therapy were not to be brought into disrepute.

The Energy Metabolism of Children from Birth to Puberty.—Dr. Fritz B. Talbot of Boston presented a summary of the work done in the nutrition laboratory of the Carnegie Institution of Washington during the past three years on the metabolism of healthy children. In this study observations were made of 108 boys and 78 girls, ranging in age from birth to puberty. He stated that by basal metabolism was meant the minimum amount of calories a child could live on without allowing anything for growth. Up to 10 kilos weight, that was about one year of age, the basal metabolism of both boys and girls was the same. After that age the basal metabolism was a little higher for boys than for girls. The basal metabolism of women was below that of adult men. The curves seemed to show that some specific impulse was at work during puberty. All the food that went into an individual was not used. Some was lost through the feces and in other ways. It could be assumed that about 90 per cent. of food intake was available, and that was borne out by metabolic experiments. It had been shown that every movement a baby made consumed calories, and hence an increase over basal metabolism was caused by muscular exercise. On an average 25 per cent. of the food intake was used

in muscular exercise at six months of age. As the child grew older the amount of food used for growth became less and less. If the mother did not have sufficient milk for the individual baby, enough food was not left for growth after deducting the amount required for exercise and that lost in the feces. When a child had diarrhea or indigestion a greater amount of the food was lost in the feces than normally and less was left for growth. This loss might sometimes be as high as 40 per cent. of the food intake. Again, some children who were apparently getting a sufficient amount of food were overactive, and the food needed for growth was used up in the energy output.

Dr. L. Emmett Holt of New York, after congratulating Dr. Talbot on his valuable contribution, said that the paper had explained a great many of their common experiences, as, for instance, individual differences in children so far as their food requirements were concerned. They all knew that it was impossible to feed a baby according to its weight or age, and that a great many factors had to be taken into consideration before one could judge accurately how much food a child required. Dr. Talbot had put down in figures just how much value was to be attributed to each factor. For the first time this had been done in a scientific way. Muscular activity in relation to weight increase was very important, not only in infants but in older children. They frequently met children who, though apparently getting sufficient food, did not increase in weight until their muscular activity was decreased. Other children again might be getting three times as much food as they could take care of, and were having excessively large stools, and here the loss might be overlooked unless the stools were examined.

Postinfluenzal Encephalitis.—Dr. Henry Heiman of New York read this paper, which was based on a study of eight cases from the Pediatric Service of Mount Sinai Hospital. He stated that various terms had been suggested to designate this condition, none of which seemed entirely appropriate; he, therefore, suggested "postinfluenzal encephalitis," since one could not help being impressed by the close association of this symptom complex with epidemic influenza. The only periods during which it had been observed were the years following the extensive epidemics of influenza. As a result of his observations he had been able to differentiate three main forms, depending on the severity and the most prominent symptoms. These might be grouped as (1) irritable; (2) lethargic, and (3) lethargic with paralyses. The irritable type was characterized by marked restlessness, excitability, and almost continuous crying. In the lethargic form the most prevalent feature, as the name implied, was a drowsy state. The facial features were expressionless, mask-like, and resembled the Parkinson syndrome. There might be convulsions or twitchings of the face muscles. There was frequently moderate rigidity of the neck. Most of these cases fell into the third group of lethargy with paralyses. In addition to the stuporous state there might be involvement of the extremities or cranial nerve palsies. In the writer's series of cases the oldest child was 13½ years, and the youngest four months. The cases were equally divided between the sexes. In one child the nervous syndrome followed immediately, and in another four months had elapsed. The average time of onset of nervous symptoms was about two weeks after the attack of influenza. The onset of the encephalitis was sudden in six cases, while in two there was a progressive development. Convulsions were the first manifestation in three of the cases. Fever played a small rôle in all of the cases reported. The fundi were examined in all the cases of this series, but showed nothing characteristic. The cerebrospinal fluids were examined in these cases, but showed nothing abnormal. In one instance there were 80 cells per cubic centimeter, 80 per cent. of these being lymphocytes. In this instance albumin was present, and there was a definite reaction to Fehling's. There were no organisms. There were no uniform changes in the blood picture. The prognosis was better than the alarming state of the patients would indicate. Thus far they had not lost any cases, but in two, at least, the mentality had been definitely affected. There was no specific therapy. Their treatment had been symptomatic throughout. In the irritable type mixed bromides and chloral were of some value. In the paralytic type massage of the involved muscles was of distinct advantage. Lumbar puncture had been of no special benefit.

Dr. Henry Koplik of New York stated that they had all seen these cases throughout the epidemic in New York, and that the clinical features had been well described by Dr. Heiman. They were quite similar to the cases of poliomyelitis that had been described on both sides of the Atlantic, appearing to be of the hemorrhagic type that affected the brain and not the cord. Some of the lethargic cases resembled tuberculous meningitis, and some physicians had made the diagnosis of tuberculous meningitis in these cases, only to find at the end of a week or ten days that their patients were on the road to recovery. These patients did well without lumbar puncture. There were different types of encephalitis seen following the epidemic of influenza; all were not of the lethargic type.

Dr. Isaac Abt of Chicago called attention to the fact that all the cases of encephalitis they had been seeing were not due to influenza. Encephalitis might follow pneumonia, measles, typhoid fever, or whooping cough. The disease was selective, affecting certain portions of the brain, there being a certain number of cases in which the anterior motor areas were affected, and in some there was a one-sided paralysis. The prognosis was good so far as life was concerned, but a number of those affected remained paralyzed.

Dr. Richard M. Smith of Boston described a case of encephalitis in a child, 4½ months old, who, in addition to the symptoms mentioned, was still unable to cry a week after the onset of the disease. In this case the most striking feature was the contraction of the pupils.

Dr. Talbot of Boston asked Dr. Heiman if he had had any reports from adults as to whether double vision was among the early symptoms.

Dr. Heiman replied that he had not seen diplopia, but he had seen cases with ophthalmoplegia.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held March 7, 1919.

Dr. Seth M. Milliken in the Chair.

Fused Kidney. Right Hydronephrosis. Resection. Recovery.—Dr. Martin Rehling presented this case, a man 52 years of age, who came under his care on July 10, 1918, complaining of dyspepsia and increasing constipation and vomiting. He was admitted to the hospital on August 7. He had never been sick except for a Neisserian infection many years ago. Physical examination showed a bulging mass in the right side of the abdomen extending far down into the pelvis continuous with the liver dullness above and then running off to the left side. There was a flatness on percussion and no sign of spleen or kidney could be made out. The prostate was slightly enlarged. The urine was normal and did not contain blood. Cystoscopic examination showed a deeply trabeculated bladder and the ureter on the right side could not be seen. The *x*-ray diagnosis was dilated colon, partial obstruction of splenic flexure, and enlarged and elongated appendix. At operation a right rectus incision was made which revealed an elongated mass reaching from the pelvis to the diaphragm. The colon collapsed in front of it. At the level of the umbilicus there was an extension of the tumor which reached beyond the vertebral column to the left. This mass was found to be a fused kidney, cystic on the right side—a horseshoe kidney with the concavity upward. One small strand was found which looked like a ureter. Some fluid escaped during the removal of this strand; the remaining sac contained about two liters of fluid. The right side containing the tumor was resected from the other side; there was no isthmus, the mass being continuous with the left part of the kidney. There was some spurting from one small artery in the remaining left part of kidney which was easily controlled by a transfixion suture. A small drain was inserted and the patient made an uneventful recovery. As he was doing well and the urinary output

was satisfactory no cystoscopic or phenolphthalein test had been made, as the patient was opposed thereto. A few similar cases have been reported in the literature and Rovsing has operated on several cases, removing the mass through the right rectus incision.

Dr. ROBERT T. MORRIS said it seemed to him that it was very important to determine whether the part of the kidney that was left had undergone compensatory hypertrophy and was continuing full function, because this was not only a case of hydronephrosis, but also of fused kidney. Patients with this latter condition often suffered a great deal of pain after middle life, because of the drag due to absence of Gerota's pouch. This drag might perhaps be relieved by dividing the fused kidney, but before this was done one should find out if a compensatory hypertrophy of the remaining part of a kidney would take up the work of the entire kidney. The danger of hemorrhage must also be considered in making a division of a fused kidney, and the question came up whether one could safely make a complete division through the middle of a fused kidney as a rule.

Dr. REHLING, in closing, said that the hydronephritic portion of the kidney in this case was not functioning at all. The fluid in this part of the kidney contained very few urinary elements. It was not likely after the man had reached the age of 52 years and the other kidney had for many years been doing the work of both kidneys that it would fail to do its work now. The pathologist's report showed that the part of the kidney removed was composed largely of embryonal structures and the kidney structures resected for the remaining left part of the fused kidney showed a slight degree of glomerular nephritis. The removed sac after emptying measured 30 by 18 cm. in diameter.

Complications and Sequelæ of War Wounds as Seen at United States Army General Hospital No. 1.—Lieut. Col. WALTER A. SHERWOOD, M.C., U. S. Army, read this paper, in which he said he would speak but briefly and of generalities. He discussed his subject briefly under the following headings: 1. Chronic infection of bones and joints. 2. Unhealed wounds of soft parts, including infected amputation stumps. 3. Deformities and disabilities due to malposition of bones and bony defects. 4. Deformities and disabilities due to destruction of soft parts (skin, fascia, muscles, and tendons). 5. Injuries of the brain, spinal cord, and peripheral nerves. 6. Wounds of the thorax, abdomen, and their contained viscera. 7. Miscellaneous. He considered Group One the most important of these because the problem there was often one of osteomyelitis, and experience had taught them to treat these cases conservatively and to defer operation for a considerable length of time except for the institution of proper drainage. When operation was indicated in this group of cases they made large funnel-shaped openings, removed all necrotic tissue, and employed the Carrel-Dakin treatment. In considering the second group of cases, the unhealed wounds of the soft parts, the speaker stated that one met unheard-of wounds of the soft parts, in which there was very extensive destruction of tissue. Strapping and heliotherapy had been particularly effective in dealing with this type of wound. The fourth group of cases, in which there was deformity and disability due to malposition of bones, often harbored latent infection and in cases in which bone grafting was necessary this procedure should be postponed for several months. In some of these cases the growth of bone was so rapid that later bone grafting operations could be dispensed with. In discussing the deformities due to destruction of the soft parts he considered more particularly tenoplasty. In speaking of injuries to the brain, spinal cord, and peripheral nerves he stated that but a small number of these cases were operable, about 5 per cent. A detailed report would later be made on each of these groups of cases. Col. Sherwood then showed a series of lantern slides to illustrate the various surgical problems with which the Army surgeons were at the present time confronted.

Col. CHARLES H. PECK said he felt a little embarrassed in attempting to open the discussion on this splendid presentation of Col. Sherwood's, because it furnished so much material for discussion that it would be impossible to cover it in a reasonable length of time. It would therefore only be possible to emphasize several points that stood out prominently. In the first place the slides brought to their attention the tremendously destructive character of these wounds inflicted by the missiles of modern warfare and had visualized in an excellent way the judgment and surgical skill that would be required to treat the thousands of battle wounds that must be cared for. It emphasized that the wounds were in most instances infected and that among these the cases suffering from osteomyelitis formed a large and important group, in fact the most important of all battle casualties. To speak in general terms of so many cases and of general problems of treatment, that of adequate drainage and the attempt to sterilize cases was most important, but it gave no adequate idea of the subject such as was conveyed by the visualization of individual cases. These pictures showed that many cases were deserving of papers in themselves, and that many features had to be considered in carrying a case to a successful conclusion and a restoration of function. Another point to be emphasized was that secondary operations should not be attempted too early. It was important to use the best judgment and to give plenty of time for an infection to quiet down before undertaking a secondary operation. It was true, however, that cases of osteomyelitis might require prompt opening and drainage. Bone cutting and grafting was attended with much danger if undertaken before infection had quieted down, and this was especially true if the infecting agent was a hemolytic streptococcus. In spite of all that they had learned during the four years of the war it was often difficult to avoid or overcome infection even when the cases were brought in early and complete débridement was done, and this was accomplished under actual military conditions in only a small percentage of cases. They had to deal with wounds not as they would like to have them, under ideal conditions, but frequently many hours after the wounds had been received and after the men had been lying out in shell holes or on the field. After the men were transported from the front line hospitals or to the base hospitals the conditions met with were the late results and sequelæ of infection. Since the beginning of the war they had had wonderful aid in the Carrel-Dakin treatment, which was probably the most valuable single addition to the former methods of treatment that they had. Carried out in the best way and in the best hospitals, it had been effective in a large percentage of cases in controlling infection and promoting healing. As it was being carried out in our own great military hospitals, where it was receiving its full measure of attention, it was giving very satisfactory results. In the cleaning up of large wounds of the soft parts Col. Sherwood had spoken of the use of a mild solution of boric acid and exposure to sunlight. That method had been tried by some of the military hospitals on the other side. Dr. Conner had tried it on the other side, and he believed that it was a principle worthy of extended trial. The whole section was indebted to Col. Sherwood for having visualized such a large number of battle casualties such as would have to be met and treated by the military surgeons of this country now and for many months to come.

Dr. CHARLES A. ELSBERG said he had been fortunate in seeing some injuries of the peripheral nervous system in soldiers and there were a few facts with which he had been impressed in these cases. In the first place, due to the fractures that occurred so often of the humerus, forearm and the femur and other bones of the lower extremities, the patients had to be immobilized in splints for a considerable period of time. Therefore it could not be avoided that there should be great stiffness in one or more joints without actual injury to the joint. When one attempted to make up his mind whether he was dealing with a nerve injury or not it was often impossible to do so. The joint would be stiff, the muscles were stiff, and there was considerable loss of sensation from wearing splints so that it was necessary first to give these patients physio-therapeutic treatment before one could really say whether or not a nerve injury existed. Therefore it was not surprising that many of these patients came without any mention of nerve injury because of the complicating injuries of bones and other tissues which made it impossible to say whether a nerve had been injured or not. All this showed the importance of proper physio-therapy and of the proper use of splints from the beginning of the

treatment. Another fact in regard to nerve injuries was in connection with a certain group of patients, who after four or five months showed no definite improvement in the functions of the nerves, and the question of the advisability of operative interference had to be considered. One should be careful in making the statement that all such cases required operation for every once in a while one would be surprised to see such a patient suddenly begin to improve. Dr. Elsberg cited such a case occurring in a man with a musculo-spiral paralysis. For months this man's condition remained stationary and finally, on January 10, they decided that he required operative interference, inasmuch as there was complete musculo-spiral paralysis, both motor and sensory. For certain reasons the operation was delayed for a week, and when he was examined at the end of the week it was found that he had considerable return of power and sensation which had appeared within the week, after five months of complete paralysis. Such cases made one cautious and more conservative than usual. At Army General Hospital No. 1 the speaker had supervision of the operating on nerve injuries, and they had found that only about 5 per cent. of nerve injuries in that hospital required operation. It was a great surprise to him to learn that in one Army hospital 50 per cent. of nerve injuries had been operated upon; in another one in every three cases, and in still another one in every four cases.

Dr. HAROLD NEUHOF referred to a few points in connection with the treatment of infected wounds at base hospitals. One of these was the question of amputation, which he said required much surgical judgment. At their base hospital in France they had many compound fractures of both the upper and lower extremities, and not a few infected knee joints, with and without bone involvement. In the beginning amputation was deferred too long in some of these cases; as a result such patients were no longer in condition to stand operation. Furthermore, autopsy in such cases would show widespread pyemic foci of infection arising from suppurative phlebitis of the venous trunk in the region of the infected wound. As a result of these experiences, they had gradually come to amputate earlier in these cases. They also frequently resorted to amputation in compound fracture when secondary hemorrhage developed. Conservative treatment frequently failed and it was found that infection of the accompanying vein was almost uniformly present in hemorrhage from one of the main arteries of an extremity. When amputation was not done, the vein was usually resected with the diseased artery in such instances. Every effort was made to be more conservative about amputation for infected compound fracture in the upper extremities, but here, too, it was unfortunately necessary to amputate in some cases, despite every effort to control infection, in order to save lives.

Dr. FRED H. ALBEE said his experience enabled him to bear out statements made by Dr. Elsberg in reference to neuro-surgical cases. At General Hospital No. 3 there were on his service 225 such cases. The cock up splint had been found very advantageous in the treatment of injuries of the musculo-spiral nerve. Its management, however, presented some difficulties. At the same time that the extensor muscle supplied by the musculo-spiral nerves were prevented from becoming overstretched by the dropping of the hand and the wrist, stiffening of the joints of the wrist and hand must be prevented by suitable physio-therapeutic treatment. During this treatment, however, the hand should never be allowed to drop into extreme flexion. He felt convinced that if the treatment suggested by Dr. Elsberg was religiously carried out that the operative interference in these cases would be much diminished. In regard to osteomyelitis of the bones, in a large percentage of cases, one had to be rather radical and not only remove all dead bone but also, on mechanical principles, all deep pockets and shelving projections of bone should be removed, as they led to the pocketing of the infection and the prevention of healing. It was important to study the *x*-rays, which helped to disclose deep pockets, dead bone, and foreign bodies. In their work they had been guided by the *x*-ray in determining whether they were dealing with osteomyelitis of any extent associated with the gunshot injury or not.

Dr. FENTON B. TURCK said Dr. Sherwood's paper was most valuable in that it had given them information on a wide variety of pathological conditions, both before and subsequent to treatment. Most important among the points he had brought out was that he had shown the importance of the part played by necrotic tissue in relation to wound disease and the advantage of increasing the resistance of the patient. At the Interallied Conference of Surgeons, held in 1918, Tuffier and Sacquepée (*Archives de Med. et de Pharm.*, Paris, 1918, XX, p. 613) analyzed their results in the primary, secondary, and late treatment of war wounds and the conclusions they reached were that sterilization by chemicals was defective and that necrotic tissue was the important factor in delaying healing. Therefore the method of treatment that gave the best results was wide débridement and rapid suture, thus eliminating the source of the poisons from the necrosed tissue, which were the cause of wound disease. Dr Turck cited other references to the literature of war surgery showing that surgeons were coming to the viewpoint that elimination of necrosed tissue and not the destruction of bacteria was the problem to be solved. The bacteria merely played the part of secondary invaders increasing the autolysis that was already going on in the tissues. From this standpoint sunlight as a treatment for wounds should be very beneficial since it overcame tissue autolysis, increased tissue resistance and speeded up natural antitoxin formation. This was also true of baking. Nature was always manufacturing these antitoxins against tissue necrosis and it was always an advantage to assist her in this process. Dr. Turck then referred to his experimental work and the antitoxin which he had been able to produce against tissue necrosis, and said that as they had been able by the use of autolyzed muscle tissue to produce an antitoxin against the necrosis of muscle tissue and by the use of autolyzed lung tissue had produced a specific antitoxin against necrosed lung tissue there was no reason why in time they might not be able to produce an antitoxin against osteomyelitis.

Dr. WILLIAM C. LUSK said he thought that the section might be interested in the work he had been doing in wound healing with the use of chinosol and salt. He had shown some of his cases before the New York Surgical Society. Among the results of wound healing by the use of these agents he cited the following examples: A case of cellulitis covering an area about the size of his hand, due to colon bacillus, with sloughing interior, in which with the use of a solution of 2 per cent chinosol and 5 per cent. sodium chloride the opposing surfaces of the abscess cavity were almost completely united on the ninth day; a case of two small areas of staphylococcus aureus cellulitis in the same patient, in which, with the use of the same solution, the opposing surfaces of the abscess cavities were largely united on the ninth day; small abscesses healed in about a week's time; an ulcer infected with pyocyaneus, in which, after a two-hour application of 2 per cent. chinosol and 5 per cent. salt, with subsequent dressing with sterile gauze, which was left in place for 48 hours, the green stain did not recur; a bone cavity about seven inches in length in an expanded lower portion of the shaft of a tibia, resulting from an operation for osteomyelitis, the whole medullary area of this portion of the bone having been removed, which, with daily applications of 2 per cent. chinosol and 0.6 per cent. salt for about two hours, became filled with granulations in the course of about five weeks, after which with the use of a chinosol ointment and strapping, the epithelium grew over the surface of the ulcer; a pelvic fistula six to eight inches in length, the opening of which was at the apex of a wound completely dividing the anal canal, with daily injections of 2 per cent. chinosol and 5 per cent. sodium chloride, in a month's time reduced to two and one-half inches in length, and later closed entirely, with irregular injections of chinosol and sodium chloride in alcohol; a deep wound entirely encompassing the anus, the result of the separation of a slough, with high retraction of the anus above the skin surfaces of the buttocks, which, with the daily application of a solution of 2 per cent. chinosol and 2 per cent sodium chloride for half an hour, cicatrized so that in three and one-half weeks' time the anus was pulled down even with the surrounding skin. He had obtained good results in the treatment of small abscesses and of a sloughing carbuncle with the use of a 2 per cent. chinosol in normal (0.85

per cent.) sodium chloride. The technique was simple, application of the chinosol-salt solution generally being made by means of gauze. He said he had performed a great many experiments on dogs with the view of proving the value of chinosol and salt as a first-aid disinfectant. For this purpose the chinosol should be used in combination with 0.85 per cent. sodium chloride. In the animal experiments the wounds were constructed as pockets between the superficial and deep layers of the superficial fascia on the dogs' backs. In a recent series consisting of 12 dogs, in which the lymphatics leading from pockets uncontaminated with blood were first infiltrated with about one ounce of the solution, the wounds then packed for fifteen minutes with gauze wet with the solution, then infected with as much of a virulent twenty-hour culture of staphylococcus aureus as could be absorbed on a piece of gauze about half an inch square crumpled up, which was left in the wound for half an hour, then treated again for fifteen minutes with a chinosol-salt solution applied on a gauze pack, and finally sutured up tight, these same wounds in seven of the animals united by primary union, while the controls all suppurated. The strengths of chinosol used in this series of animals were grains iv and grains vi to the ounce, and 2 per cent. He had presented a scientific treatise on the subject recently before the New York Surgical Society, which would soon appear in print.

Dr. JOHN F. CONNORS said that in their experience with war wounds there were many things that had come to them which were surprising, and one of these was that there was so little hemolytic streptococcus infection. Another point was that of amputations in osteomyelitis. At Savigny they had had more deaths following amputations than from anything else, and they came to realize that it was because they tried too long to save the limb. They first tried to control secondary hemorrhage by ligation and packing, but they found that they were losing many men, so they began making amputations earlier and they then found that more men lived. As to the treatment of wounds with sunlight and air, at Savigny they at first had some difficulty in getting the method employed, but after a short time when the results were demonstrated they had no difficulty at all. It was a simple method and appealed to him as strongly as anything he knew of. It was the best thing for late gas infection. A large number of such infections developed in the muscles of the back of the leg in men who were allowed to pass through the casualty clearing stations and evacuation hospitals, and when one came to operate on them he found them infected with the gas bacillis. These wounds were treated by opening them up widely and packing with peroxide of hydrogen at night, while during the day they were exposed to the sunlight. Many cases of late gas infection were saved by this means. The speaker emphasized that cases of osteomyelitis should be left alone until they saw what nature could do for them.

Col. SHERWOOD, in closing, said that he had purposely omitted the details of treatment and results, as he intended taking these up at a later time. He wished now to emphasize what Col. Peck had said in reference to the Carrel-Dakin technique. They were using it right along and expected to continue to use it. The cases in which it had failed were those in which it was applied by men not properly trained or not enthusiastic as to its value. The men who had had the course at the Rockefeller War Hospital and were enthusiastic got first-class results all the time.

Empyema at Base Hospital, Camp Mills, with Special Reference to the Use of Philips' Empyema Apparatus.—First Lieut. H. B. PHILIPS, M. C., U. S. Army, presented this communication, in which he first gave a brief résumé of a previous preliminary report on this subject published in *Surgery, Gynecology and Obstetrics*, in February, 1917. The apparatus consisted of a special cannula, a bottle, a negative pressure manometer, a suction pump, and connecting rubber tubing. The cannula was of special design so as to be used for a trochar cannula for the thoracotomy, and being also non-obstructible, it remained in the chest wall until the empyema sac was obliterated. A rubber suction pump surrounded the cannula and permitted of an absolutely air-tight connection with the pleural sac. This made it possible to empty the pleural sac with non-obstructible drainage, maintaining a continuous negative pressure of 30 to 60 mm. of mercury, until the empyema sac was obliterated and firm adhesions formed between the visceral and parietal pleura, when the apparatus might be removed. During the height of the epidemic of influenza only one apparatus was available, and it was only at the tail end of the series that enough apparatuses were on hand to meet the demand, so that it was necessary to resort to varied treatments, which, however, were all consistently conservative. For a clear consideration of these cases they were divided into four groups, as follows: 1. Those treated by simple repeated aspirations. 2. Those treated by intercostal drainage. 3. Those treated by rib resection drainage. 4. Those treated with the Philips apparatus. In the great majority of cases treated by simple aspiration this method failed and more radical treatment had to be instituted early. Of a group of 17 cases, three terminated successfully, without any other treatment except repeated aspiration. In most of these cases symptoms of aggravated sepsis or the appearance of pneumothorax, in spite of the most persistent care to prevent these complications, indicated better drainage methods. Their experience had led them to feel that the contraindications for repeated aspirations were the following: (1) the character of the exudate such that it obstructed the cannula or needle. (2) Absence of improvement following this treatment. (3) The appearance of a complicating pneumothorax following aspiration. (4) Severe toxemia of the patient. Ten cases were treated by intercostal drainage, two of which were healed in 43 and 45 days respectively. Two cases were transferred and lost sight of. There was a mortality of 30 per cent. in this group. At the time of writing this report three of the cases were draining over 70 days. All attempts to secure air-tight intercostal drainage with improvised cannulas met with absolutely no success. These cases all showed the disadvantages of open thorax in addition to those of inadequate drainage. Twelve cases were treated by rib resection. These cases were divided into those treated by repeated preliminary aspirations, and those in which the operation was the initial treatment. In the former group there were seven cases, with one mortality; in the latter group there were two cases completely cured in four weeks' time. The impression from this group of cases made one feel that the postponement of the operation, with repeated aspirations gave the patient an easier time with apparently less risk at the operation. However, it seemed to be an advantage paid for during convalescent time, for undoubtedly the delay permitted of the formation of adhesions in a partially collapsed lung, which enhanced the chronicity of the condition. Of the cases treated with Philips apparatus, 16 in number, the most prominent facts deducible were: (1) That complete expansion of the lung was secured in an average of three days after the application of the apparatus. (2) That the mortality of the straightforward cases of empyema, that was those not complicated by coincident active pneumonia, was *nil*. (3) A large pneumothorax was exceedingly improbable and not encountered in their experience, and the open pneumothorax was impossible after the apparatus had been applied only a few days, for by this time the lung had been very considerably expanded and a good part of it had become adherent to the chest wall in its expanded condition. (4) That the duration of the empyema as such was very materially shortened. The writer described the advantages secured by the apparatus in detail and summarized them by stating that they consisted in the following: (1) The exclusion of atmospheric pressure. (2) The necessity for operation was done away with entirely. (3) The exclusion of secondary infection. (4) The duration both of the treatment and the condition was very materially shortened. (5) A functionating lung was secured from the very start. (6) The apparatus provided a clean, sanitary, pleasing and economical way of getting rid of the pus. During the entire application of the apparatus, the dressings remained perfectly clean, as when originally applied. Adhesive paste interspersed between the layers of the dressing made an ideal air-tight dressing which did not leak. Attention was called to the fact that the apparatus could be used with success in ordinary serous pleural effusions. The danger

of secondary infection was minimal, and the means afforded of expanding a chronically compressed and collapsed lung by the apparatus could not be overlooked.

Major CHARLES L. MIX said he was pleased that the section had had the opportunity of seeing these *x*-ray plates, else they might not have a clear idea of the curative effects of Lieut. Philips apparatus in cases of empyema. Their early experience at the Base Hospital at Camp Mills had been about the same as that of other hospitals in that the mortality last April in their cases of empyema was 55.5 per cent., all of the cases being caused by the *Streptococcus hemolyticus*. During the recent epidemic of influenza they had had unusual opportunities for the study of empyema following the pneumonitis of influenza, and also that following true lobar and bronchopneumonia. Major Mix reported the detailed statistics of these cases for two week periods from September 14 to November 15, during which period they had 3911 cases of influenza. Of these 1048 developed pneumonia and 394 died. Of the 1048 pneumonic cases 60 developed empyema, that is to say fluid in the pleural cavity, even though it were merely turbid fluid and not purulent. Of these 60 cases 16 died, and of these 16 only eight were in the hospital more than 21 days. In other words, 8 of the 16 did not die of empyema, but of pneumonia, and should not be charged to empyema deaths. If one took these 8 cases from the 60, it left but 52 cases of empyema, with eight deaths, which was a very respectable statistical showing.

As to their methods of treating empyema, they had first followed the recommendations of the surgeon-general's office and had employed repeated aspiration, but there was no one so skillful that he could repeatedly aspirate a patient without producing a pneumothorax, and the reason these cases of repeated aspiration did not all get well was because of secondary infections due to this "external" pneumothorax. Therefore repeated aspiration was not the best or the ideal treatment for empyema. There would always be some cases in which rib resection would be indicated, but this method of treatment was open to the great objection that it invariably produced pneumothorax, and that subsequently the lung expanded very slowly over a long period of time. Though rib resection was safe and the results good in many instances, yet the convalescence was a matter not of weeks, but of months, and all have seen instances in which the sinus remained open for years.

Dr. Philips' apparatus was simple, and with it one could secure complete negative pressure and continuous sucking out of pus without any chance of air getting into the pleural cavity. The lung expanded and stayed expanded, so that there was no accumulation of pus or fluid. There would of course remain as a sequel a sinus around the trochar, but this healed in a few days without danger to the patient. The advantages of the method were very great. There were no wet dressings which were malodorous, sticky and uncomfortable; one had instead of dressings saturated with pus nothing but a passage-way out from the chest to the bottle, and no germs could get into the chest. This method was of fairly general application, and was of a great deal of value except in cases falling into certain categories. Cases in which it was not applicable were those of "internal" pneumothorax in which air escaped from a bronchus into the pleural cavitiy, because the apparatus would merely suck air through a bronchus into the bottle so that drainage could not be maintained, but in such cases the apparatus was of value as a diagnostic means since it quickly demonstrated the existence of an "internal" pneumothorax because of inability to create a negative pressure. A second group of cases which were unsuitable for this treatment were such cases of *Streptococcus hemolyticus* infection as showed intense toxemia; these did not get well with any treatment. In such cases with low systolic and diastolic blood pressure and a rapid pulse-rate even rib-resection was of no avail. A third group of cases in which the apparatus might not be applicable were those with multiple pockets of pus. It would sometimes be found that the apparatus could not reach all the pockets, and therefore in such cases one might be obliged to resort to rib-resection. Aside from these three classes of cases the apparatus certainly did work wonders, and did lessen mortality; moreover, it shortened convalescence and lessened the septic absorption..

Capt. H. A. JOHNSON stated that Lieut. Philips' apparatus contained a number of elements which led him to believe that it was important in the treatment of empyema. It was clean and maintained negative pressure accompanied by expansion of the lung. In Portland they had attempted the same thing, and their results were as satisfactory as at Base Hospital No. 1. This method was a compromise between rib-resection and aspiration, and was useful in cases in which the patient might not be a good risk for rib-resection, though in such cases rib-resection might be done under local anesthesia. He had done rib-resections under general anesthesia for empyema, both acute and secondary, following lobar and bronchopneumonia and wounds of the chest without any deaths, and he had resected from one to four ribs, but these operations might have been done under local anesthesia. Captain Johnson said that in his opinion surgical judgment was far more important than surgical skill in dealing with pus in the pleural cavity, and he believed that rib-resection could be done under local anesthesia without shock, the patients not complaining of pain. The operation was followed by the use of free drainage, two to four No. 10 Carrel tubes being employed, and in no case had there been a resulting pneumothorax. It was not an ideal procedure on account of the difficulty of sterilization, but they had used it and had a clean ward and very little pus. There was one objection to rib-resection, and that was osteomyelitis of the rib and secondary necrosis, which demanded future operative interference. He believed, however, that rib resection was desirable and that no good drainage could be maintained without it.

Dr. FENTON B. TURCK described animal experiments which he was carrying out in which by insufflation into the tracheas of cats a pneumonitis was produced within two hours which killed the cats. This had been accomplished by using six drops of a 50 per cent. solution of 48-hour emulsion of autolyzed lung tissue. There was no reaction until the emulsion reached the lungs of the animals, thus showing its specificity. In other experiments he had sprayed the feet of cats with this emulsion and had placed them with other cats, and all the animals who were exposed to this autolyzed lung tissue came down with pneumonitis, showing the same reaction. Dr. Turck also described the way in which he had injected a goat with this emulsion at intervals during a period of six months and had thereby secured an antitoxin against pneumonitis. He had made a study of the pathological changes taking place in this form of pneumonitis and felt confident that the antitoxin would prove effective against pneumonia. All this experimental work had confirmed him in the belief that the cellular necrotic changes, and not the pneumococcus or other bacterial invaders, were the real cause of pneumonia.

Dr. SETH M. MILLIKEN said he did not like to have the audience go away thinking that the intercostal incision with drainage in empyema cases was not of great value. He had seen a number of cases of empyema, particularly in children where the intercostal drainage was curative. In a series of eleven cases who were treated in this way no further treatment was necessary in six, while five had secondary rib-resection. Of course the intercostal drainage might not be effective where there was a pocket below the level of the drain. Of osteomyelitis of the rib following resection, he had seen but one case. In that the subperiosteal resection had been done.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

UNIVERSITY OF THE STATE OF NEW YORK.

New York, May, 1919.

(*Continued from page* 995.)

SURGERY.

1. Describe gangrene due to gas bacilli.
2. Describe a lymphangitis due to infection of the thumb.

3. Give the treatment of a penetrating bullet wound of the skull.
4. State the conditions of a breast cancer when operation is inadvisable.
5. Describe tuberculous arthritis before the stage of softening and give the surgical treatment.
6. State which lymphatic glands are primarily affected in each of the following and give the clinical appearance of the glands in each case: (*a*) epithelioma of tip of tongue, (*b*) streptococcic infection of index finger, (*c*) chancre of penis.
7. Give the steps of the operation of tracheotomy.
8. What is ranula? Give the treatment of ranula.
9. What is the surgical treatment of a moderate-sized osteosarcoma of the tibia?
10. State the causes of nonunion in fractures.
11. Name conditions that may simulate acute appendicitis.
12. Describe convergent strabismus and give its surgical treatment.

OBSTETRICS AND GYNECOLOGY.

1. What are the signs and symptoms of threatened eclampsia? State the urinary findings in threatened eclampsia.
2. Describe the technique of Braxton Hicks' internal podalic version.
3. What is a funnel-shaped pelvis? What diameters would suggest this condition?
4. Mention two causes of tonic contraction of the uterus.
5. What are the findings in a threatened spontaneous rupture of the uterus during labor?
6. Define phlegmasia alba dolens. Give its etiology and its treatment.
7. When should menstruation cease and what conditions may attend its cessation?
8. Name the diseases of the external organs of generation.
9. Describe an operative method to correct posterior displacement.
10. Make a diagnosis of pregnancy.
11. What conditions should be differentiated from chronic uterine inversion?
12. Give the measurements of the normal female pelvis.

HYGIENE AND SANITATION.

1. Describe in detail the principle involved in the tuberculin test in cattle and explain its application in public health work.
2. What purpose is served by the use of the Binet-Simon test?
3. Name the methods used for the wholesome preservation of milk.
4. How does the introduction of heat into a room assist in the ventilation?
5. Describe an effective sanitary method of caring for waste water from a kitchen sink in a farmhouse.
6. How may the spread of disease by the housefly be prevented?
7. How may the presence of diphtheria in a hospital for children be minimized?
8. What is meant by mechanical filtration as applied to a municipal water supply?
9. Describe the use of the antityphoid bacterine.
10. What purposes are served by open-air schools?
11. What are the best methods for the disposal of human excrement in a military camp?
12. What are the principles to be observed in the construction of a modern hospital for contagious diseases?

ANSWERS.

SURGERY.

1. *Gangrene due to gas bacilli* is a severe infection due to the extensive invasion of tissues by anerobic bacteria. The muscles are mainly involved, and in severe cases whole groups of muscles are affected throughout their entire extent. Contributing factors are the presence of a mixed infection or of extravasated blood and secretions from wounds, interference with the circulation, and dead or devitalized muscle tissue. There may be cellulitis or a localized gangrene or a gangrene of the entire limb. The characteristic symptoms of the last form are: Sudden, sharp, lancinating pain in the limb, below the wound; obliteration of the distal pulse; profound toxemia, with high temperature and rapid, low-tension pulse; characteristic fecal-like odor around the wound; the subcutaneous tissues are filled with lymph-like fluid containing bubbles of gas; the intermuscular septa and muscle sheaths are similarly filled with fluid and gas, and there is often separation between sheath and muscle tissue. —(From De Tarnowsky's *Military Surgery*.)

2. In *lymphangitis due to infection of the thumb* the line of lymphatic vessels is painful and tender, and surrounded with an area of edema. The nearest glands are swollen and painful (in this case the epitrochlear gland is involved); and, in suppurating cases, fluctuation may be made out. If the superficial vessels are affected, they stand out as red lines in the skin, and sometimes may be felt as cords. Inflammation of the deep lymphatics is diagnosed by edema, along with enlargement and tenderness of the glands. Constitutional signs of inflammatory fever are present, and vary with extent and virulence of the irritation.

3. *Treatment of a penetrating bullet wound of the skull:* "In all cases of punctured or compound depressed fracture a thorough exploration of the wound should be made, and all depressed or injured bone removed. Foreign bodies should be taken away, if found close to the wound; but it is doubtful whether a bullet should be sought for if it has penetrated deeply into the brain, or if it has traversed the brain and fractured the bone on the other side. Probably an aseptic incision, with removal of the splintered fragments and a limited search for the bullet is the best treatment to adopt, and, even if unsuccessful, will do but little harm if the patient's general state warrants an operation. Protruding brain tissue is gently removed, and the whole wound thoroughly purified with carbolic lotion; even the 1 in 20 solution may be used without fear. The dura mater should, if possible, be drawn together by one or two sutures, and a small drain tube or gauze wick inserted within it. It is often advisable to introduce a portion of sterilized gold foil between the cortex and the dura, so as to prevent the formation of adhesions. The scalp wound is closed, except at the drain opening; the gauze or tube should be removed, if all is going well, in about two days' time. If the temperature rises as a result of septic infection, the wound must be reopened and every effort made to relieve tension and thus localize the mischief."—(Rose and Carless' *Surgery*.)

4. *Conditions in which operation for cancer of the breast is inadvisable:* When the cancerous mass is fixed to the bony thorax; when there is extensive involvement of the skin, either by scattered nodules or by general infiltration; when metastatic growths have extended to the viscera; when the axillary involvement is very extensive; when there is extensive involvement of the supraclavicular glands; when there is marked edema of the arm of the affected side.

5. TUBERCULOUS ARTHRITIS —*Symptoms:* "In the early stages the signs are not at all well marked, especially in those where the primary stage is osseous, and consist of slight aching after use. Soon, however, the cardinal signs appear: (1) Increased heat over the joint; (2) the presence of some fluid in the joint; (3) impaired mobility; (4) wasting of the muscles which move the joint. The joint is usually maintained in the position of ease, viz., slightly flexed. In the late stages abscesses form, and the pain becomes severe, even to 'starting pains' at night. If the abscesses burst and are allowed to become septic, a hectic temperature follows, and amyloid degeneration may lead to death from exhaustion. The joint itself may be disorganized, the relaxation of the ligaments allowing dislocation to occur.

Results: "1. The disease may be cured, leaving a movable joint if treated early. 2. A cure may terminate in ankylosis if the articular surfaces have been damaged. 3. If sepsis has been admitted, the patient may recover after a time, with ankylosis and deformity; but as a rule, unless treated, death occurs from amyloid degeneration. 4. General tuberculosis may bring about a fatal termination.

"The *prognosis* depends on the stage at which treatment is begun, and whether the patient can afford good

feeding, sunshine, and fresh air for prolonged periods. Babies and old people are the worst subjects, so that for them conservative treatment is not advisable.

"*Operative measures:* Abscesses outside the joint should be incised, scraped out, and stitched up. Where the disease progresses in spite of expectant treatment, three operations are open to employment: arthrectomy, excision, and amputation. *Arthrectomy* means removal of the whole of the tuberculous material with as little disturbance as possible of the surrounding healthy parts. The joint is opened, the entire synovial membrane dissected out, and diseased areas in the bone gouged away. The joint will often be a stiff one, but the growing ends of the bones are not interfered with. *Excision:* The synovial membrane must be removed as in arthrectomy. The ends of the bones are sawn off and all the cartilage-covered surfaces removed. Bony union is obtained between the sawn surfaces. The choice between excision and arthrectomy depends mainly upon three things: 1. *The chance of successfully eradicating the disease* is greater with excision than with arthrectomy. 2. *The ultimate utility of the limb* is greater after arthrectomy in such joints as those of the upper extremity, ankle, and hip, if some movement is left; while in the knee a firm leg after excision is better than a weakly ankylosed joint after arthrectomy. 3. *The subsequent development of the limb* is stopped by excision, and not by arthrectomy, so that excision should not be done till after the sixteenth or eighteenth year. Infants and old people stand excision badly, from having insufficient recuperative powers. Infants should have arthrotomy or arthrectomy done; old people, amputation. *Amputation* is indicated in old or broken-down people; where there is extensive disease of the bone and soft tissues; where amyloid disease is advanced; where excision has failed, or sepsis is present as well as tubercle."—(*Aids to Surgery.*)

6. (*a*) In *epithelioma of the tip of the tongue*, the submental glands are primarily affected; (*b*) in *infection of the index finger*, the epicondyloid and axillary glands are affected; (*c*) in *chancre of the penis*, the inguinal glands are involved.

In (*a*), the glands become enlarged, cystic, and may ulcerate. In (*b*), the glands become enlarged, hyperemic, redder and firmer than usual, more tender, and may suppurate. In (*c*), the glands become enlarged, move freely under the skin, feel hard and shotty, and do not suppurate unless there is a mixed infection.

7. *Tracheotomy:* "The patient is placed on the back with a narrow pillow under the neck. Chloroform or cocaine can be used as anesthetics. An incision, 1½ inches long, is made downward from the cricoid cartilage, keeping strictly in the mid-line. The incision is deepened till the tracheal rings and isthmus are exposed. Enlarged veins give trouble during this stage if there is dyspnea. A director-hook is thrust into the trachea, and the point of a knife is slid along the groove to open the treachea from below upward. The patient is allowed to cough for a few minutes while the wound is kept open with dilating forceps; then the tube is tied in."—(*Aids to Surgery.*)

8. *Ranula:* "The term ranula is applied to any cystic tumor formed in connection with the glands in the floor of the mouth. Formerly these tumors were believed to be retention cysts due to blocking of the salivary ducts. They are now known to be the result of a cystic degeneration of one or other of the secreting glands in the floor of the mouth. The *sublingual ranula* is the most common variety. It appears as a painless, smooth, tense, globular swelling of a bluish color. It usually lies on one side of the frenum, and over it the mucous membrane moves freely. As it increases in size it gradually pushes the tongue toward the roof of the mouth, and so causes interference with speech, mastication, and swallowing. It is differentiated from a retention cyst of the submaxillary gland by the fact that a probe can usually be passed along Wharton's duct alongside of the swelling. The *treatment* consists in making an incision through the mucous membrane over the swelling, dissecting away the whole of the cyst wall if posible, and, if any portion cannot be removed, swabbing it with a solution of chloride of zinc (40 grains to the ounce), after which the cavity is stuffed with iodoform gauze and allowed to close by granulation. It is sometimes found more satisfactory to dissect out the cyst through an incision below the jaw."—(Thomson and Miles' *Manual of Surgery.*)

9. "The *treatment of osteosarcoma* is eminently unsatisfactory, as even though the most radical measures are taken, recurrence is too frequently observed, or death from secondary deposits occurs in spite of a successful issue locally. . . . Formerly, the rule that governed surgical practice was to amputate the limb well above the growth in all cases, and to ascertain by microscopic examination of the medulla at the time that it was free from disease. Thus for a tumor at the lower end of the tibia, amputation through the knee would be practised; if the upper end of the tibia is involved, amputation through the middle of the thigh. . . . The results of such treatment have been so bad, and dissemination of the growth to the lungs so constant, that surgeons are now doubting the desirability of such mutilating procedures, and trusting rather to the effects of local excision, where feasible, followed by treatment with radium, *x*-rays, or Coley's fluid."—(From Rose and Carless' *Surgery.*)

10. *Nonunion of fracture is caused by:* Ill health, want of approximation of the end of the bone, want of blood supply in the bone, defective innervation of the bone, disease of the bone, lack of rest, and immobility.

11. *Conditions that may simulate acute appendicitis:* Acute peritonitis, ovaritis, salpingitis, ovarian neuralgia, ruptured ectopic gestation, movable kidney with Dietl's crises, renal colic, nephrolithiasis, biliary colic, acute intestinal obstruction, cholecystitis, acute pancreatitis, gastric or duodenal ulcer, typhoid fever, colitis, enteritis.

12. In *convergent strabismus*, "there is deviation inward of the visual line of one eye. It is generally associated with hyperopia, with or without hyperopic astigmatism. It usually commences in early life, between the first and fourth years, when the child begins to use his accommodation for near objects, such as toys and pictures; rarely it is congenital. At first the squint may be noticed only at times (periodic), with near vision, or when there is any interference with the general health; but it is apt to become constant for both near and distant vision; occasionally it disappears.

Surgical treatment. Tenotomy of an internal rectus and advancement of an external rectus are employed either singly or in combination. *Tenotomy of internal rectus:* "The speculum is introduced and the eyeball drawn outward, if necessary, by an assistant. The conjunctiva over the lowest portion of the insertion of the muscle, together with the subconjunctival tissue aud Tenon's capsule, is seized with a pair of fixation forceps, raised and divided with scissors; the first cut divides the conjunctiva, the second Tenon's capsule. Keeping the fold raised with the forceps, a strabismus hook is introduced through the opening, passed beneath the tendon, and pushed upward until its point is seen through the conjunctiva at the upper border of the muscle. The hook is transferred to the left hand and raised so as to lift the tendon. The scissors are taken in the right hand and introduced, one branch between the tendon and conjunctiva, and the other between the tendon and sclera; the tendon is divided close to the sclera by two or more small cuts. The hook is reintroduced to make sure that no portion of the tendon has been left undivided. If the tendon has been completely divided, the hook can be advanced to the cornea without resistance; if not, the undivided fibers must be cut with scissors. The hook is again introduced and swept from behind forward, above, and below, to ascertain whether there are any uncut fibers of attachment to the sclera which, if found, must be severed. The conjunctival wound is closed with a single vertical suture."—(May's *Diseases of the Eye.*)

OBSTETRICS AND GYNECOLOGY.

1. *Signs and symptoms of threatened eclampsia:* Headache, nausea, and vomiting, epigastric pain, vertigo, ringing in the ears, flashes of light or darkness, double vision, blindness, deafness, mental disturbance, defective memory, somnolence; symptoms easily explained by the circulation of toxic blood through the nerve centers. These may be preceded by lassitude, and accompanied by constipation, or by diarrhea. Headache is perhaps the most significant and common warning symptom. In bad cases the urine is reduced in

quantity (almost suppressed), very dark in color, its albumin greatly increased, so that it becomes solid on boiling. Next comes the final catastrophe of convulsions.

The urinary findings in threatened eclampsia are variable; as a rule there will be found great diminution in the quantity excreted, diminution in the amount of urea, albumin is present in variable amounts, and there may be casts (hyaline, granular, etc.).

2. *Braxton Hicks' internal podalic version:* "The patient should be placed in the lithotomy position and be deeply anesthetized, to relax the parts and allow the whole hand to be pushed into the vagina. The external hand is placed over the breech, so as to depress it; while the presenting part is tilted away from the brim by the fingers inserted through the os. The fingers press against the front of the child and the flexion is lessened. When the head is out of the brim the external hand can be used to elevate it toward the fundus. As soon as a knee or foot comes within reach of the internal fingers, it should be caught and brought into the brim, the membrane being ruptured at the same time. If the os is fully dilated, delivery may be finished at once, as in an ordinary breech case; but if the os is only partially dilated, it must be left to nature, to allow of dilatation."—(Jardine's *Delayed and Complicated Labor.*)

3. *A funnel-shaped pelvis* has a contracted outlet, and is deeper than normal. At the outlet, the transverse diameter is always less than normal and often the anteroposterior diameter is also less than normal. The sacrum is narrow, situated far back, has lost its normal curve and is therefore longer; the lateral walls of the pelvis and the symphysis pubis are deeper than usual.

A pelvis may be considered "funnel-shaped" when the transverse diameter at the outlet is reduced from the normal of eleven centimeters to eight centimeters or less, and the anteroposterior diameter at the outlet is reduced to nine centimeters or less.

4. *Two causes of tonic contraction of the uterus:* (1) Anything obstructing the advance of the presenting part; (2) the premature and improper use of ergot.

5. *The findings in a threatened spontaneous rupture of the uterus during labor,* are: Evidence of some obstruction to the presenting part; the patient is restless and anxious, with rise of temperature and increased pulse rate; the pains are more frequent and stronger than usual, and one pain tends to pass into the succeeding pain without any interval; the lower part of the abdomen is unduly sensitive to pressure; the round ligaments become more tense; the uterus becomes retracted, and the retraction ring is more prominent and higher than usual.

6. PHLEGMASIA ALBA DOLENS is a form of puerperal sepsis in which there is a thrombosis of the iliac or femoral vein. Sometimes it occurs after a uterine phlebitis, in which clots are carried from the uterine sinuses to the hypogastric veins, where they cause obstruction to the blood flow in the crural veins. The trouble may also begin as a crural phlebitis. It is thus due either to cellulitis or to thrombosis. It usually appears about the third or fourth week of the puerperium. *Symptoms:* Irregular chilliness and malaise, pain in leg and abdomen, rigor and swelling of leg, fever, skin is white and tense, and the vein feels hard. *Treatment:* Rest in bed, support of the patient's strength, relief of the pain, and application of lead and opium wash to take down the inflammation.

7. Menstruation normally ceases at a variable time between the fortieth and fiftieth years. The symptoms of the menopause are referable to two stages: a stage of menstrual irregularity preceding the cessation of the menses, and a post-cessation stage of variable systemic disturbances. In normal or nearly normal cases the irregularities are not excessive; the systemic disturbances are slight. There is a period of unstable equilibrium. The woman may at times be unusually capricious and emotional; yet she passes through this physiological crisis with only a few minor disturbances. She may have the characteristic vasomotor flushes, perspiration, vertigo, somnolence, numbness, and faintness. The menstrual function ceases as it began, and other psychic disturbances are common in the abnormal cases, and may be exaggerated. The menstrual deviations vary in wide limits. The flow may gradually decrease and come at lengthening intervals until it altogether ceases; it may occur at short intervals or become continuous; it may become so excessive as almost to amount to dangerous hemorrhage; or life may be jeopardized by a slow, continuous drain. There is an increased tendency to malignant disease of the uterus and breasts during this period. The excessive fear of this may prey injuriously on the mind of the woman.—(From Dudley's *Gynecology.*)

8. *Diseases of the external organs of generation:* Vulvitis (simple and gonorrheal); erysipelas, abscess, varicose veins, hematoma, edema, gangrene, tumors, eczema, herpes, syphilis, tuberculosis, condylomata, elephantiasis, kraurosis, and congestion of the vulva; chancroids; urethral caruncle; inflammation and adhesions of clitoris; cysts of Bartholin's glands; inflammations, infections, tumors and cysts of the vagina; vaginismus.

9. *For backward displacements of uterus: Alexander's operation,* which consists of extraperitoneal shortening of the round ligament in the inguinal canal. The essentional points are aseptic and antiseptic precautions, to expose the aponeurosis of the external oblique, secure bleeding points, open the inguinal canal, isolate the round ligament and clear it of fat and cellular tissue, pull on the ligament till the uterus is far enough forward, and then cover the wound with a sterile pad while the opposite side is being treated similarly; both ligaments are then pulled tense, drawn across the symphysis, and stitched with catgut into the inguinal canal. Each stitch is passed through the skin and subcutaneous fat, then through the floor of the exposed canal, then through the round ligament, then through the opposite wall of the canal, and out through the skin. The ligament is stitched into the whole length of the canal, and the excess of ligament is cut off. The wound is then closed, the patient kept in bed for about three weeks, and in some cases a pessary is inserted for a month or six weeks. This operation is only available in the absence of adhesions, inflammations, prolapse, tumors, or pelvic diseases; that is, in uncomplicated cases of backward displacement.

10. *Positive signs of pregnancy:* (1) Hearing the fetal heart sound; (2) active movement of the fetus; (3) ballottement; (4) outlining the fetus in whole or part by palpation; and (5) the umbilical or funic souffle. *Doubtful signs of pregnancy:* (1) Progressive enlargement of the uterus; (2) Hegar's sign; (3) Braxton Hick's sign; (4) uterine murmur; (5) cessation of menstruation; (6) changes in the breasts; (7) discoloration of the vagina and cervix; (8) pigmentation and striæ; (9) morning sickness. *Subjective signs of pregnancy,* in the order of their appearance, are: Cessation of menstruation, morning sickness, increased frequency of urination, active fetal movements. *Objective signs of pregnancy,* in the order of their appearance, are: Softening of the cervix, changes in the mammary glands, discoloration of the vulva and vagina, pulsation in the vaginal vault, Hegar's sign, active fetal movements, ballottement, palpation of the fetus, intermittent uterine contractions, hearing the fetal heartbeat, rate of growth of the uterine tumor.

11. *Conditions which should be differentiated from chronic uterine inversion:* Uterine polypus or myoma, and prolapsed uterus.

12. Measurements of the diameters of the normal female pelvis:

	ANTERO-POSTERIOR.	OBLIQUE.	TRANSVERSE.
Brim	4 inches	4½ inches	5 inches
Mid-plane	4½ inches	4½ inches	4½ inches
Outlet	5 inches	4½ inches	4 inches

Between anterior spines ..... 10¼ inches
Between the highest points of the iliac crests 11 inches
Between trochanters ..... 12¼ inches

HYGIENE AND SANITATION.

1. "The mechanism of the tuberculin reaction, so far as understood, is as follows: The tuberculin acts as a local specific irritant upon the tuberculous foci, producing intense hyperemia and disintegration of the tuberculous mass. This phenomenon has been interpreted as an acceleration of a process going on more slowly under ordinary conditions, and is regarded as due to

the intensifying or stimulating action of the poisonous nucleoprotein, which is the essential ingredient of tuberculin. The disintegration is accompanied by the generation or liberation of toxic substances which enter into the general circulation and produce fever and other constitutional disturbances. The tuberculin reaction is not absolutely specific, but can be produced by various nucleoproteins, yeast nuclein, bacterial proteins, and other substances. Insusceptibility to the tuberculin reaction can be produced by repeated doses, a fact that has been taken advantage of by unscrupulous cattle dealers.

"When a small amount of tuberculin is injected into a healthy animal, there is no apparent constitutional disturbance; but when the same quantity is inoculated into an animal with tuberculous lesions, a remarkable selective action appears. There is marked congestion around the tuberculous area, accompanied by necrosis and sloughing off of the tuberculous tissue; fever and other constitutional symptoms also appear."—(Jordan's *Bacteriology.*)

"In cattle, tuberculosis may be present without any very apparent symptoms until an advanced stage is reached. Routine examination of herds by the tuberculin test has therefore become one of the necessary measures in public sanitation, in order that the milk of tuberculous cows may be excluded from consumption, and that such cows may be eliminated from herds (Bang's System). Mohler states that an accurate diagnosis is established in 97 per cent. of the cases. Stall the animal and take the temperature in the rectum every two hours from 6 A. M. until midnight. Make the injection then (subcutaneously). Begin to take the temperature at 6 A. M. and continue as on the preceding day. The dose is usually 0.25 c.c. of old tuberculin. A positive reaction consists in febrile and constitutional signs, with marked congestion around any focus of tuberculosis. The febrile reaction begins six to ten hours after injection, reaches its height in nine to fifteen hours, and declines to normal in eighteen to twenty-six hours. A rise of 2° F. or more above the maximum of the previous day should be regarded as a positive reaction. In a doubtful case, repeat in four to six weeks. (Normal rectal temperature, 100° to 102° F.; normal pulse, 45 to 55 beats per minute.)"—McKail's *Public Health Chemistry and Bacteriology.*)

2. The *Binet-Simon test* is employed to test the mentality of children and feebleminded persons.

3. *Essentials for the production and preservation of pure dairy milk:* Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day, to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° F., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer, it must be kept in a clean place, and at a temperature some degrees below 60° F."

4. "Air when heated becomes lighter and more bulky; when cooler it becomes heavier and less in bulk. Hot air tends to rise and cold air to fall; as a result currents are created, all of them setting from the colder surfaces to the warmer and back again, and so keeping up a more or less continuous circulation. The heated, lighter, more bulky air, seeking greater accommodation, tries to escape from the space in which it is contained. In a room it makes for the outlets, and if these are in the upper parts of the space the air makes its way through them. To take up the space vacated by the escaping air, new fresh air enters at the inlets, and ventilation or carrying through of air is brought about. The heat affecting the air in a room is obtained partly from the occupants of the room, partly from the heating and the illuminating apparatus. The cold that affects the air and leads to its contraction and increase in weight, and incidentally also to its circulation, is derived from windows, walls, and doors."—(Porter's *Hygiene and Public Health.*)

5. *Waste water from a kitchen sink in a farm house* may be collected in the kitchen and then poured into a remote part of the yard or some field, first using one site and then another, care being taken that the water has an opportunity to soak in; this method is not available when the ground is frozen. Or it may be emptied into a pit filled with stones, and covering the same with a layer of soil every day. This pit must be kept covered.

6. *To prevent the spread of disease by the housefly:* "Since flies breed only in filth, the first thing to do is to render it impossible for the fly to reach any of the accumulations unavoidable around habitations. This is done: (1) By destroying filth wherever found. (2) By rendering it distasteful or poisonous to flies or their larvæ by the use of lime, kerosene, oil of pennyroyal or cresol. (3) By excluding light from the receptacle or by screens which the flies cannot pass. The most difficult part of an anti-fly campaign is teaching the people to dispose of their garbage properly. No amount of screening, trapping, or poisoning will make up for careless disposal of filth and waste. All such materials must be promptly destroyed or buried. If a really good suspension of milk of lime (calcium hydrate) is mixed with the garbage or refuse, the eggs and pupæ or maggots of the fly are at once destroyed, but it must be made to come in contact with the eggs or maggots to do any good. Kerosene oil is more effective, but more expensive. Where crude oil of low grade distillates are procurable, the expense is much lessened. Oil of pennyroyal, in the proportion of 1 ounce to 1 quart of kerosene, is very distasteful to the adult fly, as well as fatal to the young, and a small quantity sprinkled around the garbage can is sufficient to keep away all flies. The greatest drawback is the expense. Cresol is not expensive, and may be used freely in 2 per cent. emulsion. Privy vaults, manure bins, and similar places must be made and kept perfectly dark. Screens must be made automatically self-closing, otherwise they are sure to be left open and to fail of their object."—(Gardner and Simond's *Practical Sanitation.*) Fly poisons, flytraps and fly papers may also be used.

7. *To minimize the presence of diphtheria in a hospital for children:* The isolation of all cases and carriers; all who show cultures containing organisms which morphologically resemble the diphtheria bacillus should be isolated, whether the strains are virulent or not. Cultures should be taken from both nose and throat. Convalescents should not be released from quarantine until at least two cultures taken from both nose and throat are negative. All persons within the institution, both inmates and administrative force, should then be tested to the Schick reaction. Those reacting positively should be given a prophylactic dose of diphtheria antitoxin (1000 units). The immunizing dose may be repeated every ten days or two weeks as long as the danger persists. Those who react positively to the Schick test may be immunized with a toxin-antitoxin mixture. Each cubic centimeter of the mixture contains from 80 to 90 per cent. of the L+ dose of toxin, and one unit of antitoxin. One cubic centimeter of this mixture is injected subcutaneously and repeated three times at intervals of six or eight days. The results as determined by the Schick reaction produce an immunity in about 25 to 30 per cent. of injected individuals within four weeks; the remainder react slowly, in four months to two years. In addition to the above-mentioned measures care must be taken that the infection is not spread by the use of cups, spoons, dishes, toys, towels, handkerchiefs, and other articles used in common. The infected discharges should be rendered harmless at the bedside, and all objects that come in contact with the discharges from patients or carriers

should be disinfected. A general fumigation with formaldehyde may be practised, but in a well-ordered institution special cleanliness of floors, walls, and other surfaces will suffice.—(From Rosenau's *Preventive Medicine and Hygiene.*)

8. By the *mechanical filtration of water* is meant the *rapid* filtration of the water through sand, after a chemical precipitant (such as aluminium sulphate) has been added to the water. It is called *rapid* filtration in contradistinction to the *slow* filtration method or English method.

9. *Antityphoid inoculation* has been thoroughly tested, especially in the American army, and is of the greatest value. It is useful for those who have to live in infected localities, and for those who attend typhoid patients. By this means typhoid can be reduced to a minimum. Leishman reports: "In 5,473 soldiers vaccinated against the disease, 21 took it and 2 died; in 6,610 soldiers practically under the same conditions, who were not vaccinated, there were 187 cases and 26 deaths; that is, among the vaccinated soldiers there were 3.8 cases per thousand and among the unvaccinated 28.3 per thousand."

Method of immunizing against typhoid: The vaccine is administered subcutaneously over the insertion of the deltoid muscle; the site of the injection should have been previously painted with tincture of iodine; intramuscular injections are to be avoided; after the injection has been given the iodine is wiped off with a pledget of cotton and alcohol; no dressing is needed; the syringe and needle must be sterile; three such injections are given at intervals of about ten days; the dosage for adults (of 150 pounds weight) is 500,000,000 bacilli for the first injection, and 1,000,000,000 bacilli for the second and third injections; each of these amounts is contained in about 15 minims, or 1 c.c.; for a child weighing 50 pounds the dosage should be about one-third of the above, or a little more, for children take the injections very well.

10. "*Open-air schools* for children who are or are suspected to be tuberculous are becoming more and more common. In these, except in the worst of weathers, most of the teaching is given out-of-doors, and the timetable is so arranged as to allow of the pupils having certain periods of rest."—(Porter's *Hygiene and Public Health.*)

11. *Disposal of human excrement in a military camp:* "For permanent garrisons, sewerage systems with water carriage are possible and desirable. For temporary encampment, burial or burning are the most satisfactory methods. Various types of incinerators for this purpose have been designed, . . . but they are clumsy, heavy, and unless carefully tended prone to become nuisances. The best method is to burn the material with crude oil, which is simply poured into the pit and lighted. In firing, some straw or other light combustible stuff should first be thrown in."—(Rosenau's *Preventive Medicine and Hygiene.*)

12. *Principles to be observed in the construction of a modern hospital for contagious diseases:* "The site must be carefully chosen, must be of sufficient size, and readily supplied with water and easily drained. It should be isolated from neighboring buildings, but should not be more than 4 or 5 miles from the district it is to serve. The size of the site should be sufficient to provide a space of 1 acre for every twenty to thirty patients. No part of the building in which patients are to be accommodated should be nearer to the boundary wall than 40 feet. The wards are most conveniently constructed in blocks of two, one for male and the other for female patients suffering from one specific disease. In some places all the wards are on one floor, but if a large number of beds are required, in order to economize space, the blocks may be two stories high; but in any case they should be separated by a space of at least 40 feet. Preferably the wards should be rectangular in shape, and should not contain more than twelve or fourteen beds, allowing 150 or 200 square feet of floor space and at least 12 feet of wall space per bed, and 2,000 cubic feet of air space per patient. There should be windows on both sides, the total glass area providing at least 1 square foot to every 70 cubic feet of ward space. In height the wards should be from 12 to 15 feet. The walls should be smooth and impervious, so that they may be easily washed down. Since windows are numerous, ventilation should be easily carried out, but additional air inlets and outlets may be provided. . . . For artificial lighting electricity is best and most convenient. Water closet, bath and lavatory accommodations should be provided in connection with each ward, but should be entered through a lobby with a window to the open air, and not directly from the wards. In each ward block there should be a room for the use of nurses from which a view of the wards can be obtained. This is usually spoken of as the duty room. Occasionally a suite of three rooms is placed near the entrance to the block, all communicating one with the other, and used in connection with the discharge of patients. Of these rooms, one is that in which a patient about to be discharged leaves the clothing he has worn while in the ward, another contains a bath of water to which a certain amount of disinfectant is generally added, and the third a dressing-room in which he puts on fresh disinfected clothing preparatory to leaving the hospital. . . . Apart from the ward blocks, it is necessary to provide: an administration block; small wards for the isolation of doubtful cases; a laundry; a mortuary; a boiler house; a building to contain disinfecting apparatus; and so on. Of these, the administration block is the only one to which reference need be made. In it are placed the various offices in which the business of the hospital is transacted, as well as apartments for the medical and other officers. In the case of smaller hospitals it usually contains the sleeping quarters for the nurses and others, and commonly also the hospital kitchen. In larger hospitals a separate nurses' home is not uncommonly provided. The administration block need not be 40 feet from the boundary wall, but should be at least this distance from the ward blocks."—(Porter's *Hygiene and Public Health.*)

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MOTILITY IN THE ANIMAL ORGANISM.

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So far as I am aware, no definite and satisfactory theory has been proposed to account for motility in the animal organism. It has been considered to be in some way the result of oxidation of protoplasm with the attending liberation of heat and various waste products including CO_2 and certain nitrogenous compounds, but a clear conception of how this chemical process results in physical motion seems lacking. There has occurred to me, however, a possible explanation of this phenomenon of motility—an explanation which certainly has the merit of simplicity whether or not it may ultimately prove satisfactory.

In the first place, we seem to have associated the idea of *contraction* with motility, and this idea I believe has led us astray. Of course, contraction often apparently results from the action of motile mechanisms, but, not always; and when it does result, it is a secondary effect. The oxidation of the carbohydrate group in muscular action is often likened to an explosion; but our reason, dominated by the idea that contraction is the fundamental characteristic of animal motility—"contractility" being considered an essential characteristic of living matter—has recoiled from the impossible task of explaining how an explosion can result directly in contraction and, consequently, we have never applied to this phenomenon of motility the simple and well-understood physical principle according to which in mechanics explosive energy is readily converted into motion; which is, of course, the principle of *expansion*. Hence we have never regarded the CO_2 liberated in muscular action, for instance, as the actual source of the energy manifested, as we know it to be in the gas engine; but merely as a waste product to be eliminated as rapidly as possible, lest it accumulate in the muscle and cause "fatigue."

This, then, is fundamental to my hypothesis—that all forms of motility in animal organisms are essentially similar and all are due primarily to expansion caused by oxidation of the carbohydrate group in the protein molecule, resulting in the formation of CO_2 and H_2O with the liberation of heat—just as in the automobile cylinder; and, in addition, the explosion tears apart the protein molecule to a certain extent, splitting off one or more nitrogenous groups. The CO_2 then exercises its expansive force, which is transformed into motion useful to the organism by methods varying in the different types of motion; and is then eliminated as a waste product just as it is from the automobile cylinder. Only, of course, in the animal organism the explosion, the expansive force of the CO_2, and the elimination of the waste products—comparable in part to smoke resulting from imperfect oxidation—are all modified and slowed down by the fact that they occur in a liquid medium.

Now let us apply this principle to some of the types of motion in animals. We should naturally expect to find motility reduced to its simple terms in the most primitive type of animal organism—the common ameba; and I believe we shall not be disappointed in this expectation. An ameba is a single cell carrying on the struggle for existence on the simplest plane. It is just a globule of living matter with a layer of dense protoplasm which is in turn surrounded by a layer of less dense protoplasm. Just what the structure of this protoplasm is, we do not know. Under the microscope various structural details and currents of more or less dense fluid have been detected; and chemical analysis shows the presence of C, H, O, N, etc., atoms in great number, the largest chemical units to survive the analytical process being the protein molecule and the carbohydrates and fats. But whether the cell in life constitutes one huge organic molecule with an enormous number of atoms, the cell nucleus representing an extremely large and complicated organic nucleus in the chemical sense, with an immense number of side chains—protein, carbohydrate, fatty, etc.; or whether the cell is merely a morphological entity made up of many separate molecules dissolved or suspended in water and held together only by viscosity—we do not know. But we do know that during life the cell constantly gives off CO_2 and various nitrogenous compounds such as urea, together with heat; and that its life cannot be long maintained unless it is supplied with oxygen and with "food" in the shape of proteins, carbohydrates, etc. In other words, living protoplasm constantly undergoes a process of slow combustion and the oxygen used up is supposed to be combined with the carbohydrate group of the protein molecule; so that when the carbohydrate side-chain is split off and oxidized to CO_2 and H_2O, some group or groups of the protein molecule are broken loose in the process and eliminated wholly or in part as urea. Life, then, is essentially a process of the building up and breaking down by oxidation of these complex organic molecules; and every function of living matter, including motility, is probably the result of an intensification or a modification of this fundamental process. And if we are so impressed by the wonderful manifestations of life that we are inclined to doubt whether they can be

accounted for in this way, we need only consider the complexities of the simpler organic molecules, especially in the light of stereochemistry; and then consider the enormous number of atoms in the protein molecule and the likelihood that a number of protein molecules may combine together, as well as with the carbohydrate and fatty molecules; and lastly consider the possibilities in case the entire cell with its nucleus constitutes a single molecule! For example, some of the simpler organic compounds have the same molecular formula but differ from each other in certain respects, and we have been able to account for this difference only by assuming that the relations of the atoms in space differ as a righthand glove differs from a left. Might not bilateral symmetry in the animal organism be accounted for perhaps by assuming that the arrangement of atoms in the molecules of the cells, or at least of the nuclei, of the right and left sides of the body of the organism bears a similar relation? Of course I am not here attempting to explain the mystery of life, but simply drawing perhaps one step nearer to it. And one of its most remarkable characteristics is that the nearer we get to it the more mysterious and unfathomable it appears.

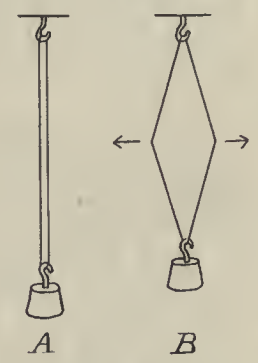
Let us, then, keeping these principles in mind, study the action of an ameba suspended in a drop of water of medium temperature. Even if the ameba is apparently motionless, we must assume that oxidation is taking place with the breaking down of the living protoplasm and the formation of CO_2, etc., and this oxidation is no doubt more rapid in the outer and less dense protoplasmic layer because here the combustible compounds are nearer the supply of oxygen in the surrounding water; and perhaps it is partly the CO_2 gas produced by the combustion and dissolved in this outer layer while gradually being diffused to the surrounding water, that causes the outer layer of protoplasm to be less dense. In the inner, denser layer of protoplasm perhaps the building-up process is proceeding more rapidly than the breaking down or oxidation, this process consisting partly in the synthesis of the carbohydrate molecule with some combination or modification of protein molecules and taking place probably under the influence of the nucleus. The entire ameba might be compared to a candle flame, with the wick in the center furnishing the fuel which in the dark area surrounding the wick is volatilized and partly broken up (or digested and assimilated) and in the light outer area is oxidized. Just so, perhaps, the proteins, carbohydrates, etc., taken in as food are split up and resynthesized in the dense inner layer of protoplasm by the action of the nucleus which may have the properties of, or may produce, one or more enzymes, and thus acts like the candle wick in furnishing the fuel.

Thus the life process goes on in the ameba, but the oxidation is comparatively slow while the organism is at rest, and the CO_2 produced diffuses into the surrounding water as rapidly as it is formed. But if a positive stimulus be applied to the ameba from a given direction—such as food substances dissolved or suspended in the water—oxidation will become more rapid in the protoplasm on the side stimulated, CO_2 will be formed faster than it can be diffused and will cause the protoplasm on that side to expand and bulge out in the form of a "pseudopod." If the stimulation keeps up this process will continue, the pseudopod will enlarge, and the rest of the ameba will be partly drawn into the advancing pseudopod by the action of viscosity, and partly will flow into it in currents of fuel drawn onward by the draught of combustion, like oil in a wick. On the other hand, if the stimulus is a negative one such as an advancing current of cooler water, the normal oxidation of the protoplasm on the side negatively stimulated will be reduced, less CO_2 will be formed on that side, and it will accordingly contract and the balance of tension being upset, the other side will expand and form a pseudopod and the ameba will flow away from the source of stimulation. For we must remember that oxidation with formation of CO_2 is constantly taking place, especially in the outer layer of protoplasm, and this produces a centrifugal expansive force tending to disrupt the protoplasmic sphere in all directions radiating from the center. But because the CO_2 can gradually diffuse through the protoplasm into the surrounding water and can partly occupy the interstices of the protoplasm, the pressure never becomes great enough to overcome the viscidity and disrupt the organism. And because the oxidation and therefore the resulting expansive force of the CO_2 would be equal in every direction, no one part of the surface would bulge out into a pseudopod. But if, due to a negative stimulus, the oxidation on one side be greatly reduced or suspended, the expansive force on that side would be lost and that side would shrink in allowing the other side to bulge out into a pseudopod. And, of course, once a pseudopod is formed, the tendency would be to enlarge it, as a greater surface is presented for oxidation; also, the negative stimulus, if it continued to act, would continue to reduce oxidation and hence pressure on the stimulated side, which would continue to shrink, allowing the other side to continue expanding and forming pseudopodia. Thus a negative stimulus would repel the ameba just as definitely as a positive one would attract it, both acting directly on the protoplasm; a stimulus that increases oxidation, that speeds up the vital processes, being a positive stimulus; while one that decreases oxidation and slows down the vital processes is negative. Thus I believe we can explain ameboid motion, which occurs not only in the common ameba and many related forms, but also in the white blood corpuscles in higher animals. This is the simplest type of animal motility because no special mechanism exists to confine or regulate the pressure resulting from the expanding CO_2, or to apply the force generated or change its direction.

The next higher type of motility is probably represented in the action of the *flagellum*, the locomotive organ of the flagellates. In these organisms the cell is similar to that of the ameba but surrounded by a cuticular membrane and at the anterior end, as a rule, there projects a thin, long whip-like protoplasmic process called a *flagellum*, also surrounded by a membrane. This is the motile organ and movement is confined to it excepting that the less dense outer layer of protoplasm of the cell body probably circulates through it. Now if a positive stimulus affects one side of the flagellum, it causes increased metabolism in the form of

oxidation along this side of the protoplasm just under the cuticle with resultant liberation of CO_2 which expands causing this side of the flagellum to stretch and get longer than the other side; and the flagellum accordingly makes a rapid sweeping movement toward the other side. Then the CO_2 partly escapes through the stretched membrane of the stimulated side and partly diffuses through the entire protoplasm of the flagellum equalizing the pressure, and the flagellum returns to its original shape. Meanwhile, the currents in the outer protoplasm of the cell carry away the residue of CO_2 and other waste products, and if the stimulation persists the process is repeated and the organism is headed toward the source of stimulation. Then the flagellum, having a slightly spiral movement, causes the cell to rotate around its long axis, passing through the flagellum, the flagellum rotating with it, and thus successive sides of the flagellum are subjected to the stimulus and a continuous series of lashing movements is set up which carries the organism toward the source of stimulation. It is interesting to note that in Mastigamœba we have an intermediate form between the ameba and the flagellates, a flagellum being present as well as ameboid movement by means of pseudopodia. The same general principle applies to the ciliates, in which the motile mechanism consists of a number of cilia which are like small flagella with a simple sweeping motion like oars. Probably increased oxidation with liberation of CO_2 and expansion along one side of the cilium causes it to sweep in the opposite direction and propel the organism. But there are so many cilia around the cell as a rule and the cell body itself in the ciliates is so complicated and shows such specialization that the problem of orientation is much more complex than in the ameba and the flagellates, and possibly the coordination of ciliary movement is controlled through the cell body and not directly by the action of the stimulus on the individual cilia. Some cilia may be stiffened in the center by axial rods and some observers have detected muscle fibrils and perhaps even nerve fibers in the cell body, and possibly some cilia are moved by muscle fibrils attached to the axial rods. But with both flagella and cilia the movement is much more rapid and violent than in the pseudopodia of ameba because the oxidation takes place along a more extended surface and the resulting explosion and expansion are more sudden, and the surrounding membrane produces a momentary compression of the CO_2. Furthermore, the flagellum and the cilium constitute a mechanism for changing the direction of the force generated—the expansion along one side of the flagellum or cilium in a direction parallel to its axis is changed into a movement of the cilium in a direction at right-angles to its axis, due to the membrane stretching on the expanding side and holding fast on the other. Compare this mechanism with the motor organ of plants, where the movements are due to an increase or a decrease of water pressure in the cells along one side of a flexible axial rod. These movements can be very rapid too, and the only difference is that the plant movement occurs in a gaseous medium (the atmosphere) and the differential pressure along the two sides is due to water, whereas in the cilium and flagellum the movement takes place in an aqueous medium and the differential pressure is due to a gas —CO_2. Compare also the warping of a beam or stick exposed to moisture on one side. We find ciliary action also in ciliated epithelium, where the cells are stationary and the cilia cause movement in the surrounding medium—*e.g.* in the respiratory passages of man where they carry up phlegm and foreign particles of dust, etc., to the throat. Here I believe the ciliary motion is dependent upon the same principle, whatever may be the influence regulating the direction and rhythm.

The last and most important type of animal motility is that occurring in connection with the muscle fiber, and it is also the most complicated in its specializations. Now, we have so closely associated the idea of *contraction* with muscular action that we have come to consider contraction as the fundamental process in all animal motility, and have even made the terms *motility* and *contractility* almost interchangeable in this sense. But even in muscular action, contraction is a more or less final result and is caused primarily by *expansion.* In fact, probably no actual contraction takes place in the size of the muscle excepting in one direction, and this is merely the result of an expansion in the opposite direction. The stimulated



muscle broadens and shortens but it does not really *contract* at all, and, as a matter of fact, probably actually increases in bulk. A simple illustration will suffice to show the fundamental principle of muscular action. Take a loop of string and hang one end on a hook and suspend a weight from the other end as in the accompanying illustration. Then pull apart the sides of the loop in the direction of the arrows as in Fig. B. The weight will be raised by the shortening of the loop.

If, instead of a loop of string, we take a long, narrow fusiform bag made of some material in the meshes of which the vertical fibers which carry the weight are inextensible while the horizontal fibers running around the bag are either elastic or so loosely woven as to be extensible; place a small quantity of an explosive mixture in the bag and ignite it; the bag will expand laterally, but, not being able to expand vertically on account of the inextensible vertical fibers in its walls, the horizontal fibers will be blown out so far that they will pull the vertical ones with them and shorten the bag and lift the weight. Then as the expanding gases slowly escape through the meshes, the bag will slowly collapse and extend again. This, I believe, is the essential principle of muscular action and a skeletal muscle is simply an extremely dense

network of fibers longitudinally inextensible which run continuously through the sarcolemma sheaths of the muscle cells and are gathered together at the ends into the tendons; with each sarcolemma sheath filled with a protoplasmic substance—the muscle fiber—so modified and so disposed as to be capable of rapid and continued oxidation resulting in the liberation of CO_2, which expands each sarcolemma sheath at right-angles to its long axis and correspondingly contracts it in the direction of its long axis owing to its inextensibility in this direction. And the transverse expansion and longitudinal contraction of the entire muscle is the sum of the transverse expansions and longitudinal contractions of all the sarcolemma sheaths. The expansion being the primary and fundamental manifestation of energy and the contraction a secondary mechanical effect. In other words, instead of one big bag widening and shortening we have in the muscle a lot of little bags widening and shortening. Then the CO_2 diffuses through the walls of the sarcolemma sheaths, to be carried away by the blood, allowing them to collapse again, and the muscle is said to relax. In involuntary muscle and cardiac muscle the sarcolemma is not so strongly developed, but there is a continuous sheet of fibrous membrane holding the muscle fibers in its meshes; and, in fact, the sarcolemma of voluntary muscle is simply a dense thickening of this membranous sheet around each fiber the better to confine the CO_2 and get more power out of it.

Let us now consider the evolution of the muscle fiber and try to apply this hypothesis to the varying structure and properties of the different types. Some observers have thought they could recognize primitive muscle fibrils even in some of the ciliates, as *Paramecium*, where they appear to run longitudinally through the cell beneath the cuticular membrane and are supposed to cause the entire cell to shorten. And in *Steutor* and in the stalk of *Vorticella* protoplasmic differentiations have been detected that resemble muscular fibrils. These fibrils seem to constitute the ultimate "contractile" elements of all cells which in part or wholly show muscular differentiation. They appear to be long threads of protoplasm, probably of an especially combustible nature, enclosed in a delicate membrane which is attached to the cell wall at either end. On stimulation rapid oxidation would occur liberating CO_2 which would expand the membrane transversely and shorten it longitudinally, thus drawing together the parts to which its ends are attached. Thus we have a mechanism which is an improvement on the flagellum and cilium, for the expanding CO_2 is enclosed on all sides and continues to exert its expansive force for a longer time. It cannot escape from the membrane immediately because the water and viscid protoplasm clog the pores. And the water and other contents of the membrane being practically incompressible, and its solvent power for CO_2 limited especially at the higher temperature resulting from the oxidation, the CO_2 can exert considerable force for an appreciable interval of time. Probably in the flagellum, cilium, and muscle fibril the protoplasm is of an especially combustible and explosive nature, perhaps because the oxygen is stored up in a more available form than in the slow moving ameba. But, generally speaking, more oxygen seems to be used up to form CO_2 in muscular contraction than exists in combination in the muscle protoplasm. The explosive protein molecule with the carbohydrate side-chain is not like the molecule of nitroglycerin, for instance, where there is more than enough oxygen to satisfy the avidity of the C atoms. In continued muscular action it would appear that some of the required oxygen must be furnished from outside the fibril. Therefore, we would have CO_2 and other waste products diffusing out of the fibril and O and perhaps new fuel substances diffusing in. It is well to get as clear an idea of the primitive fibril as we can, for it is the motile unit of all muscle cells. To follow the evolution of the muscle cell, then, we find in *Hydra* that many of the ectoderm cells are contractile, with a portion of the cell more clearly set apart to perform the "contractile" function than in any of the protozoa. Well defined muscle fibrils are found in the jelly-fishes, as *Aurelia*, and also cells partly modified into a *striated* contractile portion. In the worms we find plain muscle fiber well differentiated, and so on up to the vertebrates and man, where we find three types of muscle fiber—the smooth or involuntary, the voluntary, and the cardiac. Let us now take these up one by one and in the light of this hyphothesis try to explain and correlate the peculiar structure and action of each.

1. *Smooth Muscle.*—The individual cells or muscle fibers are the most primitive of the three types, being fusiform in shape and from 0.05 to 0.15 mm. long by 0.005 mm. in diameter, thus varying from ten to thirty times as long as they are wide. This elongation enables the muscle fiber to shorten to a greater extent on "contraction," as a simple calculation will show that the amount of shortening possible bears a fixed relation to the length and the greatest shortening theoretically possible—when the cell expands to form a sphere—is slightly less than one-third of the length of the fiber when fully relaxed. There is an elongated nucleus in the center of the cell and the protoplasm is almost entirely differentiated into primitive fibrils running the entire length of the cell, these primitive fibrils being essentially similar in structure and function to those occurring singly or in groups in the partly differentiated cells of certain protozoa and other lower organisms. These fibrils are surrounded by the remaining undifferentiated protoplasm of the cell, called sarcoplasm, which is probably more or less continuous from cell to cell through the interstices of the white fibrous membrane which passes as a delicate sheath around each cell and forms in fact a continuous sheet through the muscle substance, serving to transmit the force of the contractions and supporting the nerves and blood-vessels. Thus the essential distinction between the cell with one or a few fibrils and the muscle fiber with its protoplasm almost entirely differentiated into fibrils consists (*a*) in the fact that more power is generated by the increased number of fibrils; (*b*) that the cell being filled with fibrils must expand and shorten as a whole when they expand and shorten; (*c*) that the CO_2 after diffusing through the membranes surrounding the individual fibrils is accumulated in the cell as a whole and, confined for a time by the cell

membrane and fibrous sheath, continues to expand the cell and do work, thus giving double expansion and prolonging the contraction, and (*d*) there being many of these muscle fibers collected together in a band of smooth-muscle tissue, the action of the single cell is multiplied many times and the effect in the form of a contraction is cumulative, the traction being transmitted by the inextensible white fibrous tissue in the meshes of which the muscle cells are enclosed. Where a layer of smooth muscle surrounds a hollow space, as the intestine, in contracting both the widening and the shortening of the individual muscle fibers, and of the muscle layer as a whole, are effective in reducing the size of the cavity—the shortening by lessening the circumference and the thickening by reducing the diameter directly. This is especially the case in a location like the pyloric opening of the stomach and is of great importance in the contracted postpartum uterus where the thickening of the muscle obliterates the cavity and prevents hemorrhage. Furthermore, in all muscles voluntary, involuntary, and cardiac, this action promotes the circulation of blood and lymph by squeezing the fluids out of the tissues. In voluntary muscle, an important instance of this thickening being utilized directly occurs in the sphincter ani where the almost continuous contraction makes economy of effort essential; and this action is of great importance in the heart also. Now, while the smooth muscle fiber is at rest, no doubt slow spontaneous combustion is going on in the individual fibrils and this produces enough CO_2 to keep the fibrils and the entire cell on a slight tension and gives the muscle its *tone*, and also generates heat, which goes to maintain the body temperature of the organism. But the CO_2 probably diffuses as rapidly as formed and does not accumulate sufficiently to expand the fibrils and cause the muscle to contract unless the muscle is stimulated; in which case it is liberated so rapidly that it accumulates and brings about a contraction. Then, after the stimulation has ceased, it takes some time for the accumulated CO_2 to escape and allow the muscle to relax. Probably, also, where there are so many fibrils packed together in the cell, and so many muscle fibers collected in the muscle, the heat generated is much greater than in a single contracting fibril, and causes more rapid combustion as well as increasing the expansive force of the liberated CO_2 and lessening its solubility. After reaching the outer wall of the cell, the nerve impulse is probably conducted to the individual fibrils through the sarcoplasm; and also from cell to cell, the sarcoplasm being probably continuous. This would account for the conductivity of muscle, a contraction starting in one part passing in the form of a wave in all directions; probably the heat generated by a contracting part spreading also to surrounding parts and increasing the combustible property of the muscle substance.

2. *Voluntary Muscle.*—This is the most complicated motile mechanism found in the animal organism, but it is only a modification of smooth muscle. The voluntary muscle fiber is much larger than the smooth fiber, being in some cases as much as 12 cm. in length and varying from 0.01 to 0.1 mm. in diameter. Thus it may be over 1,200 times as long as it is broad and accordingly has greater possibilities of expanding and shortening, being practically like the loop of string in the illustration mentioned above. This greater size is due to the fact that the voluntary fiber represents a number of muscle cells fused together into a syncytium with their nuclei lying along the outer wall of the cell, which is a very convenient location for them if their function is to select food substances from the blood and synthesize them into the general protoplasm of the cell and the highly oxidizable contents of the fibrils. The latter do not as a rule lie separate in the cell protoplasm or sarcoplasm as they probably do in the smooth muscle fiber, but are gathered together in bundles running the entire length of the muscle fiber and the sarcoplasm fills the spaces between the bundles and around the outer portion of the cell, possibly each bundle of fibrils in the voluntary muscle fiber being homologous with a single smooth muscle fiber. In the voluntary muscle fiber the white connective-tissue forming the sheath of the cell is much more dense than in smooth muscle and the thickened sheath is called the *sarcolemma;* but the inextensible white fibers running longitudinally in the sarcolemma sheaths are probably continuous from sheath to sheath throughout the length of the muscle and are attached to the bone at the origin of the muscle and collected into the tendon at the insertion; and thus the power of contraction is transmitted through them, not only in their tendinous portions but throughout the belly of the muscle as well. The fibers running around the sarcolemma in the other direction must be either elastic or so loosely woven as to be extensible, perhaps running in a diagonal direction, thus allowing the sheath to be distended transversely but not longitudinally. Now the individual fibrils in voluntary muscle are not homogeneous in their structure as is the smooth muscle fiber, but show alternate bands of light and dark substance and thus present a striped or *striated* appearance; and since the fibrils all lie parallel to one another in the bundles, and the light and dark bands lie at the same levels in all the fibrils, this striped appearance is imparted to the muscle fiber as a whole and hence the name of *striated muscle.* Furthermore, each light colored band is crossed transversely in the center by a delicate dark line—the membrane of Krause—and according to some observers there is also a light line across the middle of the dark band, known as Hensen's line; but whether this latter also represents a membrane or is an artifact is uncertain. We do not know enough about the contents of these light and dark bands to enable us to comprehend their significance directly, but a comparison of the functional characteristics of striped and unstriped muscle may perhaps give us a clue as to their meaning. Perhaps the most distinctive property of striped muscle is its ability to *contract* and *relax* rapidly. Now the rapid contraction might be accounted for in a number of ways, but the power of rapid relaxation may possibly, I think, be due to the structure which gives it its striped appearance. As we saw in the case of the primitive fibril in lower forms and in smooth muscle also, the contents of the fibril is there homogeneous; this means that the large protoplasmic molecules, partly per-

haps undifferentiated, and partly in the specially combustible form of fuel, are distributed evenly throughout the watery contents of the fibril and must seriously impede the escape of the molecules of CO_2 through the pores of the fibrillar membrane. Now, if we assume the lines of Krause and Hensen to indicate the presence of delicate elastic membranes stretched like partitions across the fibril, dividing it into compartments; and each compartment to contain a layer of dense, concentrated fuel forming the dark portion with a layer next to it of thin, watery plotoplasm; then the CO_2 liberated by oxidation of the combustible fuel could escape through the fibrillar membrane in the light area without having the large fuel molecules clogging up the pores and impeding it; and the partitions would keep the contents of the compartments from getting all churned up together when the fibril widens and shortens on contraction, etc. If this were the case, it might account for the discrepancies of observations regarding Hensen's line; for if the fuel were packed densely in the dark area, it would obscure the membrane whereas if the muscle were fatigued and the fuel supply attenuated the membrane would be more distinct. This arrangement would also facilitate the escape of other waste products from the fibril as well as the entrance of oxygen and new fuel supplies, and might be of great importance in the escape of CO_2 and the interchange of food and waste products from the inner fibrils in a dense fibrillar bundle where perhaps substances passing to or from the interior fibrils might have to pass through all the successive layers of fibrils surrounding them. This might be especially the case with the CO_2 liberated during a contraction, for the distended fibrils in the bundle would probably obliterate any space that might exist between them at rest, and the CO_2 from the inside fibrils could escape only by diffusing through the fibrils of each successive outer layer, and would thus exert *multiple expansion.* With these light bands in the fibrils all on the same level across the fibrillar bundle, and containing only a thin, watery solution, a path of escape would be presented right across the bundle. This at least suggests a possible interpretation of the light and dark bands of striped muscle. There are other less marked characteristics of voluntary muscle which can perhaps be explained by the stimulating mechanism, the arrangement of the fibrils in bundles, and the dense sarcolemma sheath; possibly, also, the combustible molecules may be more explosive. Now let us consider the *properties* of voluntary muscle. In the first place, it has a constant *tone* due not alone, as perhaps in smooth muscle, to spontaneous oxidation but also to constant slight innervation caused probably as a reflex from sensory impressions from the semicircular canals and elsewhere. But after the death of the organism the spontaneous oxidation in the muscles probably causes the contractions of *rigor mortis,* as there is no circulation to remove the CO_2 and it gradually accumulates until the heat generated has completed the oxidation of all the more unstable combustible material, after which the CO_2 gradually leaks out and the muscles relax. Now the nerve stimulus acting on the voluntary muscle fiber is probably more powerful than in the case of smooth muscle, since after the axis-cylinder of the nerve has penetrated the sarcolemma it ends in a special organ called the *end-plate* which may act like a cap to set off the explosion, which is probably conducted through the sarcoplasm to the fibrils. This is perhaps why the contraction is so rapid in voluntary muscle as compared with involuntary or smooth muscle, the former being like an instantaneous explosion set off by a cap, the latter like a slow explosion set off by a fuse—a single contraction in voluntary muscle lasting less than 1/10 sec. Now if stimulation is repeated at moderate intervals, each succeeding contraction up to about the tenth is more extensive than the preceding, constituting the phenomenon of "staircase contraction." This peculiarity of striped muscle might perhaps be explained by assuming that the first stimulus reaches only the fibrils in the outermost layer of the fibrillar bundles with sufficient force to cause a contraction; then after the outside fibrils have contracted and raised the temperature of the next inside layer, its fibrils become more susceptible to stimulation on account of the heat increasing the instability of the explosive molecules so that the next stimulus is able to explode them; and so on with each successive layer of fibrils and each successive stimulus until all the fibrils are expanding on each stimulation and the muscle reaches its maximum contraction. And, reversely, as the supply of combustible fuel becomes exhausted those fibrils in the middle of the bundles cease to contract first under the power of the stimulus which diminishes as it penetrates the bundle, and so on until even those fibrils on the outside of the bundles and subject to the full force of the stimulus fail to react. Thus after reaching a maximum height of contraction from repeated stimulation, the extent of the contractions gradually diminishes until the muscle ceases to respond to stimulation; this exhaustion probably being due more to lack of oxygen than to lack of fuel. Now after contraction has been repeated at short intervals, the muscle ceases to relax fully, due no doubt to the CO_2 being unable to escape at once from the inner fibrils in the bundles, and exerting its effect of multiple expansion as noted above. And if the stimuli are repeated at short intervals the CO_2 is produced so much more rapidly than it can escape that the muscle goes into a summated or *tetanic* contraction; following which, even after cessation of the stimulus, the muscle continues in a state of contraction, called *physiological contracture,* for some time; perhaps the heat generated by so many rapidly succeeding explosions causes combustion with liberation of CO_2 to continue for some time after stimulation has ceased, or perhaps the great pressure exerted by the CO_2, especially at the high temperature, may compress the alternate layers of white fibers in the sarcolemma and tend to close the interstices, thus making it difficult for the gas to escape until it cools off and the pressure is relieved.

3. *Cardiac Muscle.*—The third variety of muscle is that occurring in the heart, and it is intermediate in structure and function between smooth muscle and voluntary muscle, but differs in important respects from both. The cells are short and rectangular in shape, with square ends which often branch, and are enclosed and bound together by a continuous sheet of white fibrous tissue. The

nucleus is single (and hence we may conclude that the cardiac muscle fiber represents a single cell) and the protoplasm is partly differentiated into fibrils running the length of the cell parallel to one another; but arranged not in round bundles but in narrow rows radiating, as seen on cross-section, from the center of the cell, and with the undifferentiated sarcoplasm surrounding the nucleus in the center and extending in wide spaces between the rows of fibrils to the periphery of the cell and probably continuous from cell to cell. Thus easy passage through the cell is afforded for food substances passing to the central nucleus to be synthesized into sarcoplasm and fuel; easy access to the individual fibrils for storing fuel and oxygen in them, for the propagation of the contraction stimulus to all of the fibrils simultaneously, and lastly for the escape of CO_2 gas and other waste products from the fibrils and the center of the cell. This arrangement is more marked in the muscle of the auricles than in that of the ventricles, where the fibrils are more closely packed and the sarcoplasm less abundant accordingly; and this causes the striated appearance of the ventricular muscle to be more distinct, for the fibrils of cardiac muscle are also striated as in voluntary muscle. Furthermore, the fibrils are attached at their ends to the fibrous tissue enclosing the cell or perhaps to the ends of the fibrils in the adjacent cells, and thus perhaps the heart muscle might be considered to consist of a dense network of fibrils more or less continuous and bathed in continuous sarcoplasm. And when the fibrils widen and shorten on contraction, the traction would be transmitted directly through the fibrils themselves and not through them to the fibrous sheaths of the entire muscle cells as in smooth and voluntary muscle. And thus we see why perhaps the cells of cardiac muscle do not need to be long and narrow so they can widen and shorten extensively, the CO_2 after escaping through the fibrillar membranes into the body of the cell causing merely a swelling of the cell and not much shortening. Probably the expansion of the CO_2 liberated in all the fibrils during a contraction and exerting a secondary expansive effect on the cell membranes, before escaping into the blood, acts directly in expelling the blood from the chambers of the heart and especially from the ventricles; the shortening or contraction of the network of fibrils in the muscle serving principally to hold the ring and confine the pressure due to the swelling of the whole muscle. The ventricular muscle in systole does not appear to contract or shrink in size at all but actually to swell up and get larger with the exception of the apex, which is drawn up a little; and probably this is just what happens. The shortening of the individual fibrils causes a shortening or contraction of the entire network of fibrils ramifying through the muscle. This acts to some extent to diminish the circumference of the cavities of the heart; but principally it serves to form a rigid frame to support and confine the swelling of the muscle as a whole due to the expanding CO_2 liberated in the fibrils and passing from them to expand the entire cells within their restraining membranes; and this expansion or swelling causes the heart muscle, held in by the contracting network of fibrils, to bulge into the ventricular cavities and obliterate them, thereby expelling the blood. And that part of the swelling that cannot be confined by the contracting network becomes manifest externally as the swelling of the "contracting" ventricles. Thus, with the exception of motion of the ameboid type, the heart is probably the only motile organ in the animal kingdom in which the primary expansive force of the liberated energy of living matter is utilized directly as the principal source of power; but in the heart this primary expansive force is confined and its action regulated and directed by the secondary contraction force into which it is partly transformed by the muscular mechanism, and which in ordinary muscular action is the only directly useful result. Certainly the heart is a wonderful mechanism for the conservation of energy, as indeed it needs to be. The heart muscle exhibits the properties of *tone* and *conductivity* as smooth muscle does, and probably for the same reason; but it contracts and relaxes more rapidly than smooth muscle, the former perhaps because the fibrils are all directly exposed to the stimulus (and possibly because the combustible compounds are more explosive); the latter due perhaps to the structure which gives it its striation. It also recuperates rapidly after a contraction, perhaps because the fibrils are so accessible for the interchange of food, oxygen, and waste products with the sarcoplasm. But all these properties of rapid contraction, relaxation, and recuperation are less marked in the ventricular muscle than in that of the auricles, probably because the fibrils are more densely packed and the sarcoplasm less abundant. Probably the ventricles play a losing game during the active waking hours of the organism and can store up fuel only during rest and sleep. This significance of the arrangement of the fibrils in heart muscle for rapid contraction, relaxation, and recuperation is borne out by their arrangement in the wing muscles of insects where such excessively rapid contraction and relaxation are required and where rapid recuperation also must be essential; for here the individual fibrils are entirely separate and each one is surrounded by sarcoplasm. Probably the arrangement of the fibrils accounts also for certain peculiar characteristics of heart muscle. (*a*) To a stimulus strong enough to set up a contraction at all, the heart muscle responds with all the contractility of which it is capable at the moment—probably all the fibrils receive the stimulus simultaneously and contract together, not successively as they perhaps do in voluntary muscle where they are arranged in bundles. Thus stimuli repeated at short intervals cannot cause repeated and increasing contractions as in the "staircase" contractions of voluntary muscle, nor are tetanic contractions normally possible, or the phenomenon of contracture since no mechanism exists such as fibrillar bundles or a dense sarcolemma to store up and confine the CO_2. (*b*) On the contrary, heart muscle exhibits a *refractory phase* in which normally it is inexcitable, this refractory phase beginning shortly before systole and continuing a short while after it. As regards that portion just before systole, the explanation may be that the contraction—that is, the process of oxidation and liberation of CO_2—has already begun but has not progressed far enough to be manifest, and as regards

that portion of the refractory phase immediately after systole, it is a natural and necessary consequence of the fact that in performing the systole the heart has just used up all its normally available explosive mixture and there are no fibrils left in reserve as may be the case in voluntary muscle, and an interval of rest is required to get rid of waste products and replenish the supply of oxygen. This refractory period can be so shortened by raising the temperature of the heart muscle to 40° C., or by irrigation with calcium or sodium salts, that a tetanic contraction can be caused by repeated stimuli; and this perhaps means that under the increased temperature, etc., the stored fuel in the fibrils is rendered more combustible and the expansive force of the CO_2 is increased, or the elimination of waste products is hastened and the recuperation power enhanced.

Perhaps the most interesting, and certainly one of the most important characteristics of heart muscle, is its property of making rhythmic contractions, not only when normally functioning in the organism but even when removed from the heart in small pieces. This power of rhythmic contraction was at first thought to be due to intrinsic musculomotor nerve centers which rhythmically stimulated the muscle and could be controlled in turn by the vagi and sympathetic nerves. Then it was decided that this property was not due to any outside stimulus but was myogenic—dependent on some stimulus formed in the muscle itself. According to one theory advanced, the combustible compounds stored as fuel in the muscle fibrils are of such an unstable nature that, after being built up to a certain point, they spontaneously break down again liberating the energy of contraction. But the heart muscle, in addition to making these rhythmic contractions, is also excitable by stimuli from outside sources provided the stimulus does not reach it just before, during, or just after a contraction. This shows that the elimination of CO_2 and other waste products and the recharging of the fibrils with a new supply of oxygen and perhaps fuel does not consume the entire interval between normal rhythmic contractions, but that following the recharging of the gun there is normally a period during which everything is ready and waiting for the command to fire. This consideration leads one to reject the hypothesis that the rhythmicity is due to unstable compounds breaking down as soon as built up. Now, in working out the gross anatomy of the heart, we have found the only key to its *structure* lay in the study of its comparative anatomy and development. Let us, then, apply this method to the study of its *function*, keeping ever in mind the two great limitations of comparative anatomy and embryology: (a) that perhaps no existing type of animal may retain a particular organ in its most typical and generalized ancestral form, without modifications in the direction of either degeneration or specialization; and (b) that in the embryological development of any animal, while ontogeny may be (and no doubt is, in its general character and significance) a recapitulation of phylogeny, yet it is not a complete recapitulation—the tendency is to slur over or skip entire stages in the development of organs so that the process of development in the individual may be shortened. So that in studying the structure and function of any organ, the story of its embryological development must be read in the light of comparative anatomy; and in interpreting both we must depend upon a delicate sense of judgment in order to determine, amid its varying phases of structure and function in the development of the animal and its mature characteristics in more primitive related types, what may have been its generalized ancestral form and function; and our conclusions at best can be only hypothetical. Now, in the light of embryology and comparative anatomy, we are perhaps justified in assuming that the blood-vascular system originated, not from an enclosed portion of the cœlom, but from hypoblastic tissue by the secretion of fluid (the blood) by certain cells of the intestine, with the pressure of this fluid forming spaces in the cells which communicated and became lined with these cells. Perhaps among existing types certain of the marine worms—the *Chætopods*—retain the vascular system in a form most nearly approaching the primitive generalized type which seems to consist of a dorsal vessel above the intestine and a ventral vessel below it, these vessels communicating with each other directly by means of cross branches and receiving nitritive fluid from the intestinal sinus which gives off branches to both, and also giving off fine capillary branches to the body walls, etc. Now, these main vessels and the branches connecting them are probably all contractile in the primitive form, the contraction being in the form of a peristaltic wave passing along them; but with the formation of more complicated branches and more numerous capillaries, the contractile power tends to become localized and concentrated in the dorsal vessel or "heart" in the form of a *rhythmical peristaltic wave*, and in some of the arthropods this dorsal vessel becomes locally modified to form a definite heart which contracts rhythmically. In these primitive types the vascular system nearly always communicates with the cavity of the cœlom, either through valves or capillaries opening into it or else the blood from the arteries and capillaries empties directly into it and is returned from it to the heart—thus constituting the prototype of the lymphatic system in higher forms. Now, when we follow the development of the vascular system into higher types, we find that the vertebral heart originates simply from a main artery which has become bent upon itself and the musculature locally thickened, with various modifications in the size, shape, and arrangement of the interior giving rise to the chambers of the heart with the valves, etc., just as the stomach or gizzard is a specialized portion of the alimentary tract. The development and structure of the heart are comparatively well understood, but its function is what we are interested in here. In the higher vertebrates, in the human being, the circulation of the blood depends directly upon the heart alone. There are many secondary influences—the elasticity of the aorta and larger arteries equalizes and sustains the pressure during diastole, the musculature of the arteries and veins regulates the pressure, the action of the skeletal and other muscles, respiratory movements, etc., etc., all secondarily assist the circulation; but the heart is the pump, the actual *vis-a-tergo* of the circulating

blood—in other words, there is no peristaltic wave passing forward along the arteries and back along the veins to help the heart. Just as the musculature of the vascular system is concentrated in the heart, so also is the peristaltic wave which, in the primitive types of animal, probably passes clear around the main system of vessels to return to its starting point. If we might be justified in regarding the typical circulatory system in its most primitive form as, digrammatically, a single continuous vessel with a peristaltic wave passing around it rhythmically, noncontractile capillaries also being given off from it, then the human heart would represent a specially modified portion of this vessel with the contractile force concentrated in it and the peristaltic rhythm retained in it, although lost for the most part in the remainder of the vessel.

Now let us consider this diagrammatic primitive type of circulation more closely. The primitive blood vessels, developed perhaps from the intestinal wall, show the same peristaltic type of contraction as the intestine. Primitively, perhaps, this peristaltic contraction, starting at a given point, is conveyed from muscle fibre to muscle fibre by the power of direct conductivity more or less characteristic of all muscle tissue and dependent probably on continuity of the sarcoplasm from cell to cell. Now in the intestine a wave of peristalsis, started by stimulation at the anterior end, passes to the posterior end and ceases; there is no more muscle tissue to contract and the intestinal wall is at rest until a new stimulus at the anterior end sets up a new wave of contraction. But in a continuous vessel, like the diagrammatic primitive blood vessel, a peristaltic wave once started would continue to propagate itself rythmically around the vessel indefinitely, until a lowering of temperature or the death of the animal caused it to slacken or cease. Its rhythm would depend on the rate of conductivity in the muscle (which might vary with temperature, nutrition, etc.) and the length of the vessel around which it would have to travel before repeating itself. Now this, I would venture to suggest, is perhaps what actually occurred in the primitive ancestor of the vertebrates—a type which may have persisted for countless ages; and after millions of years, perhaps this habit of making rhythmical peristaltic contractions would become so fixed and essential a property of the circulatory system that in spite of modifications of structure, and rate of rhythm, the fundamental characteristic of *rhythmicity* would survive even after the contractile mechanism had become more or less localized in one part of the vascular system and modified into the complicated mammalian heart. This hypothesis would explain why the rhythmic contractions do not occur simultaneously throughout the heart muscle, or even throughout the auricular muscle, as we might expect them to do if the rhythmicity were due simply to an instability in the combustible molecule; whereas, on the contrary, they occur in the form of a *peristaltic wave* starting in the auricle at or near its junction with the superior vena cava, and passing thence over the auricles and then over the ventricles to the arterial orifices. Furthermore, this peristaltic form of contraction is invariable in all periods of development and in all hearts, vertebrate and invertebrate. And its rhythmic frequency is perhaps the same as if the wave of contraction had to pass all around the circulatory system and return once more to its starting point at the auricle to stimulate a new wave; only the continuity of the musculature in the vascular system has been interrupted by modifications—it is almost interrupted between even the auricles and ventricles and in disease may become completely so—it is interrupted in the elastic, nonmuscular aorta; and in the arteries, arterioles, and veins peristaltic action has been modified or superseded by direct vasomotor control. Its delay in passing from the auricle to the ventricle may represent the interval that would be required in passing through the muscular tissue that has been replaced by the fibrous tissue of the auriculoventricular septum. In any case, the wave is transmitted through this fibrous septum by a bundle of muscle fibers which has its root in the right auricle, runs thence through the auriculoventricular septum and is distributed in branches and twigs to all parts of either ventricle, bringing every part of the ventricles into simultaneous contraction. The ventricles if left to themselves have a slower rhythm than the auricles, this modification being perhaps associated with the specialization of the ventricular musculature in the direction of hypertrophy, the individual muscle cells being thicker, containing more fibrils more densely packed, and less sarcoplasm than is the case in the auricle where the muscle is more embryonic in character. The contraction in the ventricular muscle lasts longer than in the auricle, and it takes longer to relax; as might be expected, according to my hypothesis, from the dense arrangement of the fibrils, for the CO_2 cannot escape so quickly, as well as being formed more abundantly, nor can the fuel be replaced so readily. Hence the ventricular muscle must be more dependent on the rest secured during sleep for the replacement of stored fuel than is that of the auricle. The auricle might be likened to the "stroke" oarsman of a racing crew who has a narrower oar so that he can keep relatively fresh and set a stroke that may be most exhausting for the rest of the crew. Thus the inherited rhythm of the heart is given in trust to the auricle to guard and maintain intact and transmit to the ventricle, which must specialize in the heavy work. Accordingly, when the heart is removed the rhythm persists longer in the auricles than in the ventricles, as well as being of greater frequency; and the venous end of the heart is least sensitive to injury, beats longest after death, and is the first to recover after arrest. Another instance of this retention of inherent characteristics in peristaltic movement is furnished by the intestine —an organ probably nearly related to the vascular system. The downward direction of the peristaltic waves of contraction in the intestinal wall must be an inherent characteristic of the mechanism in the intestinal wall that controls them, whether this mechanism be nervous or myogenic; for when a portion of the gut is excised, and then reunited at the severed ends to the intestine, but in a reversed position, the peristaltic waves pass in the same direction in the reversed portion as they did before excision, but this means that they now pass upward instead of downward in relation to the rest of the

gut. Thus the intestinal wall has inherited from countless ancestors the fixed habit of having peristaltic waves in a downward direction and is dependent on the contiguous parts of the gut or outside nervous control only to start them or regulate their force and duration; but not, under normal conditions, to regulate their direction. Compare also the rhythmical waves of ciliary movement in the epithelial cells lining the upper respiratory passages, the movement being in one direction only.

Furthermore, the auricle, in setting the pace for the beating heart, is perhaps the ultimate timekeeper for the entire organism. For I doubt not that the regular, rhythmical beating of the heart, with the rate practically constant for the individual in health (however it may vary for different individuals, or in disease) furnishes to the subconscious mind its fundamental inherent sense of Time as a background, from which the facts of experience that go to make up the *train of consciousness* stand out in the light of the attention; just as the time record on a revolving drum furnishes a basis of reference for the curves representing any action we may study in the laboratory. Without this definite background we might indeed be conscious of a *succession* in the presentation of events to consciousness, but this sense of succession would be either confused by a multiplicity of events or interrupted by the irregularity of their occurrence. There would be no fixed basis in time to which to refer them, for time can be measured only by a succession of phenomena recurring at regular intervals. Now this is just what the regular beating of the heart furnishes, and it matters not whether it furnishes it directly to the subconscious mind by visceral sensations or indirectly by the increased oxidation in the nerve cells following each fresh wave of arterial blood.

Thus perhaps we may solve the mystery of the subjective sense of time—a mystery which the Greek philosophers could scarcely apprehend; which Kant analyzes with wonderful clearness in his "Critique of Pure Reason," but for which he could find no basis in experience; which Berkeley considered merely an abstract concept formed from the succession of ideas in consciousness: which Wundt and Spencer left unsloved after speculating as to whether the sense of time is continuous or made up of discrete occurrences; and which a recent authority, writing in the Encyclopædia Britannica (XI Edition) sums up as follows: "On the whole, then, we may conclude that our concrete time experiences are due to the simultaneous representation of a series of definite presentations both accompanied and separated by more or fewer indefinite presentations more or less confused; that, further the definite presentations have certain marks or temporal signs due to the movements of attention; that the rate of these movements or accommodations is approximately constant; and that each movement itself is primarily experienced as an intensity." Thus the rhythmical beats of the heart would be brought to the mind as "movements of attention" whose rate would be "approximately constant"; and would act as "marks or temporal signs" constituting a scale of time for the measurement of the "definite presentations" which are "both accompanied and separated by more or fewer indefinite presentations more or less confused," just as the time record on a revolving drum in the laboratory furnishes marks or temporal signs with reference to a series of curves more or less distinct and interwoven; and if the rhythmic beat of the heart is brought to consciousness through the waves of increased oxidation following the fresh supply of arterial blood to the nerve cells, then "each movement itself would be primarily experienced as an intensity." Thus the heart beat would furnish the physical basis of the subjective sense of time which was so beautifully analyzed by Kant, though he could not comprehend it. He considered that Space and Time belong to things, not in themselves, but only as we know them; Space being the form of *outer* sense, Time the form of *inner* sense; and neither of these concepts being given by experience, but rather being *conditions* of experience *supplied by the mind* from its *inward resources.* Little did Kant suspect, as he sat in his study absorbed in thought with his gaze fixed on that distant steeple, that the *inward resources* that supplied his mind with the concept of Time as a condition of experience were perhaps the subconscious impressions of the beating of his own heart.

Of course, this sense of time furnished by the heart as a graduated background for the study of experiences in their time relations is blurred by the multiplicity of experiences that accumulate against it in the life of the individual, and becomes less obvious and distinct as our other time experiences multiply; just as we may disregard the graduated scale in the eyepiece of a microscope and judge the dimensions of objects directly, once our judgment is trained. But this time scale is always in the background of experience and registers even during sleep; not, however, during loss of consciousness, from which we recover without any sense of the lapse of time—as, indeed, may occur also in very deep sleep. And perhaps the irregularities of heart action in fevers and other diseased conditions may partly explain the mental confusion and anxiety which are such distressing symptoms and which may possibly result largely from a loss or disturbance of our sense of time. When our hearts beat rapidly, clock or calendar time seems to pass slowly by contrast; and vice versa. Thus when, over a short period, our hearts beat rapidly in anticipation, time seems to drag by constrast. But this influence is modified by the number or intensity of experiences brought to the field of consciousness; they tend to distract our attention from the chronometer within us and we do not realize the passage of subjective time. Perhaps the fact that calendar time seems to pass more quickly as we grow older may be due in part to the gradual lessening in frequency of the pulse —our clock is running down and the day is spent sooner than we thought.

Thus I have attempted to apply my hypothesis to some of the more important phenomena of motility in the animal organism, and have attempted to suggest possible explanations for these phenomena in the light of this hypothesis. But whether or not my application of the hypothesis shall stand the test of time, or even whether or not it prove correct in the light of our present knowledge, of this I feel convinced: the action of a voluntary

muscle, like the rectus muscle of the thigh, is due to a shortening of the muscle between its tendons of origin and insertion, resulting in a traction on these tendons; now this traction must be transmitted to the tendons from and through the belly of the muscle by either (1) the inextensible white fibrous tissue which ramifies through the belly of the muscle forming the walls of the sarcolemma sheaths and is collected together at the ends to form the tendons, or (2) by the protoplasmic contents of the fibrous sarcolemma sheaths of the individual muscle cells; there is nothing else to transmit the traction. Now, when we consider the friable or liquid character of the protoplasmic muscle substance, how can we conceive of its transmitting any tractile force or even possessing any tensile strength, either taken as a whole and acting on the medial ends of the tendons, or as individual cells acting from inside on the ends of the many sarcolemma sheaths? To my mind, it is inconceivable and absurd. Very well, then, the traction must be transmitted from the belly of the muscle to the tendons by the inextensible white fibres spreading out from the tendon at one end and ramifying through the belly of the muscle and concentrated around the individual muscle cells in the sarcolemma sheaths, and finally gathered together to form the tendon at the other end. But how, then, can such a network of inelastic fibres be made to shorten up and exert traction? They are not elastic and cannot be made to shorten of themselves. The only way I can conceive of is by a force expanding them transversely and thus causing them to shorten longitudinally, just as we might stretch a piece of cheese cloth one way and see it draw up the other way. Now this force must be exerted from within the fibers, coming as it must from the substance of the muscle cells; and what sort of force must it be? Could a *contraction* of the protoplasmic contents of the network cause the network to be stretched out transversely and shorten longitudinally? Not that I can conceive of. Then it must be an *expansion* of the protoplasmic contents. Now how might this expansion be brought about? Well, we know that oxidation takes place in the protoplasm and a good deal of CO_2 is liberated and that this sort of chemical change is capable of liberating considerable energy in the cylinder of an automobile or the chamber of a twenty-inch gun; so why might it not be sufficient to cause a little expansion in a muscle fiber? Of course, in the present state of our knowledge, we may not be able to say positively that it is the cause of muscular contraction; but it seems as if it might be a sufficient cause and, so long as we know of no other, we might at least give it a little credit and not consider the Co_2 as merely a *waste product* or a possible "slight stimulant to muscular contraction" so long as there is not too much of it present, which seem to be the prevailing views with regard to it. If this be the nature of the force causing muscular action it would explain the *elastic* character of the traction exerted by a muscle contracting against resistance, an elasticity that suggests that of an expansive gas enclosed in a slightly extensible bag. This also would explain the "feel" of a contracted muscle. like the biceps for example, the compressibility and elasticity varying from flabbiness in the untrained muscle to the almost incompressible tension of the muscles of an athlete—just a question of the amount of Co_2 liberated and the rapidity of its liberation, and the strength of the sarcolemma sheaths to compress it. Furthermore, we can understand why muscles can really exert so little force and why the tendons have to be inserted so close to the joints in order to get the utmost range of movement possible even at the sacrifice of power. For theoretical considerations show that the belly of a muscle can shorten much less than one-third of its length.

Thus in higher forms the motile tissues are not directly exposed to the influence of positive and negative stimuli as is the protoplasm of the ameba, but are connected with the external world by delicate threads of combustible tissue—the axis cylinder processes of the nerve cells—which carry the stimuli to them, with modifications, in the higher forms, of the nature of reflex arcs and association centers, and specialized end organs to receive the various forms of stimuli. Now, if the contraction of muscle is really due to an explosive liberation of Co_2 in an aqueous solution of protoplasm, etc., may not the nerve impulse that sets off this explosion be comparable to the action of a long delicate train of powder in a fuse which carries the spark to the mass of powder to be exploded; and the motor end-plate to a cap at the end of the fuse to flare up and set off the explosion more quickly? Thus the nerve impulse would be essentially similar in nature to the muscular contraction, except that it is much slighter in extent and perhaps the combustion more explosive in character, being conducted at the rate of 100 feet per second in the axiscylinder process and about ten feet per second in muscle. Either in nerve or in muscle the explosion can be started at any point by an electrical or other stimulus, but normally the muscle receives it from the nerve, which in turn receives it from the external world either directly or modified by the action of the reflex arc or the higher association centers in the light of experience inherited or acquired; inherited experience constituting *instinct*, and all experience having its physical basis in paths blazed through the complicated nervous network by previous impulses. The fact that the Co_2 and heat produced by prolonged stimulation of a nerve are scarcely if at all measurable is not of any significance to the contrary, nor the fact that the expenditure of nervous energy in mental work or otherwise produces no measurable increase in waste products eliminated—this is to be expected. The actual amount of combustion in the nerve tissue would be small because it would not need to be otherwise—nerve impulses do not accomplish anything until they become manifest in muscular contractions; just as a fuse, if long enough, might keep on burning indefinitely—it would not make any smoke to speak of or produce any results until it finally reached the powder and exploded it, and then the smoke from the fuse would be lost in that of the powder. Just so, nerve impulses may originate from stimuli acting on sensory organs and travel to the nuclei of origin of the sensory nerves and then chase themselves around the higher brain centers indefinitely—they are like a spark running around an

immensely complicated network of delicate fuse with the continuity of powder in it interrupted in places; the fuse may sputter and the sparks fly, but the combustion is almost *nil*, there is no smoke, no noise, no work done until the charge of powder is finally reached and exploded. And the debilitating effects of too much nervous strain are probably due as much to the absence of sufficient muscular action as to the presence of too much thought, although a nerve impulse once set up by an external stimulus must probably find somewhere an outlet in the form of muscular or other action. And it may be that after a train of thought has passed around the exceedingly complex network of the central nervous system, like a spark wandering around a complex network of fuse, and has at last found the proper outlet to action—like a bewildered wanderer in the mazes of the Labyrinth of Crete who, exhausted, has finally found his way out—its force is so attenuated that it requires an additional impetus from the cerebellum to strengthen it into a nerve impulse capable of contracting many muscles and producing results; the cerebellum is supposed to have some such action, or at any rate does not seem to have any other. But a nerve impulse traveling around a simple reflex arc would no doubt retain sufficient force to stimulate a reaction.

North Street and Ward's Lane.

THE SURGICAL DISORDERS OF DIGESTION.*

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THE disorders of digestion go to make up the greater number of complaints concerning which the physician is consulted. In listening to the story of a patient who is complaining of dyspepsia we are prone to center our thoughts upon some disorder of the stomach itself, and in consequence become confused in our conclusions relative to the patient's actual physical condition. The case records of surgeons will show that extragastric lesions have been found as causative factors in the production of the symptoms in 90 per cent. of the dyspeptics who come to operation for relief.

In examining a patient for "stomach disorder" it is a very good rule to follow the advice of the automobile mechanic to look at everything else before you examine the carburetor. If you can accept the above as correctly representing actual conditions founded on a liberal experience in dealing with living patients, the writer will ask you to visualize a human being without a stomach while considering with him some of the most frequent pathological lesions concerned in the production of dyspepsia, indigestion, faulty metabolism, and allied physical conditions provocative of so much discomfort, pain, and danger in those who confide their welfare to our keeping.

Of all causes operative in the production of digestive disorders, chronic appendicitis is by far the most frequent. In discussing chronic appendicitis one must for the nonce divorce his thoughts from the acute manifestations of the disease, and learn to differentiate between the relapsing and chronic processes in appendicitis.

The relapsing form of the disease will present in from 50 to 75 per cent. of the patients who have had a frank, outspoken, acute attack, and the patient himself will materially assist with his story in putting you on the right road to success in interpreting the symptoms. In the chronic form of the disease, however, the symptoms are usually vague, and the history as related by the patient rarely indeed contains much of value to the examiner, aside from the one suggestion by the patient that he has stomach trouble; nevertheless, the correct interpretation of a well written clinical history as given by the patient is our chief guide to the diagnosis of chronic appendicitis.

If the history does not point to a diseased appendix as a cause for the symptoms, it may serve a useful purpose in the scheme of differentiation by exclusion, that is to say, the history may not show what organ is diseased, but it may indicate what organs are not diseased. Perhaps I may not do better in presenting this phase of the subject than to report briefly a case of chronic appendicitis.

A young man who consulted the writer some years since said that he had been losing weight, strength, and ability to work or think connectedly. He felt badly at all times, and was not refreshed after a night's sleep. His sleep was usually broken by troublesome dreams. He had a bad taste in his mouth, and although he ate at regular intervals about the usual amount of food, it was more a subject of habit than his appetite which caused him to join the family at table. The presence of food in his stomach seemed to have little influence on his general condition, although he complained of some distress in the abdomen which was present at all times during the waking hours. His urine was scanty, high colored, and left a burning sensation in the urethra after passing. The patient never had a bowel movement except after taking a cathartic. He was a man of exemplary habits and had a splendid family history. The chief concern of this young man was that he was losing his mind. He became very morose at times, and while in this mood would say to his companions that the world would be better off without him.

His temperature, pulse rate, and breathing were normal. The heart and lung sounds of the patient revealed nothing at variance with health. His tongue was swollen, carried the imprint of the teeth in its margins, and was heavily coated. The legs, arms, head, and neck were normal save for a marked flabbiness of the muscles. The abdomen was prominent, but the musculature of its walls gave way readily to pressure of the hand of the examiner.

Moderately firm pressure elicited pain in all parts of the abdomen when it was applied. No one place seemed more sensitive than another below the level of the umbilicus. The anal sphincter was firmly contracted and the introduction of the gloved finger increased the abdominal pain, induced a sensation of nausea, and caused the patient to complain bitterly of this part of the examination.

A tentative diagnosis of chronic appendicitis and advice to have the appendix removed were accepted by the patient. At operation a chronically inflamed, white appendix with indurated walls and partially obstructed lumen was removed. Great relief followed during the patient's stay in the hospital, and complete recovery from all symptoms in the course of three or four months after the operation. The patient has had no return of his symptoms, although several years have elapsed since the above experience was recorded.

This illustration is cited only as a concrete ex-

*Read before the Ohio Valley Medical Association, Evansville, Ind., November 11 and 12, 1919.

ample, and must not be regarded as typical of the disease which we are discussing. In a general way we may say that patients having chronic appendicitis will show nerve irritability and stomach disorder.

The general well being of the patient is seriously deranged, but he is unable to describe definitely or to locate his trouble. Rarely, indeed, do these patients give a distinct history of having had an acute attack of the disease, and this materially adds to the confusion in the mind of the examiner, who is accustomed to thinking of appendicitis only in surgical terms.

The age incidence of the disease is interesting, as the following analysis of 2368 cases by Klotz, published in "General Surgery" for 1919, will show: Two per cent. of the number occurred in the first decade of life, 15 per cent. in the second, 38 per cent. in the third, 28 per cent. in the fourth, 11 per cent. in the fifth, 2 per cent. in the sixth, and 1 per cent. for the remainder.

Dyspepsia, constipation, or irregularity of the bowel, and impaired health are very constant concomitants of chronic appendicitis. The patients complain of more or less discomfort in the entire lower abdomen, which is usually persistent in character, and increased on rectal examination, but they seldom use the word *pain* in describing their symptoms.

Deposition of the inflammatory products which accompanies this disease diminishes the caliber of the lumen of the appendix, and the resultant contraction of scar tissue ends in obliteration of some part of the lumen in a certain percentage of the cases, thus preventing the entrance of barium in the *x*-ray examination.

In seeking for an explanation of the mechanism in the production of stomach symptoms in these cases, one has but to recall that the base of the appendix is freely supplied with the anodal tissue of Kieth, and draw his simile from a similar pathological phenomenon which occurs higher in the gastrointestinal tract, viz., pylorospasm.

May we not reasonably conclude from this very incomplete presentation of the subject that it becomes an imperative duty on the part of the physician in examining a patient to exclude chronic appendicitis before seeking for other causative factors in the production of disordered digestion?

Subacute and chronic cholecystitis are second in frequency only to the foregoing in the production of digestive disorders; indeed, some observers of broad experience maintain that gallbladder and duct disease outweigh chronic appendicitis in the rôle of causative factors. Unlike the preceding condition, the differential diagnosis is more readily made, owing to the presence on the history sheet of a description of a well marked attack of the acute manifestations of cholecystitis.

In chronic infectious processes of the gallbladder and ducts one of the most important of the several secretions essential to normal digestion is seriously impaired, and in consequence thereof symptoms follow which are numerous and far-reaching.

Perhaps one of the best illustrations of the difference in the behavior of infective germ life as modified by anatomical conditions is presented in this field. If the disease process is limited to the hepatic or common ducts the symptoms will be transitory, and relief will follow free purgation, owing to the readiness with which natural drainage follows removal of the edema in the mucosa lining the duct; but when the cystic duct and gallbladder are invaded the scene rapidly changes from the mild manifestations of duct involvement to the flamboyant symptoms of acute cholecystitis.

The invading organism may be identical in each instance, the tissues may be isoanatomic, and still there is a wide descrepancy in the subsequent histories. The duct case recovers quickly, but the infected cystic duct and gallbladder, owing to their peculiar construction, are soon obstructed by the swollen mucous membrane, which in turn favors stasis, chronic inflammatory changes in the walls of the cystic duct, and stone formation. The gallbladder and its duct in the presence of acute infection lend themselves admirably to the scheme of the chronic process which so frequently supervenes in the absence of timely surgical intervention.

In addition to edema and stone there is present in many of the patients a third factor in the mechanics of gallbladder and duct obstruction, viz., adhesions.

Whether adhesions are due to the variety of infection or something inherent in the individual makeup of the patient has not been fully determined, but their presence in the region of the gastrohepatic omentum, duodenum, and hepatic flexure of the colon serve to impede the flow of bile, and induce symptoms which will find expression in digestive disturbances.

Firm adhesions between the bile ducts or gallbladder and the duodenum may so distort the latter as to interfere with the passage of the stomach contents, and this leads to the subject of the intimate interrelationship of the digestive group. The profession has recognized for a long time the frequency with which disease of the bile passages was associated with hyperacidity of the stomach, but has left undetermined the salient point as to whether hyperacidity was a cause or an effect.

Pawlow in his experiments showed conclusively that pylorospasm may be produced by the passage of highly acid stomach secretions over the mucosa of the duodenum.

If the irritating influence of an excess of acid will induce food retention in the stomach it is only fair to suppose that bile stasis will follow when the mucous lining of the duct bearing a portion of the duodenum is subjected to the same irritating influence, thus favoring stagnation of bile and the invasion of germ life.

The past history of patients suffering from gallbladder disease will usually contain a description of one or numerous attacks of acute cholecystitis, with a long array of symptoms intervening between the attacks. The latter will include distress after eating, occasional sharp pains in the upper abdomen, bad taste in the mouth, furred swollen tongue, lumbago, lack of vigor, vertigo, and blurred vision.

In consequence of an altered metabolism, the skin of these patients becomes dry, and desquamation takes place rapidly. This gives rise to an annoying itching which is a very significant sign in the presence of other gallbladder symptoms.

Although the appetite is greatly impaired in most of the diseased gallbladder subjects, still there is a marked tendency in many of them to take on the "middle age spread." Fats are generally excluded from the diet and eructations, nausea, pain and vomiting occasionally follow the taking of food into the stomach. The sclera and skin are usually discolored, the patient is constipated and the stools are light in color.

In examining the abdomen of a patient suspected to be the subject of gallbladder disease, the supine position, with the thighs fully flexed, will materially assist the examiner. Another very good position is obtained by having the patient sit erect on the examining table with his thighs at right angles to the body. The examiner, sitting on the table behind the patient, passes the examining hand to the region of the gallbladder and makes firm pressure over the region with the tips of the fingers at the end of a deep inspiratory effort on the part of the patient. The protective spasticity of the abdominal muscles over the gallbladder area must be differentiated from that caused by duodenal ulcer, renal colic, and pylorospasm.

Surgical literature formerly contained many chapters on the subject of chronic pancreatitis and its importance as a causative factor in the disorders of digestion, but Robson, who did so much pioneer work in conjunction with Mr. Cammidge on disease of the pancreas, does not refer to its influence in this connection in his chapter on chronic pancreatitis, written for the 1913 edition of Burghard's surgery.

The writer's observations lead him to conclude that chronic pancreatitis is usually, if not always, secondary to obstruction of the common duct; furthermore, that the prolonged, stormy postoperative recovery of some of the infected duct and gallbladder cases are due to chronic pancreatitis, and others to trauma inflicted at the time of operation by rough handling.

Disease of the endocrine glands, diverticulitis, sigmoiditis, tuberculosis, peritonitis, malignant neoplasms of the intestinal wall, incarcerated hernia, tabetic caries, cirrhosis of liver and kidneys, focal infections, and numerous other pathological conditions within and without the abdominal cavity will produce the symptoms which we have been discussing, but if sufficient has been said to direct your attention to the vast importance of extragastric lesions as causative factors in the production of surgical disorders of digestion, the writer's efforts and your time will not have been spent in vain.

1606 Freeman Avenue.

WHAT HAS THE WAR TAUGHT US OF TUBERCULOSIS?*

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Recently I had an interesting conversation with an old acquaintance of yours and mine, the tubercle bacillus. I had just finished reading a very comforting address by one of our breezy western health officers on the approaching doom of the tubercle bacillus. According to this address, all that was necessary now to accomplish the destruction of the arch enemy of the human race was to quicken the social conscience and then to hand over this quickened social conscience to the various boards of health. The war, declared this address, had demonstrated that if tuberculosis were attacked army fashion there would soon be no tuberculosis.

Soothed and pleased at the prospect, I dropped the book for a moment and gazed rather vacantly toward the dwindling fire in the grate. I soon became conscious of a faint odor of violets in the room. I looked toward the door. There in front of me stood an enormous tubercle bacillus, curved and waxed, and glowing in a lethal haze of its own exuding. Like peas in a slender pod, four coccal granules shone dimly through its capsule. One of these coccal granules at the end of the bacillus nearest to me, was larger than the others, and seemed about to break out or bud, from the rest of the rod. Whether it was from this end that the voice came, I couldn't make out, but come it did, eery and gloating and defiant. And this is what it said:

"So, ho! The war has wrought my doom, eh? How downhearted I should be! Strange thing that while the war lasted I had more victims than ever before, more in the countries that fought, and more in the neutral countries. And since the war ceased, is there any country in the world where my deaths are fewer than before the war? But now I must prepare for my own death! I am to be no more! I am to be destroyed by army methods. Army methods! If the methods were good methods, undoubtedly the Army Medical Corps, because it is a well oiled machine, would get me, but the methods used by the American army, and, in fact, by every army engaged in the last war, to encompass my destruction, were ludicrous beyond description. The civil physician who examined the drafted men made some mistakes, but the army physicians who re-examined at the camps made more mistakes. The army method of physical examination was devised for the benefit of the feeble-minded of the army doctors to save them from thinking, but, of course, it applied to the able-minded of the army doctors as well. These it prevented from thinking. The resulting diagnoses were both tragic and comic.

"Army methods? Destroy me by army methods? The army methods of discovering me and my hiding places were worse than the pre-war civil methods. The *x*-ray? Yes! That helped the army somewhat, but the army merely used the imperfect pre-war knowledge, and the army use of this knowledge was frequently faulty because the colonel's interpretation of a plate was always right, and the captain's interpretation was right only when it agreed with the colonel's. The army *x*-ray machines added nothing to your knowledge of me, nor for that matter, to your knowledge of the *x*-ray.

"And, as to the army's method of treating my army victims, it was merely a stumbling and halting imitation of the civil methods of pre-war times —absolutely nothing new.

"And as to the army's method of keeping me from making new victims in the army—it had no such method. True, I didn't make many new victims in the army, but nobody in or out of the army knows why."

*Read at the New England Conference on Tuberculosis, Providence, R. I., Oct. 16, 1919.

Few New Cases in the Army.—"See here, you fiend," I cried, "in that last statement you admit that the army's methods were effective. You say few new cases occurred in the army. That was the object of all the army's methods—to prevent new cases in the army. And the same methods in civil life will prevent new cases in civil life."

"Ha, ha!" replied the voice. "The same methods have been long applied in civil life, and my power is still supreme the wide world over. And as to the effect on me of quickening the social conscience and handing it over to the various boards of health, there wasn't a regiment in Europe that didn't break all the board of health rules ever invented. The soldiers lived in insanitary quarters. They smoked incessantly. They drank wine and beer, and unprotected water and milk. They suffered hardships of all kinds, physical and mental. They spat on the walks and everywhere else. They slept in the mud. They were covered with cooties. They swapped pipes and clothes and knew not individual drinking cups. At the sight of these conditions, the members of the ordinary board of health, holding in their hands this precious quickened civic conscience that your friend talks of, would all have dropped dead of apoplexy.

"Yet, under these conditions few new cases of tuberculosis developed in the armies. The enormous increase in the number of new cases occurred in the comparatively comfortable, clean, well-housed people at home. Don't you think that the army's hardships, and lack of observance of board of health laws had something to do with saving the soldiers from tuberculosis?"

The log in the grate began to blaze. I heard a weird chuckle. I felt a little puff of breeze through the room. The odor of violets was swept away, and with it, the shape and the voice.

The Consumptives' Appeal.—And then the sounds of other voices filled the room. They were the voices of more than 1,000,000 people. They came from cabins on far away mountain sides, from midland mansions, from crowded city tenements, from sanatoria, from hospitals, from the learned and the ignorant, from the rich and the poor. They were the voices of the consumptives of America. And all the 1,000,000 voices cried in chorus: "Help!! Help!! Help us, O you doctors of tuberculosis. We are trying to do what you bade us do, but most of us are losing the fight. What is the secret of the enemy's power? Learn it quickly. Arm us against it. Help us or we perish."

At the beginning of the war, I read, with interest if not always with assent, the martial editorials in various medical journals, prophesying that one good, sure to come from the evil of the war, would be the solution of many medical problems, and particularly the problem of tuberculosis, because the thousands of doctors now being gathered into the army and navy would be able to make, so to speak, mass attacks on the problem, and they would not be wasting their time and energy on pitiful sniping from little laboratories. Well, now, here we are after the war—the first New England conference after the war—and face to face with the same tuberculosis problems as before the war. The war has not added one iota to our positive knowledge of tuberculosis. It has, perhaps, convinced the public that there is more active tuberculosis than had been supposed. But even the truth in that matter was recognized years ago. At the New England conferences at Springfield and New Haven, public bulletin asserted that every death in a community from tuberculosis meant as an average ten active cases of tuberculosis in that community.

New Knowledge Needed.—The war, it is true, has made clearer to us the poverty of our equipment for fighting the tubercle bacillus. The war has caused the making of comparisons, sometimes invidious, between the insufficiencies in equipment of states and countries. The war has taught many hundreds of young doctors the proper use of percussion and auscultation and the *x*-ray. The war has emphasized the need of hospital and sanatorium care for consumptives and the effectiveness of good nursing and of health propaganda. But beyond—nothing. Nothing concerning cause. Nothing concerning cure. Nothing concerning such questions as: Does tuberculosis always begin in childhood? Is it possible for a human being who escaped infection in childhood to contract the disease in adult life? Why are there more tuberculous men than women? Why does sunlight therapy usually cure bone and glandular tuberculosis, and usually fail to cure pulmonary tuberculosis? What happens to a child's organs and tissues when undergoing the sunlight cure of bone and glandular tuberculosis? Are all tubercle bacilli born of other tubercle bacilli? What is the relation to the tubercle bacillus of such acid fast bacilli as are found in dark barns, and as may be evolved from the spores of the ordinary beneficent bacilli of leaves and grasses? How dangerous to adult human beings is the milk of tuberculous cattle? Are tuberculous cattle always infected by other tuberculous cattle? What would happen if nontuberculous cows were made to live a year knee deep in manure, in new but dark, badly ventilated barns, such as are found on poor farms everywhere? What vaccinating power against human tuberculosis have the avian tubercle bacilli, the bovine tubercle bacilli, and the other acid fast or near-acid fast bacilli? What is the relation between tuberculosis and measles, scarlet fever, whooping cough, appendicitis, smallpox, gonorrhea, and syphilis? What is the explanation of the immunity of certain groups and individuals to tuberculosis? What is the explanation of grinder's and miner's tuberculosis? And the tuberculosis of the operatives in cotton, woollen, and silk mills?

The Framingham Experiment.—I have the honor to be a member of the committee in charge of the Framingham experiment, of which the director, Dr. Armstrong has told you. Nobody can have greater admiration for Dr. Armstrong and the things he is accomplishing than I have. One result of the Framingham experiment will be the improving of living conditions in Framingham and in every community that will copy Framingham's intensive health campaign. That result will mean the saving of many lives and the preventing of wastage of time and money. That result will mean that the Framingham experiment will have been well worth while. But, if that result be the only result, it will be to me, as the English say, "not good enough." I am of opinion such a result ought not to satisfy us in our fight with the flaming world-wide disease, tuberculosis. We must aim to stamp out the disease everywhere and for all time. Stamp it out

as yellow fever has been stamped out, or learn to control it as we have learned to control smallpox. To do this we need knowledge. This new knowledge we can get only by research. Until now research—particularly medical research, and more particularly tuberculosis research—has not had a strong appeal for young American doctors. Nevertheless, it is here in New England, the home of the Yankee, that many of the most important inventions and discoveries of modern times have been made. Why not get ready here to-day to awaken our young physicians of New England to the great opportunities that lie before them in tuberculosis work, opportunities for service, in most ways greater than are to be found in any other field of medicine.

In conclusion:

1. The war has taught us that the breaks in our knowledge of the tubercle bacillus prevent us from conquering the tubercle bacillus.

2. The war has taught the need of further tuberculosis research, and by implication has indicated that we who have the direction of the large sums of public money and the enormous amount of public enthusiasm now engaged in the antituberculosis campaign, owe it to the public to develop a greater and more intensive campaign of research than we have hitherto attempted.

3. The war has taught us that large medical military organizations are not capable of advancing our knowledge of tuberculosis, and that in the future, as in the past, we must put our dependence for results on the enthusiastic workers in the small wards and laboratories of hospitals and sanatoria and dispensaries, and on the observant physicians of private practice.

212 Orange Street.

CONCERNING HELIOTHERAPY IN TUBERCULOSIS.

By JAMES B. DINNAN, M.D.,

MERIDEN, CONN.

SUPERINTENDENT OF THE MERIDEN STATE TUBERCULOSIS SANATORIUM.

Our State Sanatorium at Meriden, located half way up the southern side of the Meriden mountain, and having an entirely unobstructed view of the wide Quinnipiac valley, gets more direct attention from the sun in the course of the year than most institutions in this part of the world. It also gets the most direct attention from wind storms, thunder storms, snow and ice storms. But that's another story. The important matter just now is the fact that it gets the most and the brightest sunshine. This fact doesn't give me the right to appear before you as an authority on sunlight, but it does give a partial explanation of why I have been interested in the subject of heliotheraphy during recent years.

The dictionary (Gould's) gives the following definition of heliotheraphy—"The treatment of disease by exposure of the body to sunlight. Sunbathing." I need not tell you that the use of sunlight in the treatment of disease is not new. It is older than civilization. And at some period and for some sickness, most civilized people have tried to practise it. The Egyptian doctors knew of it. Heroditus wrote of it. The physicians of ancient Greece and Rome made elaborate use of it in baths and solaria. In those old days, the sunlight treatment of disease was frequently part of a religious rite. For instance, the physician would send his patient to one of the temples of Apollo to pray for health. Apollo was the god of light and life. Temples to Apollo were built along the Mediterranean shore. To one of these, the patient came. The priests of the temple assigned him to one of the nearby cure galleries which were not unlike the verandas of a modern sanatorium (Baradat). Remains of these temples are still to be seen in the neighborhood of Nice. Our American Indians used heliotherapy and it is claimed that the Indians of Central America and of the Pacific Coast of South America used heliotherapy for the treatment of consumption.

So much of the contention concerning the action of heliotherapy impinges on the question of the effect of the various rays of the solar spectrum, that perhaps you will forgive me for recalling to your attention the fact that in estimating the wave lengths of these rays, the frequency of vibration of the red rays is estimated at 450 billions a second and the frequency of the violet rays at 750 billions a second, and the frequency of the ultraviolet rays at billions of billions a second; and that these ultraviolet rays are, perhaps mistakenly, called the chemical rays, and the red and infra red rays the heat rays, and the rays between, the luminous rays.

Malgat's rather fanciful description of the action of sunlight on the human body is as follows: "One portion of this bundle of white light is reflected into space; another portion pierces the skin as the solar spectrum, each refracted ray travelling and working on its own account. One transmits its own motion to the molecules and atoms of the skin, converts itself into work and thus extinguishes itself. Another portion penetrates into our internal organs, and there converts itself into molecular movement, and thus extinguishes itself. A third portion, a very small portion, not used by the skin, not used by our internal organs, goes through the entire body and loses itself in space."

Sersiron's summary of the action of light rays within the body is: "By their powers of decomposing and oxidizing, they destroy ferments, diastases, and microbes and the toxins of microbes, in the same way as they destroy moulds and mosses. And they are vasodilators and produce a passive congestion that greatly favors phagocytic action."

The present great interest in heliotherapy, especially in heliotherapy in tuberculosis, began only a comparatively few years ago. Even as late as 1905 at the great International Tuberculosis Conference held at Paris, the best authorities of France and the rest of the world regarded as unexplainable the mystery of the wonderful cures of bone and glandular tuberculosis that were taking place every day in the seaside sanatoria of France and other countries. Now, however, it is recognized everywhere that whatever assistance may have been given by the purity or salinity of the air, the salt water bathing, the ozone in the atmosphere, the sanitary environment, the good food, the important factor in the seaside cures of these

*Read at the meeting of the New Haven County Medical Society, Oct. 1, 1919.

cases of surgical tuberculosis, was sunlight. Before this, Finsen, of course, had been using sunlight for skin tuberculosis. And in 1902, Malgat, a physician of Nice, had read before the French Academy of Medicine his historic paper on heliotherapy. Then the physicians in charge of the famous sanatoria in the Alps began to take interest in the subject. Soon the whole world was taking interest in Rollier's demonstration that at Leysin, 5,000 feet above the sea in a place of perpetual snow, he could duplicate and surpass the best of the seaside cures of surgical tuberculosis. And his cures could, of course, be attributed only to sunlight. He pushed his belief far. He had his sun-brown crippled children, clad only in sandals, a hat, and a trunk, play games on the frozen snow. His dramatic successes threatened for a while to throw into the shadow the great work of the seaside sanatoria. Their final effect, however, has been to revive interest in the seaside sanatoria. Rollier and Leysin have merely explained the seaside cures, and caused the managers of the seaside institutions to develop in every possible direction the treatment of their patients with sunlight. Rollier's success has, of course, had the further effect of making it clear to physicians who have the misfortune to practise neither on snow clad mountain tops, nor on the ocean beaches, that sunlight is a powerful and badly neglected therapeutic agent even in such places as northern New York.

In 1913, I made visits to the largest of the sanatoria in England, Ireland and France that are devoted to the sunlight treatment of surgical tuberculosis, and I came home an enthusiastic believer in heliotherapy. The first seaside sanatorium to be erected in Europe for the treatment of glandular tuberculosis is still in operation. This is "The Royal Sea-bathing Infirmary for Scrofula" at Margate in England. It was founded in 1791, and has now 150 beds. For some reason or other, perhaps the scarcity of suitable beaches, England was not in recent years as enthusiastic about the seaside treatment of tuberculosis as most of the other countries of Europe. However, she has small sanatoria at such places as Bournemouth, Folkestone, New Haven, Brighton, Ramsgate, Scarborough, and St. Leonards-on-Sea.

Italy has more than twenty seaside sanatoria for tuberculous children, but most of them are not open in the winter. They care for more than 10,000 patients every year. Belgium's sanatoria at Middlekerke and Wenduyne are open all the year and have more than 200 beds. Only one small Dutch sanatorium is open all the year, the one at Loosduinen near the Hague. The others are at Scheviningen and Zandvoort and Wykaan Zee. Before the war, Germany's principal seaside sanatorium, the one at Norderney, was open all the year. It was founded in 1799, and treated more than a thousand children a year. Several thousand other children were treated during the warm months at a dozen other shore sanatoria. Austria, before the war, had seaside sanatoria on its bit of Adriatic coast, that cared for several hundred children. Denmark has four fine seaside sanatoria, three of them, Refsnaes, Juelsmunde and Odder, open all the year, and Helleback from April to October.

Norway has two seaside sanatoria open all the year, a large one at Freidrickvaern near Christiana and a small one at Hagewik near Bergen. In Sweden the sanatorium at Barkakra is open all the year and those at Styrso and Bygdea during the summer only.

Before the war Russia had three all-the-year sanatoria, Portugal two, Spain one, Argentine one, and the United States perhaps a half dozen. The pioneer in America was the one called Seabreeze and located on the Coney Island Beach in the midst of all the architectural and social jazz of that famous resort. The astonishing results achieved at this institution induced the City of New York to invest $2,000,000 for the purchase of a site and the erection of suitable buildings at Neponsit at Far Rockaway Beach. There is another all-the-year sanatorium at Atlantic City beside the Board Walk. And, as you know, Connecticut expects to open one at Crescent Beach, Niantic, during the next few weeks.

Thus far I have not mentioned the seaside sanatoria of France. I have reserved them for the last because they are the most important and because they have the largest and best digested reports. France has 15 of these institutions, 7 on the north coast facing the North Sea, the Channel or the Atlantic, and 4 on the Mediterranean. In the reports of 60,000 cases made to the Paris Congress, 74 per cent. of the gland cases were cured, 57 per cent. of the bone cases, 32 per cent. of the cases of Pott's disease, and 61 per cent. of the cases of tuberculosis of the skin, nose, eyes and ears, 72 per cent. of the cases of rickets. In the great sanatorium at Berck-sur-mer with more than 1000 beds, all the recent construction has been planned with the view of giving full sunlight treatment to all the patients, after the manner of Rollier.

It is important to remember that Rollier scorns the old method of bathing in sunlight only the affected part. His conception of heliotherapy is the bathing of the entire body in sunlight no matter how small or well localized the lesion may be. However, he makes the approach to a full sunlight bath very gradual. During the first few days the child is kept in bed and is not permitted to have any treatment. After three or five days, as a rule, he is pushed out onto the verandas into the sunshine. The head is covered with a white hat or an umbrella, the eyes protected with dark glasses, and a white garment worn over the body. On the first day the feet are exposed three times a day for five minutes; on the second day three times for ten minutes, and the legs to the knees three times for five minutes; on the third day the exposures are increased five minutes three times daily; on the fourth day the thighs are included; on the fifth day the arms; on the sixth day the back; and on the seventh day the abdomen and chest. By the end of the first week some parts of the body are exposed for one and one-half hours a day. The exposures are increased five minutes three times daily until the patient gets a full sun-bath for from three to five hours daily. This, as a rule, is the maximum, although some

bear the treatment for seven hours. Individualization, of course, is necessary and in some instances the scheme of exposures must be modified to suit the case. Pulse and temperature are closely watched and used as indicators of the patient's tolerance.

At the last International Conference on Tuberculosis, the one held in Berlin in 1913, there was considerable discussion as to whether sunlight therapy, on snowy mountain tops or on the white beaches of the ocean gave the best clinical results. The advocates of the seaside proclaimed instances of cures in patients that had done badly at Leysin. And diametrically opposed claims were made by the physicians from the mountains. Much of the discussion centered on the question of what it was in sunlight that was curative. We have seen that sunlight cures cases of surgical tuberculosis not only at the seashore and on snowy mountain tops, but also in less suitable places. How does it do it? As the French say, what is the mechanism? Ah, there is a big question! And it deserves an answer. On that answer depends the other question—If sunlight cures bone and glandular tuberculosis so easily, why does it usually fail to cure pulmonary tuberculosis? It was believed by Finsen, who was one of the first to make a serious effort to use sunlight in tuberculosis, that the ultraviolet rays of the spectrum were the only ones having curative power, and, that as the ultraviolet rays stopped at the skin it was useless to expect any effect from sunlight beyond the skin. His conception of his cures of lupus and other superficial tuberculous lesions was that the chemical ultraviolet rays killed the germs, but were absorbed by the hemoglobin in the superficial blood vessels. Therefore, his use of arc lamps and crystal. Therefore, also, most of the patented lamps made in Germany, and guaranteed to be more efficacious than sunlight because of their giving off more ultraviolet rays than most sunlight.

There was in the beginning a tendency everywhere to ascribe the remarkable cures of Rollier to the fact that there are more ultraviolet rays in the light on the snowy mountain tops than in the lowlands. Now, however, these views are generally discredited, even at Leysin.

Occasionally even now, somebody refers to the ultraviolet rays as the important factor in sunlight therapy, and holds to the theory that the browning skin of the patient changes the short chemical waves into longer light or heat waves. There doesn't seem to be much foundation to such a theory. Confessedly, we don't yet know for sure how sunlight acts when it cures surgical tuberculosis. But in view of what we do know, it seems fair and safe to consider that all the rays of the spectrum are needed to produce the best effects. Baradat, in the course of an argument against the advocates of the ultraviolet theory, has the following gallic pargaraph:

"Although there does not exist any practicable method of establishing the proportion of ultraviolet rays in any given atmosphere, it is easy to show that really everything in nature puts itself in a state of defense—for the protection of the human organism and for the protection of every living thing, and for the protection of the earth itself—against the radiation of the ultraviolet rays. The ozone which is formed at the first contact of the sun's rays with the oxygen of the highest regions of the earth's atmosphere, becomes immediately a halting place where many of the chemical rays are absorbed and those that remain become fewer and weaker, metre by metre, as they proceed through the 50 or 60 kilometres, that they must traverse before they reach the surface of the globe. The very skin of men and animals turns brown and covers itself with pigment in order to save itself from penetration by the radiation of the ultraviolet rays. 'And finally,' as said Nogie, 'if the ultraviolet rays could penetrate to the surface of the earth, they would bring about the immediate destruction of all vegetables and animals. Apollo, god of life and light, would be overwhelmed by Pluto, the King of hell.'"

Of course, the ultraviolet rays can kill bacteria but they cannot penetrate the skin. And the more the skin is browned, the more resistent is it to ultraviolet rays. But the browning of the skin in heliotherapy is universally recognized as an indication of the success of the treatment. The patient whose skin does not become brown and remain brown, causes immediate anxiety to his physician and nurses. One of the remarkable reactions of sunlight therapy is the exhilarating or tonic effect that it has on the patient. Ultraviolet rays are not stimulating. They are destructive of life. And it has been shown by many experimenters, even by Rollier, that the sunlight does penetrate the human body and that the depth of the penetration is dependent on the intensity of the sunlight. Malgat claims that with intense radiant sunlight alone, he has been able to get on a sensitized plate, an impression of a human chest. Yet the ultraviolet rays, because of their shorter waves, are stopped by the first layer of skin they touch, while the other rays of the spectrum, because of their greater lengths, penetrate the body more and more deeply the nearer they are to the red end of the spectrum. It would seem to be fair to assume from our present knowledge of the subject, that all the rays of the spectrum, the heat rays, the light rays, and the chemical rays, are of importance in heliotherapy, particularly in heliotherapy of tuberculosis. As I have said, the authorities of the Swiss mountains admit that much.

Morin of Leysin, one of Rollier's coworkers, in discussing the question of the place most suitable for administering heliotheraphy to the tuberculous, decides as follows: "Nobody can deny that the Alpine climate is one of the best for the purpose of heliotherapy. Here heliotherapy can be practised the whole year around. Here the sun's rays are strong, and here the air is fresh and cool. The seaside is equally suitable for the sun cure, because here the rays of light, refracted by the shining water and by the sandy stretches of beach, acquire increased intensity. In the lower lands of the middle of Europe, it is possible to practise heliotherapy in the summer time, but even then it is less efficacious than on the mountain tops because of the absorption of so much useful light by the impurities of the atmosphere."

Rollier reports from Leysin the remarkable figure of 79 percent. of cures in his cases of tuberculosis of the vertebrae. Hertz, the superintendent of one of the seaside sanatoria in Denmark, who for the last five years has been giving heliotherapy in full measure to his patients, summer and winter, has just published some results that not only rival Rollier's, but show that with the development of the possibilities of heliotherapy, the results achieved in the old days by the French seaside sanatoria can be greatly improved. His cures of tuberculosis of the vertebrae have been 75 percent. of 271 cases; tuberculous hips, 90 percent. in 139 cases; tuberculous knees, 97 percent. in 74 cases; tuberculosis of the mesentery, 94 percent in 61 cases; tuberculous adenitis, 95 percent. in 248 cases; multiple tuberculosis of bones and joints, 73 percent. in 11 cases. He claims that the cure has been permanent in a much larger number of cases than in the best surgical statistics, and he quotes approvingly Calot's dictum on surgical tuberculosis, "Le bistouri, c'est l'ennemi."

Thus far I have not spoken of the use of sunlight in the treatment of pulmonary tuberculosis. Not that I haven't had it in mind. In fact, that is the phase of the subject that interests me most. Practically all of my patients are cases of pulmonary tuberculosis. When I read four years ago that Rollier claimed that by his methods of using heliotherapy he had cured not only surgical but also pulmonary tuberculosis, I decided to start a little heliotherapy clinic with some of the consumptives under my care at the Meriden Sanatorium, and in the treatment to follow closely Rollier's technique. The class consisted of six male patients ranging from fifteen to fifty-four years of age. All were active advanced or second stage cases. All had tubercle bacilli in their sputa. The experiment was begun in early June, and continued until the end of October. It was conducted on the roof of one of our second story verandas. I followed the gradual exposure methods of Rollier. For two patients we went a little too fast in the beginning, and as a result had two sharp sunburns. These soon healed, and in ten days the two patients had caught up with their classmates. Except for the slight inconvenience, due to sunburn, none of the patients experienced any discomfort at any time. The patients were exposed while lying on cots placed on the veranda roof. The amount of body surface exposed was controlled by the use of a light covering. The equipment of each patient consisted of a pair of light cotton drawers, a white hat and a pair of smoked glasses. The treatment was continued for five and one-half months, but exposures were made only on 107 days, owing to the many days of rain and showers which necessitated a discontinuance of treatment for the day. The atmosphere varied between 40° F. and 90° F.

Determinations of blood pressure, counts of the red and white blood corpuscles, and estimations of hemoglobin were made at first every few days, and later every week. The patients were weighed weekly, while temperature, pulse, and respiration were taken daily at the beginning, and ending of exposure. Frequent notes were made as to cough, amount of sputum, appetite, sleep, and condition of the bowels. Several examinations of sputum were made during this period. At the beginning of treatment, radiographic plates were obtained in each case.

I have reported in a previous paper read at one of our conferences of the staffs of the State Tuberculosis Sanatoria, the tabulated results of all these observations. To-day, I will give you merely the general summary:

Of the six patients, two are dead; three are arrested cases, and have returned to work. The sixth patient left the sanatorium an arrested case and returned to work, but I have not been able to trace him for the last two years. Of the two who died, one left the sanatorium improved and died eighteen months later of a severe hemorrhage; the other died at his home. He had a greatly hypertrophied heart, but it was undoubtedly his tuberculosis that killed him. For these six patients, the five and one-half months of heliotherapy lessened the sputum in all cases; markedly improved the cough in five cases; improved the temperature in two cases; slowed the pulse rate in four cases; browned the skin in all cases at first but in the two who died later, the skin paled in patches after thirty days and never again darkened; sleep was better and appetite better in all cases; all said they felt better; four cases lost weight, an average of 2¾ lbs.; two cases gained weight, an average of 7½ lbs.; two of those who lost weight were among the arrested cases; the records of our hundreds of observations of blood pressure, red and white blood counts, and hemoglobin estimations showed no apparent relation between these results and a gain or loss in general or lung condition.

This summer, we happened to get among the new admissions of children, several acute cases of bone and glandular tuberculosis. It occurred to me that it would be worth while both for the patients themselves, and for the sake of comparing results, to subject them to a Rollier regime of heliotherapy for a few weeks. I am having three of these children brought to the meeting today for your inspection, not because the results are any more wonderful than those secured at other sanatoria, but to allow you to visualize some of the reactions of the Rollier treatment.

In conclusion, I would say:

1. Sunlight properly applied is our best therapeutic agent in the treatment of bone and glandular tuberculosis.

2. Although sunlight therapy has been most successful when applied to patients on mountain tops or on ocean beaches, it gives also excellent results inland and on the lowlands.

3. Although the number of cases of pulmonary tuberculosis that I treated with systematic heliotherapy was too small to permit the drawing of conclusions, it has left me with the conviction that the general skepticism on this subject is not warranted, and that we owe it to the public to take a much greater interest in the possibilities of heliotherapy in pulmonary tuberculosis.

4. A promising field for future research in our scientific laboratories would be intimate studies of the effect of heliotherapy on the tissues and organs of diseased and healthy animals.

TREATMENT OF INFLUENZA BY AN APPARENTLY SPECIFIC METHOD.

By FRANCIS E. PARK, M.D.,

STONEHAM, MASS.

In the March 6, 1915, issue of the MEDICAL RECORD I published a treatment which I had found to be of the greatest value in lobar pneumonia. As the subsequent years had fully borne out its earlier

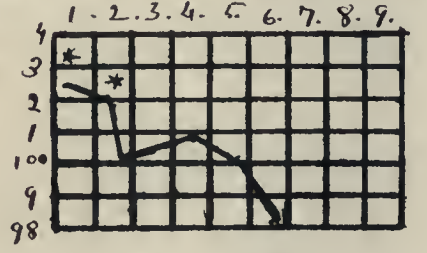

FIG. 1.—Case I.

promise both in my own practice and in that of other physicians who had adopted it, on the advent of the influenza epidemic, with its very frequent complication of pneumonia, it seemed to me to be a

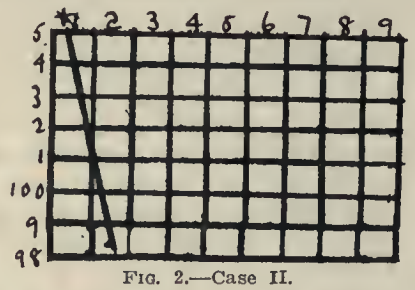

FIG. 2.—Case II.

most logical treatment and was used throughout the entire run of the disease, giving me prompt and uniform success in every indicated case.

I will first give a brief history and the tempera-

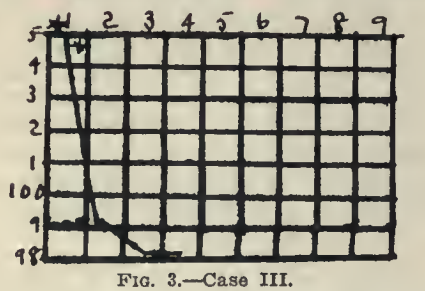

FIG. 3.—Case III.

ture chart of 30 consecutive cases, which are typical of all those treated, and then describe again the method used. An asterisk on the chart signifies an injection.

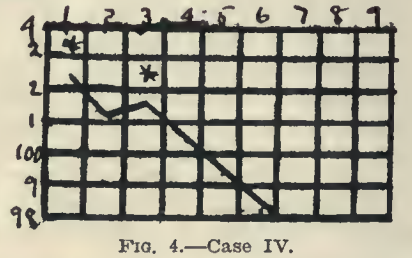

FIG. 4.—Case IV.

CASE I.—Mrs. V., 61 years. Very fat, much prostrated, great congestion of lungs, with rusty sputum and beginning consolidation. Tendency to asthma. Perfect recovery. Two injections of 4 c.c. each.

CASE II.—Man, 38 years. Was taken ill late in the afternoon; I saw him at midnight; typical case. All symptoms very pronounced. One injection was given of 5 c.c. The patient was discharged the following day.

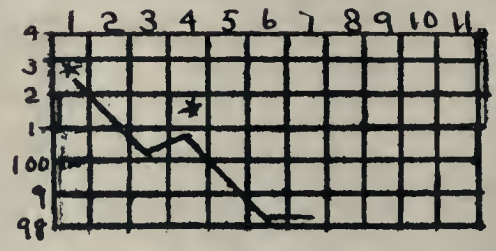

FIG. 5.—Case V.

CASE III.—Man, age 25. Very violent sudden attack. He fainted at his work. I saw him an hour later, and gave him 5 c.c., following this with another 6 hours later. Immediate recovery.

CASE IV.—Woman, 35. Very septic case. Did not respond promptly; yet did not get worse, but recovered more slowly than some. Had two injections.

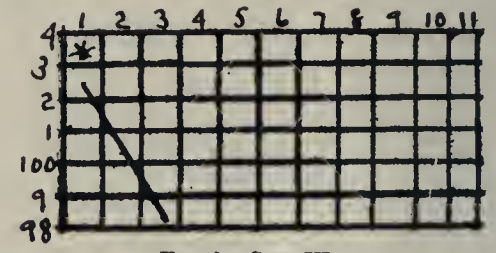

FIG. 6.—Case VI.

CASE V.—Woman, aged 45. Moderately sick when seen. Two injections of 3 c.c. each were followed by perfect recovery.

CASE VI.—Man, aged 31. Beginning case. Well marked symptoms, moderately advanced. He made a good recovery after one injection of 4 c.c.

CASE VII.—Man, aged 28. Had been sick but a few

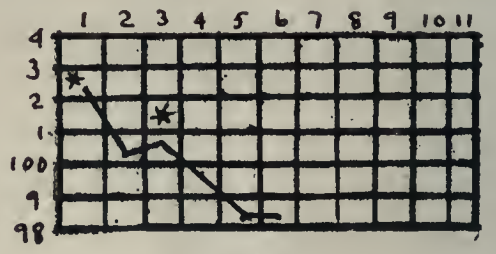

FIG. 7.—Case VII.

hours. Bronchial symptoms were very pronounced and there was apparently a beginning pneumonia as well. The patient was badly run down by overwork. I gave him two injections of 4 c.c. each. Good recovery.

CASE VIII.—Man, aged 33. Beginning case. All symptoms were well pronounced. One injection of 4 c.c. was followed by prompt recovery.

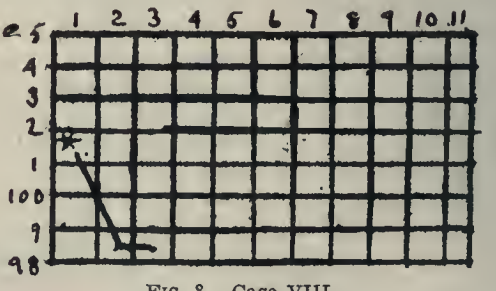

FIG. 8.—Case VIII.

CASE IX.—Boy, aged 19. Had been sick about 8 hours, and was very much prostrated. There was intense congestion of both lungs. He received one injection, and rapid convalescence followed.

CASE X.—Man, aged 27. Light case, did not have to go to bed. One injection of 3 c.c. was followed by immediate recovery.

CASE XI.—Woman, aged 31. Had been sick 2 days,

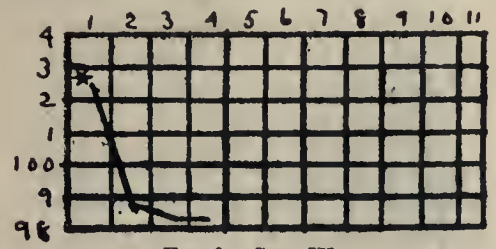

FIG. 9.—Case IX.

and was greatly prostrated. There was some consolidation in one lung. This was the type of case that often ended fatally. I gave two injections of 3 c.c. each.

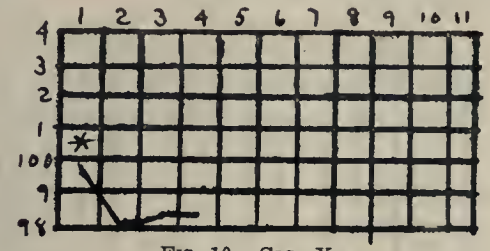

FIG. 10.—Case X.

CASE XII.—Girl, aged 16. Seen soon after the onset. Extremely ill. One injection of 3 c.c. was followed by good recovery.

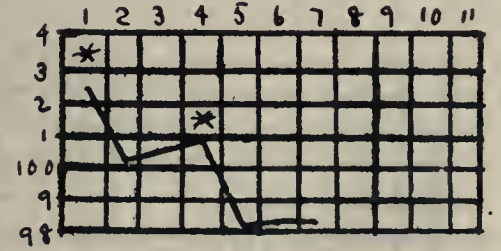

FIG. 11.—Case XI.

CASE XIII.—Girl, aged 19, very fat. She was extremely ill, presenting the appearance of the fatal type

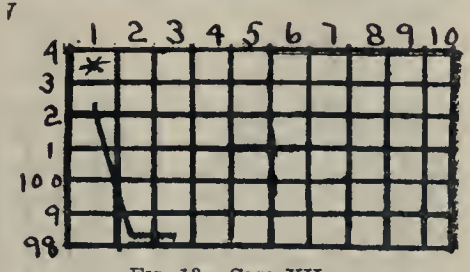

FIG. 12.—Case XII.

of influenza, the symptoms being exaggerated. One injection preceded a prompt recovery.

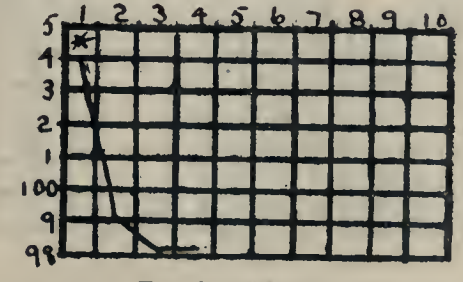

FIG 13.—Case XIII.

CASE XIV.—Man, aged 52, very heavy build, full blooded. He had great congestion of the lungs, with marked prostration. A good recovery followed one injection of 4 c.c.

CASE XV.—Boy, aged 18. Beginning case. Very ill. One injection. Good recovery.

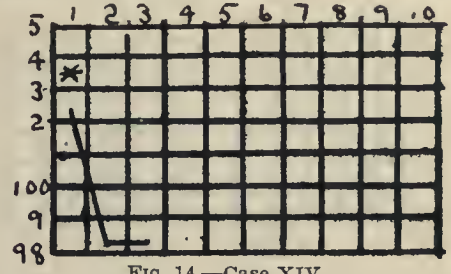

FIG. 14.—Case XIV.

CASE XVI.—Man, aged 51, a debilitated alcoholic. Marked pulmonary congestion. Extremely ill. He received one injection of 4 c.c.

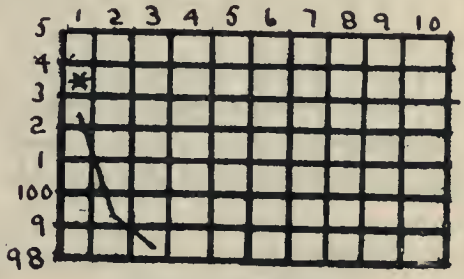

FIG. 15.—Case XV.

CASE XVII.—Girl, aged 19. Had been sick 2 days. She responded well to the first injection, but after a sharp drop in the symptoms, the temperature started

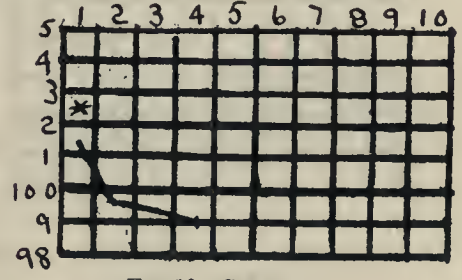

FIG. 16.—Case XVI.

up again, necessitating a second injection, when it immediately began to fall, and the patient made a good recovery.

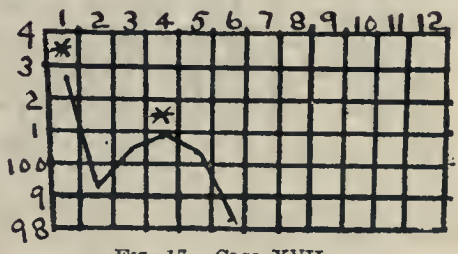

FIG. 17.—Case XVII.

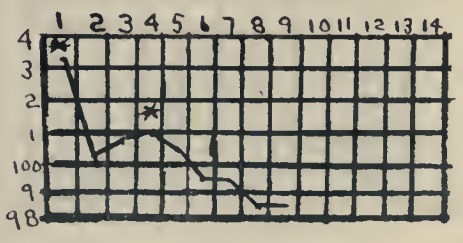

FIG. 18.—Case XVIII.

CASE XVIII.—Woman, aged 26. Much run down, showing but little resistant power. She responded

promptly at first, then after a slight rise of temperature made a slow but steady gain. There was slight pneumonic process in one lung. The patient received two injections of 3 c.c.

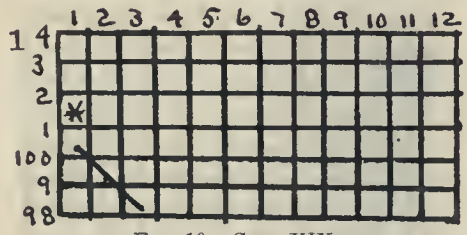

FIG. 19.—Case XIX.

CASE XIX.—Man, aged 20. Early case, not well developed. Had one injection of 4 c.c., which was followed by immediate improvement.

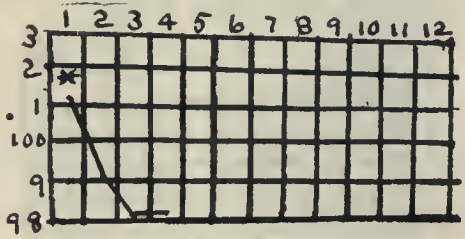

FIG. 20.—Case XX.

CASE XX.—Woman, aged 23. Very sick. I saw her about 8 hours after the onset of her illness. She was

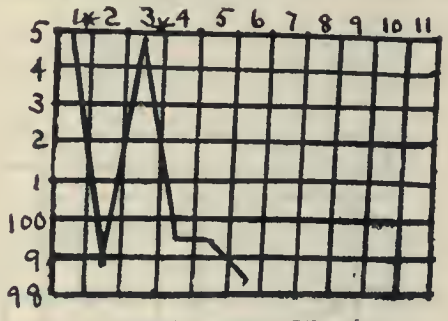

FIG. 21.—Case XXI.

having great pain and prostration. One injection of 4 c.c. was followed by a good recovery.

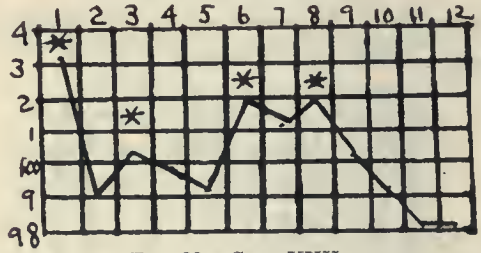

FIG. 22.—Case XXII.

CASE XXI.—Nurse, aged 24. Very severe attack complicated with acute otitis media. The drum mem-

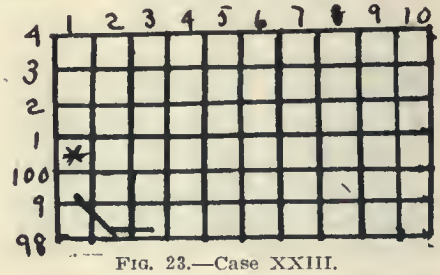

FIG. 23.—Case XXIII.

brane was punctured at once, and an injection of 4 c.c. was given. Immediate relief followed, but in a few hours the temperature shot up again accompanied with a severe chill. The ear was draining freely. A second injection was given with marked relief. The patient made a good recovery.

CASE XXII.—Girl, aged 20. Very sick. Responded nicely at first, then a pneumonia set in running a very

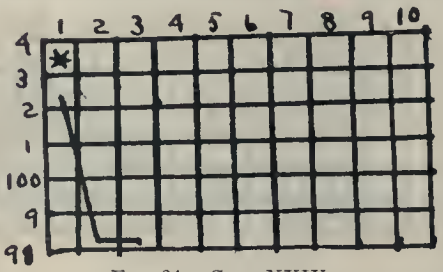

FIG. 24.—Case XXIV.

mild course. At no time did she appear to be in any danger, and eventually she made a good recovery. She received four injections of 3 c.c. each.

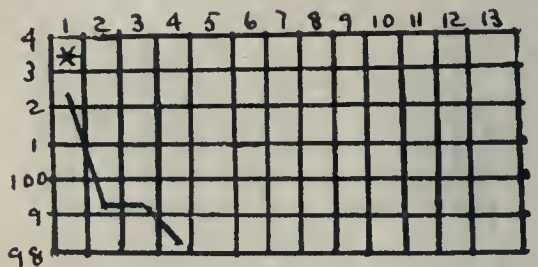

FIG. 25.—Case XXV.

CASE XXIII.—Girl aged 20. The attack had just begun and had not gained much headway. One injection of 3 c.c. was followed by immediate recovery.

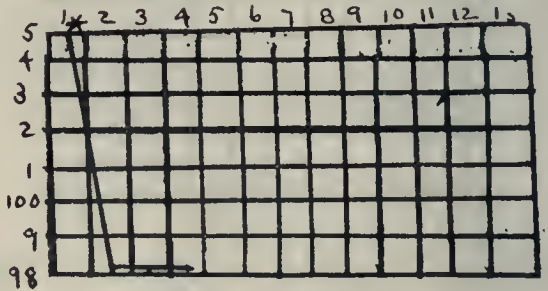

FIG. 26.—Case XXVI.

CASE XXIV.—Woman, aged 34. Very fat, and extremely ill, showing the symptoms of the rapidly fatal

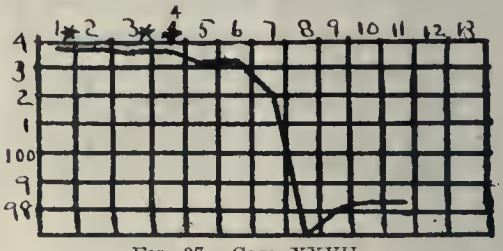

FIG. 27.—Case XXVII.

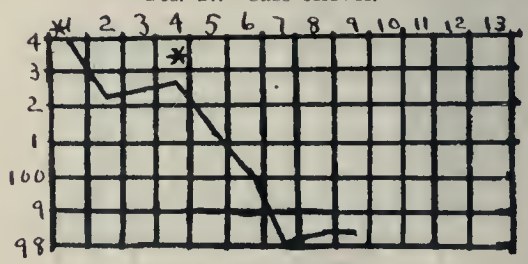

FIG. 28.—Case XXVIII.

type. The patient was greatly alarmed by her condition. I gave her one injection of 5 c.c. with the result that the patient was discharged the following day.

CASE XXV.—Man, aged 25. Fully developed attack ac-

companied by marked prostration. One injection of 4 c.c. was followed by a good recovery.

CASE XXVI.—Man, aged 35. He was seen 6 hours after the attack began, and was at that time very sick, all the symptoms pointing to a beginning pneumonia. I gave him 5 c.c. and the man was well the following morning, and was back at work in 2 days.

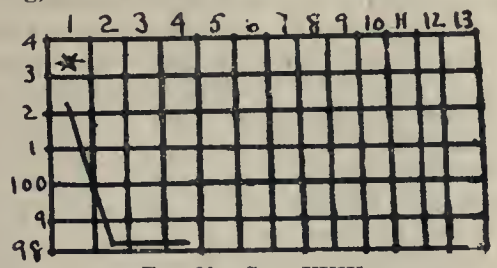

FIG. 29.—Case XXIX.

CASE XXVII.—Man, aged 25. Influenza with double lobar pneumonia. I am absolutely sure that under the usual treatment this man would not have lived 3 days. One of the most desperately ill patients I have ever seen. He received three injections of 5 c.c. each, and made a very good recovery.

CASE XXVIII.—Insane woman, aged 23. The influenza was complicated from the start with lobar pneumonia. It was naturally a difficult case to handle. The patient received two injections of 3 c.c., the second being followed by recovery.

CASE XXIX.—Man, aged 34. The onset was severe and the man was very sick. I saw him 6 hours after attack began and gave one injection of 5 c.c. The temperature fell rapidly and recovery ensued.

CASE XXX.—Man, aged 31. Double lobar pneumonia had already started when I saw the case. I gave three injections of 5 c.c. each. Convalescence began in four days, following the third injection. This man would in all probability have died under the ordinary method of treatment.

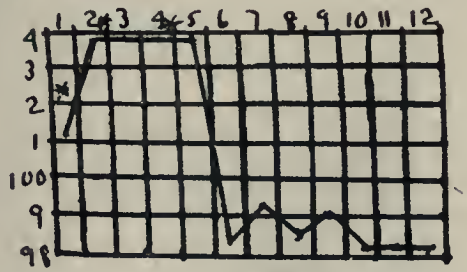

FIG. 30.—Case XXX.

On looking over the charts, one is struck by the constant fact that there is almost invariably an immediate drop in the temperature after the injection is given. This was constant through the whole epidemic. It applied, however, only to those cases seen fairly early, say within twenty-four hours of the onset of the attack. I saw many cases in consultation where the patients were cyanosed or nearly moribund, and in these there was no response. They seemed to have lost the power to react. Apart from these late cases, all those I saw recovered promptly and without complications. Another remarkable thing was that I did not see a cyanosed case where the treatment was used promptly. In treating the cases I not only made use of this specific intravenous treatment, but in addition, I kept the bowels open and also used the spirit of nitrous ether to assist elimination through the kidneys, giving small doses, from 10 to 20 drops every two hours in plenty of water. This I consider of great importance as an aid.

The treatment is very easy to give, any physician who can insert a hypodermic needle into a distended vein can give it.

I prepare my solution as follows: Dissolve in 60 c.c. of physiological salt solution, 1.3 grammes each of sodium salicylate and soluble iron phosphate. Filter this and sterilize with heat. Then add 1 c.c. of a saturated solution of the best beechwood creosote in lime water. The solution is then ready for use. The dose varies from 3 to 5 c.c. and can be repeated in twelve hours if needed. I have never given more than four injections in any one case, and the great majority required but one.

Great care must be taken to put the injection into the vein. If it is deposited in the arm much pain and disability will result. There should be absolutely none if it is given right. If the needle is inserted properly it will be possible at any time to prove its position, by withdrawing the piston of the syringe slightly, when the blood can be seen pouring into the barrel. One should always use an all-glass syringe and insist on having one with the nipple on the side, rather than on the middle of the end of the barrel, as is usual. The advantage of this is twofold: First, it is much easier to insert; and, secondly, it gives one a larger margin of safety, in case a bubble of air has gotten in through a poorly fitting needle, and one does not wish to remove it at the time; for until all the solution has been injected the air will stay in the top of the barrel and one can easily control it.

The injection should be given very slowly and through a 26-gauge needle; a steel needle can be used perfectly well, and has the added advantage of a sharper point.

The only reaction that will be observed comes at once. First there is a flushing of the face, quickly followed by nausea, and in some cases, emesis. It is all over as quickly as it comes and nothing further is felt. It is well to explain this to the patient, so as to prevent any alarm on his part.

In conclusion I wish to emphasize that the great point of this treatment is that it must be used promptly—as soon after the onset of the disease as possible. The patient rapidly loses the power to react. I should not hesitate, however, to use it at any stage, for in the many thousand injections I have given, even in very aged and weak people, I have never seen any harm occur. But it is pre-eminently a treatment to abort and cure the disease in the early stage. In six years' constant use I have never seen it fail when given at this time.

The Professorship of Medicine held by Laennec in the University of Paris.—This chair was founded in 1542 and has had fifty incumbents up to the present time, an average incumbency of seven and a half years. Distinguished in their day were nearly all of them but not many names mean anything to us now. Some of the more distinguished up to Laennec's time were Guy Patin, Riolanus, Tournefort, Ferrein, Portal, Astruc, Corvisart, Hallé. Yet by some irony of fate hardly one of the men mentioned is remembered as a physician, for Patin is best known as a satirist, Riolanus as a botanist, Tournefort as a traveler and botanist, while Ferrein and Portal are known to us to-day only as anatomists. Corvisart was, of course, Napoleon's physician and with his pupil Laennec marks the transition from prescientific to scientific days. Even Recamier, who succeeded Laennec, hardly belonged to the new regime. But at a later period we find the chair of Laennec filled by Magendie, Claude Bernard, Brown-Sequard, d'Arsonval; all eminent, but rather as physiologists than practitioners.—Letulle in *La Presse Médicale.*

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, January 10, 1920.

PREVENTIVE MEDICINE IN GREAT BRITAIN.

IT seems to be generally admitted that medical practice is now in an evolutionary stage in Great Britain. Old conceptions as to the duties of the general practitioner are being very considerably revised if not cast aside entirely. The work of the medical profession in Great Britain in the future will consist rather in the prevention than in the treatment of disease. The creation of a Ministry of Health is the straw which shows the way the wind is blowing. Up to the present time the Ministry of Health does not appear to have done any practical work, but it has done a good deal of clearing the ground, preparing for practical work. With this end in view the Minister of Health has caused the experts who are members of his medical staff to issue a series of memorandums. Perhaps the most valuable of these yet sent out is that recently issued by Sir George Newman, Chief Medical Officer of the Ministry. In this he discusses the functions and practice of preventive medicine and indicates the lines on which should be developed the great work of conserving and improving the health of the nation. It is pointed out that the chief business of the practising medical man is to cure disease; the primary function of the State in relation to disease is to prevent it. While these two spheres overlap in the routine of daily work, they possess a firm, common ground in research, upon which prevention and cure very largely depend. Of course, the population of Great Britain is very much more dense than it was in the last century, and in addition the stress and strain of modern life, reacting on body and mind alike, have become so intense as to produce diseases formerly unknown. Up to quite recent times the State had concerned itself little with questions of health, with the exception of the supervision of certain dangerous trades. Despite this negligence the population has become progressively and steadily more healthy and the span of life has been increased. This so far satisfactory state of affairs may be traced in the main to an enlightened public opinion, led and fostered by some of the pioneers of sanitation, which has found expression through the popularly elected local governing bodies responsible for the management of sanitary matters.

This is the bright side of the medal, but there is, of course, a reverse side. Statistical data reveal the following facts, or one might preferably say broad deductions: (1) There is a steadily falling birth rate. (2) There is a death rate which shows a steady decline at all ages, and there is an increased expectation of life from birth upward; nevertheless, nearly half the deaths occur under 50 years of age. (3) Although the infant mortality rate is one of the lowest recorded, there is still unnecessary loss of life in infancy and before birth. (4) There is a relatively light burden of epidemic and infectious disease, which, with certain exceptions, is steadily decreasing in incidence and mortality, an indication of the progress of preventive medicine. (5) Tuberculosis, measles, acute rheumatism, and influenza are, however, still prevalent, and, with venereal disease, lead to much disablement and mortality. (6) There has been in recent years remarkable and continuous improvement in sanitary environment, though the problem of insufficient and unsuitable house accommodation remains. (7) The systematic medical examination of school children since 1908 has revealed a substantial degree of physical and mental impairment, both the existence and effects of which have been confirmed by the examination of recruits. (8) The expenditure on sickness and disablement benefit, and other returns related to the system of national insurance, denote that more than half of the insured persons claim and receive treatment, and that a very serious amount of time is lost to employment, amounting to upward of 270,000 years per annum, owing to invalidity or disablement, much of which is preventable.

The problem, then, lying immediately before preventive medicine is, first, to rear and maintain a healthy race of people, and, secondly, to continue the attack upon infection and to initiate an attack upon all forms of preventable sickness and invalidity. The provisional articles of a national policy in preventive medicine are thus outlined: Eugenics and the principles of sound breeding; maternity and the care, protection, and encouragement of the function of motherhood; infant welfare and the reduction of infant mortality; the health and physique of the school child and adolescent; sanitation and an improved personal and domestic environment; industrial hygiene; the health of the worker in the workshop; the prevention and treatment of infectious disease; the prevention and treatment of non-infectious disease; the education of the people in hygiene; research, inquiry, and investigation; and the extension of the boundaries of knowledge.

It is clear that if the policy of the Ministry of Health of Great Britain is carried out on the lines indicated in the memorandum, a large proportion of the British medical profession will be practising preventive medicine and must be educated accordingly. It is patent that such a policy calls for an adequate medical service and appropriate administrative machinery. It will not be the highly skilled consultant who is in the front rank in the nation's

fight for health, but the main body of the profession. The medical profession of Great Britain will have to reform its methods of medical education and the hospital service must be reformed also. At least, this is the opinion of the writer whom we have quoted. America has not a central department of health, but sanitary and health conditions in Great Britain and America are closely alike in many respects. It should therefore be instructive for the medical men of this country to watch those of Great Britain proceed along a new path, more especially as we may have to travel along the same path in the not far distant future.

CONCERNING NECROPSIES.

THE subject of necropsies is one of such vital importance to our profession that we have no hesitation in adding our voice to that of Dr. Douglas Symmers, who, in a recent article in the *Journal of the American Medical Association*, deplores the difficulty of obtaining necropsies in a State like New York. Although, as Dr. Symmers points out, medical men still exist who are indifferent to the value of necropsies, there is no question that the laity need far more to be educated in that regard. Many a medical man would be willing to travel far to learn the exact nature of a lesion which has long been a puzzle to him. But he is all too likely to be met with, "Cut him all up? Never!" Vain are his pleas of "value to science," "no mutilation," "no desecration." Science failed to save the life—now science can go hang. The words autopsy and post-mortem still connote "cutting up," hacking the beloved remains.

The medical profession has been slow to educate the public to the real service which their dead bodies can perform. Legislation can and should deal with the profitable disposition of bodies which no relative cares to bury. But when we deal with beloved dead instead of unwanted derelicts, legislation must keep hands off, and only individual enlightenment should control. Before the people can be expected to co-operate in the matter of granting permission for necropsies, they must first be taken into the confidence of the doctors. Often the more intelligent will grant such permission on the promise that the findings will be reported to them. Surely it is but seldom that such information need be denied them. At present the laity know only that necropsies mean mysterious tampering with the dead. They may even admit that necropsies are a help to medical science. They have yet to learn what pathology can do for themselves.

Perhaps it is the medical man's sense of pride which is to blame for the public's ignorance of what the pathologist can contribute to its physical welfare. The doctor is painfully aware of the frequency with which the pathologist makes havoc of his sense of conceit. Fallibility is something which his patient must by no means suspect in him. Laymen will condemn more harshly than pathologists, and often with less reason. But necropsies are essential to honest medicine. The real scientist need not be ashamed of his mistakes—if he does not make them too often.

DATE OF ORIGIN OF THE INFLUENZA PANDEMIC.

BETWEEN the actual and apparent dates of an epidemic there may be a considerable interval. This was seen in connection with the outbreak of syphilis in Italy in 1494. Without any reference to the American origin of the disease it has become apparent as a result of cumulative study of certain town archives, not only that no sudden invasion of this disease could have occurred at the times and places stated, but that the condition was not in reality a new one and can be traced backward haltingly until it is lost in medieval obscurity. The fact that the earliest town archives go back only to the middle of the XVth century is largely responsible for this state of affairs.

In regard to the influenza pandemic it is not long since that writers appeared to agree that the outbreak could not be traced back of the Madrid episode in the last week of May, 1918; yet already we note that the pandemic has been traced to March of the same year and in both France and Italy. Dr. Rho, at the head of the Italian Military Marine Medical Department, in a report first made last March before the Inter-Allied Sanitary Commission, recalls the appearance as early as March, 1918, of cases in his service, nor does he call them three-day fever but influenza. Calmette at the same meeting fixes March as the first month of diffusion of the pandemic. However, we know now, no more than before, where was the cradle of the disease. Dr. Siredey, head of the Hôpital St. Antoine in Paris, states that the first cases of influenza appeared during the month of March and that the institution has never since been free from cases. The fact that outbreaks of grippe occurred in the United States in March, 1918, may also be recalled. When the disease first attacked Europe it was seriously stated that the infection had been brought from America, in which country it had broken out among the prisoners at Sing Sing in March.

Any grippe which breaks out in the late Spring should clearly be regarded with great suspicion because what is known as influenza nostras, acute catarrhal fever, and endemic winter grippe is strictly a seasonal affection which begins with cold weather. As far as we can see now the influenza originated in March and several months were required before it gained sufficient headway to assume pandemic incidence.

SYPHILIS AND TUBERCULOSIS.

SYPHILIS, the arch enemy of mankind, not only modifies, and usually for the worse, the course of many diseases, but also, undoubtedly, prepares the soil for numerous infections which otherwise might have been successfully resisted. We are reminded

again of this by an article on the association of syphilis and tuberculosis appearing in the December issue of the New British monthly journal *Tubercle*. In this article Dr. Alfred Mirande of Paris points out that Emile Sergent by a series of experiments has not only confirmed the views of those who have shown that there is an association between syphilis and tuberculosis, but has placed the matter in a somewhat new light. Sergent's thesis is thus summarized by Mirande: Syphilis and tuberculosis are two different infections and can develop separately in the same organism. Syphilis produces a soil for the tuberculization of the infected subject, but especially does the syphilis of the father prepare for the tuberculous infection of his child. Many forms of tuberculosis, and in particular scrofula, develop most often in a favorable syphilitic soil. Perhaps the most interesting and suggestive part of the article is that which deals with the subject of tuberculosis in cases of congenital syphilis. According to Sergent, tuberculosis in a young congenital syphilitc, instead of taking on the bronchopneumonic form general in subjects of this age, develops as an excavation, the cavity being either the product of associated action of the treponema and the tubercle bacilli or of the bacilli only. In any case mercurial treatment should be commenced and will help the cicatrization of pulmonary lesions, even when the bacillus of Koch is present. In the case of a congenital syphilitic apparently without lesions, the phthisis becomes sclerotic, and as in the adult is accompanied by asthma and emphysema. Finally, Mirande remarks, it should be remembered that the frequency with which syphilis is found in the children of tuberculous parents, whoever they may be, has prompted Sergent to wonder whether tuberculosis is not often the indirect result of the inheritance of syphilitic soil, and to put forward his claim that tuberculosis may be a symptom of congenital syphilis. In making the diagnosis of a suspected case of syphilotuberculosis, the following points should be borne in mind: Laryngeal phthisis is often a symptom of syphilis. Fibrous pulmonary tuberculosis should lead to a search for syphilis. In general tuberculosis is perhaps an indirect result of the inheritance of the syphilitic soil, syphilitic pneumopathies often conceal a hybrid association with tuberculosis, and the remedial effect of mercurial treatment is not alone sufficient evidence, when its influence on the soil is known, for discarding the possibility of the presence of tuberculosis. In children many diseases of tuberculous origin, especially scrofula, develop readily in syphilitic soil. Mercury is the treatment advocated by Sergent for the syphilotuberculous and he prefers it given by injections in the form of soluble salts.

Epidemiological Pseudology.

Conservative writers will be apt to deplore the tendency to see in most of the great innominate pestilences of the past nothing more than malignant influenza. The question is much more than an academic one, for the eradication of pestilence has been set down to advances in several sciences and to evolutionary progress in general. If then the innumerable deadly visitations of antiquity and the Middle Ages were very largely influenzal, we cannot be said to have advanced much, for a malady of this type can hardly be evaded or minimized when present. Cruchet in the *Journal de médecine de Bordeaux* for November 25, 1919, xc, 22, apparently takes some such viewpoint, for he criticizes his colleague Durodié for recently published beliefs that influenza makes up a very large proportion of the historical pestilences. He states that we can deduce influenza from the scanty data, but may also deduce other quite different maladies. Reading critically Thucydides' account of the plague of Athens, he concludes that it applies equally to typhus, malignant typhoid, cholera, and smallpox, to say nothing of the bubonic plague. Thucydides speaks in the same breath of "violent cough and lesions of the genitals." Why not explain these symptoms by pneumonia and inguinal buboes and call the disease bubonic plague? The plague of Athens was in part characterized by "ulcers and small pustules of the skin" but even with the plethora of symptoms in influenza, we do not find accounts of such lesions. The same is true of the mutilating affections which destroyed the limbs, and the frequent loss of sight. The first named apparently means gangrene of obscure nature while loss of sight suggests smallpox or meningitis. Moreover, there is such a thing as acquired racial immunity to certain epidemic affections. Measles and scarlatina, to go no further, must once have been deadly on a large scale, while this is perhaps true of epidemic meningitis, which has in no whit abated its deadliness today. Anthrax has recently been recognized by competent authorities as a destructive racial malady "with a past," to which man may have become largely immune through the ages.

Migraine and Anaphylaxis.

The obstinacy to treatment of migraine should be proverbial and a lifelong student of pain and its relief once made the statement that nothing but a near toxic dose of opium could neutralize an attack and then only when given very early, before the latter had become established. However, it is conceivable that once the nature of a process becomes understood, the same may yield to a remedy anything but formidable. This is well seen in syphilitic headaches and other algias, when, after defying all anodyne remedies, they promptly yield to potassium iodide. According to Pagniez, Pasteur, Valery-Radot, and Nast in an article quoted in the *Journal de médecine et de chirurgie pratiques* (October 10, 1919, xc, 19) migraine is to a large extent an anaphylactic phenomenon, and when this factor is specially in evidence the prophylactic treatment based on combating anaphylaxis is efficacious. The subject merely ingests, three-quarter of an hour before each meal, half a gram of foreign protein in the form of peptone—any good peptone will answer. The individual access will not be jugulated at the outset, but if the treatment is pursued the attacks cease to appear as long as the patient is under the influence of the remedy. The gastric symptoms yield with the headache. The same treatment has also prevailed against urticaria in a recurrent form. The conquest of migraine by peptone is naturally regarded as proof of its anaphylactic nature but this, while extremely probable, will not be straightway accepted without further evidence.

News of the Week.

Typhus Again Epidemic in Serbia. — Commissioner William J. Doherty, of the Serbian Relief Committee of America, who returned to this country recently, reports that several cases of typhus fever have developed in the hospital equipped by the committee at its headquarters at Chachack. Appalling mortality can be averted only by immediate and drastic measures for distributing medicine, doctors, nurses and supplies. Commissioner Doherty returned to this country for the purpose of obtaining money for Serbian relief work.

The Nation's Health.—The following figures regarding the health of this nation were given recently at a meeting of the American Public Health Association as an argument in favor of a National Department of Public Health: Of the 110,000,000 citizens of this country, 45,000,000 are physically imperfect; 15,000,000 die annually; 3,000,000 are in bed all the time; 1,000,000 have tuberculosis, and from 2,000,000 to 3,000,000 have hookworm and malaria. Only 37,500,000 are fairly healthy and 19,500,000 in full vigor.

Plans for Jamaica Hospital Accepted.—Plans for the two-hundred bed annex to Mary Immaculate Hospital, Jamaica, L. I., have been accepted by the Building Department of Queens. The new buildings will be memorials to the boys who served and died in the World War.

Sage Properties to be Auctioned.—The properties constituting the residuary estate of the late Mrs. Olivia Slocum Sage, widow of Russell Sage, are to be sold at auction on January 20, 1920. According to the terms of Mrs. Sage's will, the entire residuary estate will be divided among thirty-six institutions. The Presbyterian Hospital, New York City, and the New York Infirmary for Women and Children are among the number.

Falling Birth Rate of Middle Classes in England.—According to figures published by the London *Times* recently, the outlook for the perpetuation of the nation, especially the middle classes of the population, is rather gloomy. The birth date per 1,000 living at all ages, was 34.1 for 1851-60; 35.2 for 1861-70; 35.4 for 1871-80; 32.4 for 1881-90; 29.9 for 1891-1900; 27.2 for 1901-10, and 17.7 for 1918. During the period covered (1851-1910) the death rate fell by 30 per cent., it is true, but a large proportion of the fall is to be ascribed to the reduction of the infant death rate and to measures of public hygiene. Thus, as the *Times* points out, falling birth rate has been compensated for by falling death rate among the working and industrial classes. This does not apply, however, to the middle classes, whose birth rate is falling rapidly, while their death rate, never very high, is not falling and cannot fall rapidly. From these figures the *Times* holds that we are witnessing what can be described "without exaggeration as the death of the middle classes."

Year 1919 Holds Banner for Health.—New York City made its best record for healthy in the fifty-three years of the history of the Board of Health, according to the recent announcement of Dr. Royal S. Copeland, Commissioner of Health. The death rate, which was the lowest ever recorded since the department was organized, was 12.39 per one thousand of the population. In 1918 the rate was 16.71 and for the five-year period, 1913 to 1917, inclusive, it was 13.94. In other words, in 1919 there were 74,433 deaths, as against 98,119 in 1918, and an average of 83,760 for the five years, 1913 to 1917. These figures are corrected in accordance with the increase in the population. Excluding the deaths from influenza in 1918, in order to arrive at figures for comparison, the year just ended shows a decrease of 9,327 deaths. There were 176 deaths from alcoholism, 155 of which occurred during the first six months of the year, as against 48 for the last six months. There were 130,377 births reported during the year, a decrease of 9,454, as compared with the year 1918. This is one of the effects of the war, the birth rate being the lowest that we have had in the city during the last twenty years. On the other hand, the marriages increased from 56,735 in 1918 to 58,983 in 1919.

The Brooklyn Diagnostic Institute.—A welcome and hopeful sign of progress in medicine is the establishment of special hospitals and clinics for the purpose of diagnosis. A recently founded institution of this class and one that promises to enjoy a wide field of usefulness is the Brooklyn Diagnostic Institute, established at 867 St. Mark's Avenue. The aim of this clinic is declared to be "to hold at the command of the general practitioner the highest type of diagnostic skill and to be scrupulously observant of the loftiest standards of professional ethics." Dr. Jacob Gutman is director-in-chief and head of the departments of medicine and endocrinology. Each of the seventeen departments is under the direction of a well-known specialist in the given field.

Smallpox on Steamer.—Two steerage passengers arriving at New York Quarantine station January 3 were reported as having smallpox. The two patients, a man and his little daughter, were removed to Swinburne Island. The remaining 1,342 steerage passengers were sent to Hoffman Island to be vaccinated and held for observation for fourteen days. The 28 saloon and 126 second-cabin passengers and the crew were examined and those not recently vaccinated were vaccinated before being allowed to go ashore.

Object to Word "Charity."—The Norristown (Pa.) Hospital will probably have a new name after the hospital association meets, early in January, as the members object to the word "Charity" in the name which the founders gave to the institution.

Smallpox in New Jersey.—Four cases of smallpox have been admitted recently to the Essex County (N. J.) Isolation Hospital. Two of the cases, those of a mother and her son, were traced by the health authorities to Canada. It has not been ascertained how and where the disease was contracted by the other two patients.

Yellow Fever in Mexico.—Reports from Tampico, Mexico, state that an epidemic of yellow fever is raging in many cities and towns of the States of Yucatan, Campeche, Chiapas, and Oaxaca. Vera Cruz is said to be free. Quarantine has been established against several ports, including Saline Cruz, Progresa, and Frontera.

Paris Births and Deaths.—The birth rate in Paris for January, 1919, was 9.5 per thousand,

while for December of the same year it exceeded 18 per thousand. Deaths in January were 18 per thousand and in December 14 per thousand.

Barony for British Physician.—On the New Year's Day honor list in Great Britain appears the name of Sir Bertrand Dawson, physician extraordinary to King George, who was made a baron.

Otisville Hospital to be Destroyed.—United States General Hospital No. 8, at Otisville, N. Y., is to be wrecked by fire under the supervision of Dr. Royal S. Copeland, Commissioner of Health of New York City. The hospital, which was built at a cost of more than $1,000,000, was used until recently for the care of tuberculous patients. It was erected on land owned by New York City near a municipal sanitarium, and its destruction by fire is understood to be contemplated as a precautionary measure.

New System of Health Administration in Ohio.—Beginning with the new year, Ohio inaugurates a new system of local health administration, replacing that which has prevailed for more than twenty-five years. Instead of more than 2,100 city, village and township health units, the state will have 168 city and general health districts. Each of the 80 cities will be a city health district, and the territory in each county outside the cities will be a general health district. The new health administrative system was created by the Griswold amendments to the Hughes Act.

Compensation for War Cripples Increased.—The Sweet bill, increasing the compensation of disabled former service men and enlarging the classes of beneficiaries under the War Risk Insurance Act, was signed by President Wilson December 24. This bill, which practically doubles the compensation for some classes of disability, was strongly urged by the American Legion.

Health Centers for Greater New York.—It is proposed by the United Neighborhood Houses, representing forty-five settlements of Greater New York, to establish a health center in each community in which there is a settlement house. The work of these centers is to be divided into four groups, social hygiene, nutrition, tuberculosis, and maternity protection.

"Healers" Ask Recognition by Board of Education.—A large delegation of Christian Scientists appeared before the Board of Education of New York City on December 22, asking that in the cases of teachers of that faith the certificates of its medical practitioners be accepted as to their absence from school on account of illness. These practitioners, according to the plea, are registered by the Christian Science Church in Boston, hence their certificates should have the same weight as that of a regular physician. The presiding officer promised that the Board of Education would give the request of the Christian Scienists full consideration.

More Rockefeller Millions to Medicine.—According to Christmas Day announcements, the fund for medical research throughout the world was increased by $50,000,000 through the further generosity of John D. Rockefeller. This sum was placed under the control of the Rockefeller Foundation, with the special request by Mr. Rockefeller that a part of this gift be used in promoting medical education in Canada. In accordance with this request Dr. George E. Vincent, President of the Foundation, announced that the Trustees will be asked to set aside approximately $5,000,000 for the improvement and development of the leading medical schools of the Dominion. The work of building and equipping medical schools in China, and the prosecution of various other lines of medical research and education will be continued.

Deaths in New Jersey.—According to a report of the Bureau of Vital Statistics of the State Health Department of New Jersey, issued December 27, there were 2,863 deaths in that state during the month of October. Among the deaths were 402 among children under one year, 194 among children over one year and under five years, and 1,078 among persons sixty years old or over. There were twenty deaths from influenza and twenty suicides.

Influenza Epidemic in Japan.—From press notices it is learned that an epidemic of influenza similar to that of last year has developed in Japan. The Japanese Government has taken measures to check the epidemic.

Plague in South America.—According to press notices from Buenos Aires, an epidemic of bubonic plague has gained grave proportions at Las Rosas, Santa Fe Province. The National Department of Hygiene has begun a war on the rats infesting grain warehouses.

Plague at Constantinople.—The International Red Cross has confirmed reports of an outbreak of bubonic plague at Constantinople. The disease was spreading in the poorer districts of the Turkish capital, and had invaded the European quarters.

November Death Rate Low in New York City.—Dr. William Guilfoy, registrar of records of the Health Department, has announced that the city's mortality for the month of November, 9.84 per 1,000, was the lowest recorded for any month in the history of the Department. It is noteworthy that the number of deaths from tuberculosis, which usually heads the list, fell below that of cancer. There were 448 deaths due to tuberculosis and 453 due to cancer.

Special Classes for Pupils with Cardiac Derangements.—The Board of Education of New York City is to be asked to consider providing special classes for children suffering from weakness or other cardiac disturbances. Similar classes have been held during the past two years by the Educational Alliance, East Broadway and Jefferson Street, assisted by the social service of Beth Israel Hospital, and three additional classes have been organized in Manhattan and Brooklyn. Results are said to be gratifying, as shown in improvement in health and increase in weight of the pupils.

Doctors Criticised by Court.—In a recent suit for damages for alleged injury of the plaintiff by the defendant's automobile, the two physicians who attended the plaintiff, and who testified in court against him in favor of the defendant were severely criticised by Justice Guy for unethical conduct. Holding that "such utter disregard of the ethics of the medical and legal professions cannot be passed by without serious condemna-

tion." The Justice said the Bar association and medical societies should consider the case and take action.

State Hospital Commission Meets.—The State Hospital Commission and the superintendents and managers of thirteen hospitals for the insane located in different parts of New York State held their annual conference at Ward's Island December 16. A resolution was adopted indorsing Governor Smith's efforts "for the general betterment of the State hospital service as regards the employment of more labor, the payment of higher wages, the enlarging of the hospital capacity so as to do away with overcrowding, and the enlisting of the sympathy and aid of a hitherto apathetic public opinion in the service of the State toward obtaining necessary legislation in the coming session of the Legislature for suitable appropriations to carry out those ideas."

Vaccination in Madrid.—Preventive vaccination against smallpox and typhoid fever has been ordered by the Civil Governor of Madrid for every inhabitant of the city.

Plans for New Hospital Buildings.—Plans are under way for the construction of a new home for the Baptist Hospital of Columbia, S. C., to cost $300,000.

Child Welfare Key to Solution of Problem of Americanization. — In an address recently delivered in San Francisco at a child welfare luncheon arranged by the Associated Charities, Mr. Herbert Hoover expressed the belief that the entire problem of Americanization would be met in twenty years if this nation could insure proper conditions of birth, education, and nutrition.

Sir Thomas R. Fraser, ex-president of the Royal College of Physicians of Edinburgh, died January 4. He was born in Calcutta February 5, 1841. After receiving the degree of Doctor of Medicine from the University of Edinburgh, he practised for a time, but later became consulting physician for a number of medical associations and the Royal Commissioners. In 1877 he became Professor of Materia Medica in the University of Edinburgh, a position which he continued to hold until his death. From 1900 to 1902 he was President of the Royal College of Physicians of Edinburgh.

Obituary Notes.—Dr. ROBERT M. FULLER, of Schenectady, N. Y., died December 28, at the age of 75. He was graduated from the Albany Medical College in 1865, and served as surgeon in the civil war. Dr. Fuller is credited with having originated the tablet form of therapeutic preparations.

Dr. CHARLES W. PILLSBURY, of Saco, Me., died December 4, in his sixty-ninth year. He was graduated from Dartmouth Medical School in 1881.

Dr. ROBERT LEE RANDOLPH, of Baltimore, died December 11, at the age of 59. Dr. Randolph was graduated from the Medical Department of the University of Maryland, in 1884. He was attending surgeon at the Presbyterian Eye and Ear Hospital in Baltimore from 1887 to 1892, when he became associated with Johns Hopkins University in the department of ophthalmology and otology. He was the winner of the Alverenga prize of the College of Physicians of Philadelphia in 1901, and of the Boylston prize of Harvard in 1902.

Dr. JOHN E. HAGGERTY, of New York City, died at his home December 18, at the age of 43. He was graduated from the Eclectic Medical College of New York City in 1911.

Dr. FREDERICK HALVES, a retired physician of Brooklyn, died from cardiac disease December 21, in his eightieth year. Dr. Halves was graduated from Bellevue Hospital Medical School in 1870.

Dr. WILLIAM G. POTTER, formerly a practising physician of New Bedford, Mass., died at his home in South Dartmouth, Mass., December 18, after a long illness, at the age of 55. He was graduated from New York University Medical College in 1888.

Dr. EMERY MARVEL, of Atlantic City, died in Philadelphia, January 7, as the result of surgical removal of a kidney, at the age of 51. He was graduated from the medical department of the University of Pennsylvania in the class of 1895. He was a member of the Atlantic County Medical Society, the Medical Society of the State of New Jersey, a Fellow and a Vice-president of the American Medical Association, a Fellow of the American College of Surgeons, a member of the American Association of Obstetricians and Gynecologists, and a member of the Philadelphia Pediatric Society.

Obituary.

HORATIO C. WOOD, M.D.

PHILADELPHIA, PA.

Dr. HORATIO C. WOOD died at Philadelphia on January 3 at the age of 78 years as a result of pneumonia. He was graduated from the medical department of the University of Pennsylvania in the class of 1862. He served as resident physician in the Philadelphia Hospital, and from 1872 to 1907 was neurologist to this institution. He was professor of botany in the University from 1866 to 1876, and professor of material medica, pharmacy, and therapeutics from 1876 to 1907, when he was made emeritus professor. From 1875 to 1901 he was clinical professor of nervous diseases. He was president of the College of Physicians of Philadelphia in 1902-3. He was a generous contributor to medical literature, and author of a text book on materia medica and therapeutics, and of one on nervous diseases. He was made Doctor of Laws by the University of Pennsylvania, and also by Yale University.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Dec. 19, 1919.

The Causation of Rickets.—In continental Europe rickets is termed the "English disease" because it is preponderantly in England that it flourishes. Indeed, in Great Britain it is one of the most important of children's diseases. A great deal of attention has been paid recently to its causation. In Glasgow investigations seem to show that it is chiefly due to unsanitary, badly ventilated houses and that diet is not the essential factor in its causation as it had generally been supposed. In England, on the other hand,

the majority of those who have made a study of the subject are of the opinion that diet plays the principal rôle in bringing about the condition. In support of this theory it may be pointed out that rickets is practically unknown in the West of Ireland where ignorance, poverty, bad housing and lack of sanitation prevail. And this is the case in other countries beside Ireland, in which a similar state of affairs exists. Therefore, it would appear that defective housing and so on are not the leading causes. It must be borne in mind that the symptoms of rickets are not only confined to disease of the bones. In fact, dental caries, very common in England, is an earlier and more frequent symptom than these. An early shortage of the antirachitic vitamine signifies that the tooth enamel will not be developed properly. Recent investigations have shown that in growing animals the development can be stopped, kept back and restored by lack or supply of the dietetic factor found in milk and green leaves in particular. At the present time the Medical Health Research Committee is promoting the special study of ante-natal problems. Prominent among the members of this committee are Dr. J. W. Ballantyne, pioneer in that field, and Professor Noel Paton, of Glasgow. It has been suggested that a cause of rickets may be that some expectant mothers are not fed as they should be during pregnancy. Some force is lent to this view by the fact that many breast fed children are rickety. Witness the breast fed but rachitic Negro children who are seen by no means infrequently. The problems of maternal nutrition have been too much neglected.

Need of Maternity Hospitals in Great Britain.—Sir George Newman, in the memorandum dealing with the practice of preventive medicine which he addressed to the Ministry of Health, emphasized the need for accommodation for the institutional treatment of normal and abnormal cases of confinement. In his opinion the great centers of population are in need of two-fold provision: maternity hospital accommodation for abnormal cases, maternity home accommodations for normal cases which cannot be normally or even safely dealt with in overcrowded, unsanitary or unsuitable tenements. Relatively speaking, the need for similar provision in rural districts is equally great. Many rural districts are wholly without such accommodation and in others it is inadequate. According to Sir George, what is required is, say, not less than one maternity bed per 2,000 of the population, possibly attached to or associated with the local hospital or headquarters of the district nurses. There should be a small general ward, an isolation or observation ward, a confinement ward, and where possible single wards for patients able to pay larger fees. A competent midwife-matron should be in charge.

The Teaching of Obstetrics and Gynecology to Medical Students.—A meeting of the section of the Royal Society of Medicine was held on Dec. 4 to discuss the report issued recently on the teaching of obstetrics and gynecology to medical students and graduates in London. The two points on which discussion centered were the necessity for providing more beds for lying-in women in London and the country generally, and the need for improving the facilities for teaching practical midwifery to medical students. As has just been referred to in the account of Sir George Newman's proposals, the number of beds for confinement cases in the British large centers of population is notoriously inadequate. The discussion at the Royal Society of Medicine only dealt with the maternity accommodation in London. But London may be taken as an example of the situation in this respect of all the large British cities, and London is almost without adequate accommodation for lying-in women. As the *Lancet* remarks editorially: "It is an astonishing thing that in London, the largest and wealthiest city in the world, the hospital accommodation for lying-in women should be totally inadequate; and indeed there is no lying-in hospital in London to be compared either in size or equipment with many of those to be found in quite small cities abroad or in the United States." With regard to the medical teaching of obstetrics, that question is, of course, interwoven with the establishment of maternity hospitals. If the number of these institutions is totally inadequate, then the means for teaching medical students obstetrics will also be wholly insufficient. And more than this, not only must maternity institutions be very largely increased, but in order to provide ample facilities for teaching they must be of considerable size. There may be in London two or three hospitals with medical schools attached large enough to have maternity wards with a sufficient number of beds. On the whole, however, it appears to be the opinion of many of the London medical profession that the best scheme is to establish several large midwifery institutions in different parts of London at which the students from the various hospitals may obtain their clinical instruction. While the report formulated by the Ministry of Health contains some features to be commended, it is open to criticism on many counts. In the evolution and development of so important a scheme, it is well that it should be subjected to thorough criticism by the teachers of midwifery. It is in this way that plans are perfected.

Industrial Poisoning.—In the annual report of the Chief Inspector of Factories and Workshops for 1918, issued recently, the chapter dealing with industrial poisoning, written and compiled by Dr. Legge, is of particular interest. It is pointed out that while in some industries, owing to the shortage of raw materials and the reduction of the number of persons employed, there was a large decrease in the number of poisoning cases reported; in others, the use of chemicals in the manufacture of munitions on the large scale necessary to meet the needs of the fighting forces gave rise to sudden and unexpected outbreaks of illness in the early stages of the war. Two instances are especially noticeable. In the manufacture of aeroplanes tetrachlorethane was used as an ingredient of the varnish or dope for covering the wings.

Before the beginning of the war the small and intermittent use of this substance had not been sufficient to direct attention to its injurious effects,

but toward the end of 1914, when the manufacture of aircraft had greatly developed, mysterious outbreaks of illness appeared among the workers in the doping rooms throughout the country. The symptoms, of which jaundice was a prominent one, were remarkably uniform. Investigations made by the medical inspectors found that exhaust ventilation was the most efficient means of preventing ill effects, and a ventilating plant was provided in all the doping rooms with most satisfactory results. In the meantime attention was directed to discovering a less injurious substance for the varnish. Various acetone substitutes were tried, some of them with marked success, and the use of tetrachlorethane was eventually discontinued.

The second instance was due to the use of trinitrotoluene, commonly known as T. N. T., in the manufacture of explosives. Before the war this substance was regarded as non-poisonous, and it was only its use on a large scale, and its constant manipulation by workers that directed attention to its injurious effects. Jaundice was again noticed to be one of its most serious symptoms, and in order that all possible information should be obtained, toxic jaundice was made notifiable under the Factory Act. The dust and fumes given off, especially in manipulation of the manufactured substance, were found to be the chief cause of illness, and that the measures taken to deal with the trouble were effective is shown by the striking reduction in the number of cases of toxic jaundice, which from a total of 190 in 1917, fell to only 34 in 1918.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 25, 1919, clxxxi, 26.

1. Vaccines in Influenza. W. H. Watters.
2. Primary Sarcoma of the Stomach. Review of the Case Six Years After Operation. A. R. Kimpton.
3. Functional Heart Disturbances in Women. Florence L. Meredith.
4. Enlarged Thymus Gland in Infancy and Its Treatment by Radium. Howard W. Brayton and Arthur C. Heublein.

4. Enlarged Thymus Gland in Infancy and Its Treatment by Radium.—Brayton and Heublein base this report on an experience of thirty-four cases of enlarged thymus treated with radium. In every instance there followed a prompt and lasting disappearance of all symptoms. The technique of the treatment is as follows: 100 milligrame of radium element, still in its 0.3 millimeter silver capsule, is wrapped in sufficient gauze so that when strapped to the chest by a strip of adhesive, it will lie a half-inch from the skin surface. Four marks are made in the form of a rectangle over the thymic area and the nurse is instructed to allow the package of radium to remain two hours over each mark. This makes a total exposure of 800 milligram-hours. From the moment a diagnosis of enlarged thymus is made the child's head should be kept in a flexed position, thus lessening the severity of the asthma and the possibility of sudden death. Radium possesses the following advantages over the Roentgen ray in the treatment of these cases: The action of radium is more rapid; with radium one treatment alone suffices to effect a cure, even in the severest forms of the disease; radium is portable, thus obviating the difficulty of transporting the patient to a Roentgen laboratory; the application of radium is simple, thus eliminating the dangerous element of fear from the mind of the patient, and at the same time rendering unnecessary the use of an elaborate *x*-ray equipment and highly skilled operator.

New York Medical Journal.

December 27, 1919, cx, 26.

1. The Scientific Basis of Drink Control. Rt. Hon. Lord D'Abernon.
2. Quartz Ultraviolet Therapy and Kinetic Energy. Donald McKaskey.
3. Deformities of the Hand. A. Bruce Gill.
4. Principles of the New Method of Administering Digitalis. Harold E. B. Pardee.
5. Gastrointestinal Symptoms in Disturbances of the Thyroid. L. Winfield Kohn.
6. Local Anesthesia. Alfred H. Noehren.
7. The Problem of Reducing Mortality from Pulmonary Tuberculosis. S. A. Savitz.
8. Gonococcemia and Metastatic Gonorrhea. Hyman I. Goldstein.

4. Principles of the New Method of Administering Digitalis.—Harold E. B. Pardee calls attention to the many new facts which have been brought forward during the last few years regarding the action of digitalis. The laboratory and the hospital clinic have contributed to these discoveries. A new understanding of digitalis has been reached through more accurate knowledge, and new methods of administration have resulted. Digitalis has been found to be more effective in the treatment of the patient with heart disease when his body is well saturated with the drug, than when it is present in small amounts only. The best therapeutic results are obtained when the patient is not far short of that stage of saturation at which the earliest manifestations of poisoning appear. Therefore, if one would be sure of results, one should give digitalis in fairly large doses, watching carefully for these early manifestations, and should not stop the drug until they appear. Digitalization has come to mea nthe giving of digitalis to this point of saturation. The procedure recommended by Pardee is to start with a large dose on the first day, perhaps a half of the calculated average dose, which will be one minim of the tincture to each pound of the patient's weight, and then to complete the course with smaller doses at four-hour intervals on the days following. If these smaller doses are each one-eighth of the remaining half of the calculated dose, they will vary from twelve to twenty-five minims according to the weight of the patient, and if this dose is given every four hours, then the total calculated amount, the average effective dose, will be received within a period of three days at the most. When the susceptibility of the patient is greater than the average, he may show the early toxic signs even as soon as the second day; when the susceptibility is less than the average it may be necessary to continue the four hourly doses for one to two days longer before the signs of poisoning appear. By this method of dividing the doses one is able to reach the end point rapidly, but not so rapidly that the administration cannot be stopped in time to avoid vomiting. Should it be found that with this dose one is unable to perceive the approach of the vomiting stage soon euough to stop the drug in time to avoid vomiting, or should the patient not be under daily observation, then it would be advisable to go more slowly as the point of saturation is approached. The four hourly doses should then be given only three times a day. When digitalis is to be taken in accordance with the plan outlined, the patient must not have taken any of the drug for a period of at least two weeks before beginning the treatment by this method.

Journal of the American Medical Association.

December 27, 1919, lxxii, 26.

1. Do Calories Measure the Value of Food? Henry Dwight Chapin.
2. Anaphylactic Death in Asthmatics. T. Harris Boughton.
3. Acute Dilatation of Post Partum Uterus as a Cause of Post Partum Hemorrhage: Its Analogy to Acute Dilatation of the Stomach, with a Suggestion on the Action of Involuntary Muscles: Preliminary Report. John P. Gardiner.
4. Suppuration and Gangrene of the Lung: A Study of One Hundred Cases. Harry Wessler.
5. Contamination of the Hands and Other Objects in the Spread of Diphtheria: Observations on Secondary Infections in Hospitals for Contagious Diseases. George H. Weaver and John T. Murchie.
6. Asynchronism of the Respiratory Movements in Lobar Pneumonia. Warren Coleman.
7. Eosinophilous Myocarditis in Diphtheria. Frank Nuzum
8. Methemoglobinemia Due to Bromoseltzer Poisoning. W. S. McElroy.
9. Actinomycosis Treated with Radium. S. A. Heyerdahl.

10. The Diagnosis of Chronic Cholecystitis Complicating Cardiac Lesions. Robert H. Babcock.
11. Alleviation of Distressing Digestive Symptoms in "Cardiorenal Disease": Some Suggestions. George M. Niles.
12. Cutaneous Reaction to Quinin in Quinin Idiosyncrasy. B. M. Edlavitch.
13. The Maximum Nonfatal Opening of the Chest Wall. Evarts A. Graham.

1. Do Calories Measure the Value of Food?—Henry Dwight Chapin, after a reexamination of some of the foundations of the problems of nutrition, summarizes the question as follows: Heat or energy may be produced by chemical cleavage as well as by oxidation. Heat may be a degradation of energy, and in the human organism it is an excretion. Heat measurement alone is not a safe guide for the calculation of food values. This is especially true at the beginning of life when growth is the all-important factor. The foods that *build* rather than those that readily undergo oxidation must be properly gauged if we are to have healthy development. A false theory does harm in that it points in the wrong direction, and it is a question whether it is not time to weigh carefully the calory theory of feeding and restrict or partially abandon its use. To take its place, a system of teaching must be constructed based on a knowledge of the physiologic properties of the various food elements and the fact that there are mixed types of metabolism. Some form of biologic testing of foods must be elaborated if an always reliable gauge of nutrition is to be established.

6. Asynchronism of the Respiratory Movements in Lobar Pneumonia.—Warren Coleman holds that asynchronous contractions of the respiratory muscles occur in many cases of lobar pneumonia. In the fully developed type of asynchronous breathing, the diaphragm and thoracic respiratory muscles contract alternately, with the result that the abdomen and the chest "see-saw" up and down. The cause of the phenomenon probably lies in unequal depression of different parts of the central nervous respiratory mechanism. The development of asynchronous breathing usually augurs a fatal termination.

The Lancet.

December 6, 1919, ii, 23.

1. The Thomas Vicary Lecture on the Surgical Tradition. Sir John Tweedy.
2. Presidential Address on a Plea for the Better Teaching of Oto-rhino-laryngology. Delivered before the Section of Otology of the Royal Society of Medicine, on November 21, 1919. Herbert Tilley.
3. Remarks on the Treatment of Malaria in England. S. P. James.
4. The Present Position of the *X*-rays and Radium in Gynecology. Dawson Turner.
5. Diathermy. Norman Patterson.
6. Observations on Sporulation of Syphilis Organism as Seen on the Dark Ground. C. Lundie, and F. H. Goss.
7. The Frequency of Right Inguinal Hernia After Appendicectomy by the "Gridiron" Incision. G. H. C. St. George Griffiths.
8. A Note on the Environmental Factor in the Causation of Beri-beri. K. Simpson.

7. The Frequency of Right Inguinal Hernia after Appendicectomy by the "Gridiron" Incision.—G. H. C. St. George Griffiths collected 11 cases of inguinal hernia following appendicectomy, ten of which were on the right side and one on the left. The date of the appearance of the hernia varied from a few months to three and a half years after the appendicectomy was performed. In 10 cases the gridiron incision was used, none of the incisions being near the outer border of the right rectus. In the eleventh case a Battle's scar was present, the hernia having appeared 18 months after operation. No one can state with accuracy whether there was a predisposition to a hernial formation in each of these recorded herniæ. Such a predisposition might account for the one appearing in the left inguinal canal, and also the hernia following Battle's method. Anatomically there is no explanation for these two herniæ. This leaves nine right inguinal herniæ following appendicectomy by the gridiron incision to be accounted for. The explanation must be sought for in some fault in the technique in making or closing the gridiron incision. The writer suggests that it may occur either by avulsion of division of the fine muscular nerve twigs to the lower portions of the internal oblique and transversalis muscles during the opening of the peritoneal cavity, and leading to a partial complete atrophy of the muscle-fibres in the region of the internal abdominal ring; or, on the other hand, by compression of the same nerves by the encircling catgut sutures in sewing up the incisions in the transversalis and internal oblique muscles, in repairing the abdomen after appendicectomy. From the fact that these 11 cases appeared in a little over a hundred consecutive cases of inguinal hernia, the writer considers that a new plea for Battle's method arises, to avoid the possible occurrence of this annoying end-result to appendicectomy by the muscle-splitting incision.

British Medical Journal.

December 6, 1919, ii, 3075.

1. The Thomas Vicary Lecture on the Surgical Tradition. Sir John Tweedy.
2. Fracture-Dislocations of the Ankle: Pott's and Dupuytren's Fractures. R. P. Rowlands.
3. Normal and Morbid Conditions of the Testes from Birth to Old Age in One Hundred Asylum and Hospital Cases. (Concluded.) Sir Frederick W. Mott.
4. Mumps in Adults: An Analysis of 694 Cases. George Macleod.

4. Mumps in Adults: An Analysis of 694 Cases.—George Macleod offers as the only plea for the publication of clinical notes on what is usually regarded as a mild contagious disease of childhood the circumstance that the war has afforded opportunities for the study of its manifestations in adults. Of the 694 cases, 78 per cent. occurred among Australian troops, who offered peculiar facilities for the spread of the disease in a virgin soil, as very few of them had previously been exposed to this infection, which consequently overran entire units in a short space of time. All the cases occurred in adult males from 17 to 40 years of age. Seventeen were second attacks, and one claimed to have celebrated his third attack. The onset was characterized by the usual symptoms. The parotid glands were usually the first affected, and in 64 per cent. the left parotid was the first to be involved; in 17 per cent. the disease was confined to the left side, in 20 per cent. the right side alone was affected, while in the remainder the glands on both sides were ultimately implicated. In two cases the disease first appeared in the submaxillary glands, and spread to the parotids later. In nine cases orchitis was the first manifestation; four of these had no glandular involvement, two others had pain only in the lower jaws, and the remaining three developed parotitis three or four days after the onset of the orchitis. In several cases redness and edema or a whitish exudate was observed around the orifice of Stenson's duct, but no casual organism was recovered. Orchitis was the most frequent complication, occurring in 140, or 20 per cent. of the cases. Symptoms suggestive of pancreatitis were observed in six cases, all of whom made good recoveries. In 48 cases which, after a primary attack of ordinary severity, had already entered on convalescence, the temperature rose abruptly on the seven to tenth day to 100° or even 104° F., with a pulse rate of 80 to 120. Apart from a feeling of general malaise, there were no local manifestations to indicate the seat of this complication, which was apparently toxic in character. The temperature fell by crisis in two to five days, convalescence being uninterrupted thereafter. Other complications include bronchitis, tonsilitis, rheumatism, and conjunctivitis; laryngitis and aphonia occurred in 8 cases, earache and deafness in 3, otorrhea in 2, while in 2 cases suppuration of the parotid occurred. In 2 cases death occurred from intercurrent disease. Relapses were met with in 17 cases.

La Presse Médicale.

October 18, 1919, xxvii, 60.

Intolerance of the Nursling Toward Milk Treated with Subcutaneous Injections of Milk.—Weill makes a follow-up communication on this subject, his first dating from December, 1918. The intolerance mentioned does not extend to that which accompanies severe infection or stenosis of the pylorus. He thinks so well of this resource that he would use it in all obstinate cases of simple intolerance. The latter is expressed by the rejection of nearly all the amount ingested. This

may be prompt or retarded. In addition the number of movements is increased over the normal and the discharge irritates the skin. To these symptoms are added disturbance of the nervous centers which lead to poor sleep, restlessness, excessive crying, etc. Naturally in these cases much can be accomplished by diet. In regard to breast milk it must not be understood that this confers any immunity, for the contrary has been shown. The author makes no statement in this connection of Czerny's exudative diathesis as a cause of this intolerance but seems inclined to attribute the latter to some maternal or infantile factor such as influence in the mother and the same in the infant along with ordinary cowpox vaccination, chicken pox or other mild constitutional disturbance including the sequelæ of a gastro-enteric infection. Intolerance may appear in the absence of all evidence pointing to the stomach itself, as in cases where the mere presence of metrorrhagia in the mother has been followed by milk intolerance. The author regards the process as a matter of anaphylaxis. Cow's milk, even in minute quantities, has caused fatal anaphylaxis in children already in the throes of cholera nostras. In addition to major anaphylaxis a minor or specific alimentary anaphylaxis must be considered. Cow's milk being foreign protein is naturally much more active in the production of anaphylactic phenomena than breast milk. To give brief histories, one baby 6 months old presented intolerance to mother's milk and cried all night. It received an injection of warm breast milk, 10 c.c. subcutaneously, and at once obtained normal sleep. In another child a positive intradermic reaction to mother's milk was first obtained. One c.c. subcutaneously then gave an intense reaction and prompt removal of all symptoms of intolerance. In other cases but a few minims were injected. The author terms the treatment a genuine "milk vaccination" which need not be repeated and gives permanent results.

La Presse Médicale.

October 25, 1919, xxvii, 62.

Syphilis of the Stomach.—Bensaude and Rivet describe cases of all five types of gastric syphilis, to wit: syphilitic gastric ulcer, syphilitic gastric tumor or pseudo-cancer, syphilitic linitis, syphilitic gastric stenosis, and the gastric crises of tabes. In stenotic affections we see both ordinary pyloric stenosis and hour-glass stomach. The authors sum up the clinical aspects as follows: in making a diagnosis in any of these cases we depend on the history and collateral evidences of syphilis including tabes and paresis, on the Wassermann reaction, on gastric chemistry, the *x*-ray and the treatment test. It is largely a matter of excluding ordinary ulcer, cancer, perigastritis and other organic diseases of the stomach. As in other organs when the symptoms are confused and atypical, we should think of syphilis. The authors lay much stress on the treatment test carried out as follows: iodides and mercurials are given jointly by the mouth, these being as a rule well borne. Syphilis at once shows improvement while the other conditions are made worse. The stenosing forms are naturally more difficult to benefit. The improvement is manifest, not only in the local but in the general symptoms. Untreated this affection leads to cachexia and death. Surgery is of value only when the disease has produced incurable stenosis.

El Siglo Medico.

November 15, 1919, lxvi, 3440.

Suppression of Begging in Madrid.—Maranon refers to a recent visit of inspection to the beggar's camp in company with various functionaries of the province and city, with a view of ascertaining the possibility of the suppression of mendicancy. The quarters supplied to these unfortunates under the name of charity are too wretched for words and moved the author to indignation and shame. Conditions are filthy beyond description and only radical measures can be invoked to secure amelioration. The camp is a menace to the health of the city. In 1910 Madrid was attacked by typhus and it might be naturally supposed that this fact alone would prove a sufficient motive to proceed against the problem of mendicancy, but none of the subsequent governors of the city has made any move in this direction. When the police drive the beggars from the main thoroughfares, this is not a sanitary crusade. The police, however, could be made to aid in a campaign of disinfection. It is something to have the beggars rounded up but no advantage is taken of this fact to have them bathed and deloused. The habitations have no ventilation, the beggars have but scanty clothing and they receive but little food. In the past, several epidemics of typhus have been traced to them and in theory they could spread almost any kind of infection. (There is no evidence that they were in any way responsible for the outbreak of influenza in 1918, which seems to have first appeared among the early rising market men of the city.) Clearly the first step should be to save the children of the beggars, who are badly undernourished and half destitute of clothing. Other classes, as the sick and superannuated, should then be given support. The custom of herding the beggars together may have advantages, but such a state of affairs is far more dangerous from the standpoint of epidemics than the opposite condition of vagabondage. The trouble has always been a shifting of responsibility, but the time will eventually come when this problem must be settled.

Tetanus in the French Army During 1918.—Sieur and Mercier have determined the incidence of tetanus in 150,000 French soldiers wounded in 1918. The rate was 0.06 per 1000 in the army zone, 0.19 per 1000 in the intermediate zone, and 0.30 per 1000 in the zone of the interior. These results surpass those of previous years and are to be attributed to the serum treatment which had been systematized with improvements in technic. These figures concern the morbidity only, no death rates being given. The serum, therefore, prevented the development of the disease or modified it favorably.—*La Presse Médicale.*

Pharmacological Study of Finnish Digitalis.—Grönberg states that it is possible to grow medicinal digitalis in Finland if it is a question of seeds with a titer value of 4. A digitalis grown artificially will have the same worth as the best wild digitalis from Germany. The plant grows best in sandy or garden soil without any glass protection or any defense against cold and wind. Young plants, however, need abundant moisture. The leaf stems should not be included in the harvest. There appears to be no difference in merit between one-year and two-year digitalis.—*Finska Läkaresällskapets Handlingar.*

War Rations and Diabetes.—Singer, an Austrian practitioner, writing of conditions in Austria during the war, states that rationing was of marked benefit for the glycosuric and diabetic. All degrees were favorably influenced. Many patients became sugar-free and showed a relatively high carbohydrate tolerance. The blood-sugar values were relatively low. This must be ascribed to the poverty of war rations in albumin. The ration of war can become the basis of the therapy of peace.—*Correspondenz-Blatt für Schweizer Aerzte.*

Morbidity of Finland for May.—The total number of cases of notifiable disease for the month was nearly 11,000, and of this number nearly one half were due to the second wave of influenza which began in March. The first wave occupied the Fall months of 1918. There are 32 classifications of notifiable diseases. The number of cases of laryngobronchitis was over 1600 while gastroenteric acute diseases numbered 882. These figures may include masked influenza. The number of cases of gonorrhea reported was 527, of recent syphilis 180, and of ulcus molle 106.—*Finska Läkaresällskapets Handlingar.*

Deaths from Narcosis.—Desmarest, in 6000 personal cases of narcosis, has lost 2 patients from chloroform, 2 from ether, 2 from intraspinal analgesia and 1 from kelene. He is appalled at this record and in his search for a less murderous substance has followed the Americans into the field of nitrous oxide. With Amiot he first elaborated a technic with suitable apparatus and thus far in 300 anesthesias has had no untoward result. —*Le Bulletin Médical.*

Book Reviews.

AN ATLAS OF DENTAL EXTRACTION, with notes on the Causes and Relief of Dental Pain. Designed for the Use of Medical Students and Practitioners. By C. EDWARD WALLIS, M.R.C.S., L.R.C.P., L.D.S., Dental Surgeon and Lecturer on Dental Surgery Kings' College Hospital; Assistant Medical Officer (Public Health Department) London County Council; Late Dental Surgeon Victoria Hospital for Children, Chelsea, etc. Second Edition. With Eleven Plates. Philadelphia: P. Blakiston Son & Co., 1919.

IN many rural districts, remote from a large town, the medical man of the place is even yet often obliged to treat the teeth as well as the other parts of his patients. As this is usually emergency treatment, his essential duties consist in the application of such remedies as will still pain, or in the failure to do that the extraction of the offending tooth. For such emergencies this book will be of great service. The text consists of two chapters: "The Causes and Relief of Dental Pain" and "General Notes on Extraction of Teeth." The eleven plates, each double-page, depict the teeth to be extracted, the instruments required in each case, and their mode of employment. The rural practitioner, the ship's surgeon, and sometimes the industrial physician will find this book to fulfil perfectly the purpose for which it was written.

A TEXT-BOOK OF UROLOGY IN MEN, WOMEN AND CHILDREN; including Urinary and Sexual Infections, Urethroscopy and Cystoscopy. By VICTOR COX PEDERSEN, A.M., M.D., F.A.C.S. Major, Medical Corps, United States Army; Consulting Physician to the Selective Service Headquarters in the City of New York; Member of the Council of National Defence, New York State Committee, Medical Section; Visiting Urologist to St. Mark's Hospital; Major, Medical Reserve Corps, United States of America. Member of the American Urological Association, American Medical Association, New York State and County Medical Societies, New York Academy of Medicine, American Electrotherapeutic Association, The Association of Military Surgeons of the United States, and of the Committee on Venereal Diseases of the Advisory Council of the Department of Health of New York City. Illustrated with 362 engravings, of which 152 are original and 13 colored plates. Philadelphia and New York: Lea & Febiger, 1919.

THE author of this volume deserves much praise for his comprehensive review of Urology. In one thousand pages he discusses urethritis in all its forms and phases, urethral stricture, gonococcal infection in the female, various instrumental diagnostic procedures, renal functional tests and suppurative conditions of the upper urinary tract. The text is enriched with original illustrations and abounds with the spirit of fair play in according credit to other students and authors. A tendency toward lack of balance results from disparity in the consideration of important and non-important subjects. Balanitis, posthitis and like inconsequential conditions are treated with the thoroughness of an essay, whilst the reader would be grateful had the author given the same space and work to his views and advice on sexual disabilities subsequent to infections of the urologic and genital tract. Such wealth of information, unless skillfully massed, becomes unwieldy and unfortunately, the author's arrangement of his subject is confusing. General principles of diagnosis including physical and laboratory examinations are placed in the middle of the work. The subject of Cystitis is taken up in the section of complications of urethritis; again in Chapter xiv on the bladder. Much therapeutic value is claimed for electrotherapy and heliotherapy. The literary style is far from flawless perfection. Hawthorne's remark that his style was the result of his desire to tell the simple truth as honestly and vididly as possible, has gone unheeded, for Dr. Pedersen, in his desire to make his child entertaining, often strays into somewhat cloudy English. But withal this is a contribution of real worth to the literature of urology and one that will be found most helpful by every student of this specialty.

WAR NEUROSES AND SHELL SHOCK. By FREDERICK W. MOTT, M.D., LL.D., F.R.C.P.; Brevet Lt.-Col. R.A.M.C. (T.), Senior Neurologist to the Maudsley Neurological Clearing Hospital; Consulting Physician Charing Cross Hospital; Director of the Pathological Laboratory of the L. C. C. Asylums; Corresponding Member of the Neurological and Psychiatrical Societies of Paris. With a Preface by the Rt. Hon. CHRISTOPHER ADDISON, M.P., Minister of Reconstruction. Pp. 348, with three color plates and 93 illustrations in the text. London: Henry Froude, and Hodder & Stoughton; New York: Oxford University Press, American Branch, 1919.

THE author of this volume has had exceptional opportunities for first-hand study of the victim, himself, of war neurosis or shell-shock, of the clinical manifestations of these conditions, of the histopathology of the nervous system which has undergone the injury of the category under consideration, and of the results of treatment and after-treatment. The book, which consists of 328 pages of text, including the Appendix, and with 19 additional pages of index, is not divided into chapters. but the subject matter is dealt with under individual headings, of which there are more than a hundred. The volume would seem to be of special interest and usefulness, (1) to the neuropsychiatrist, because of the complete account of the pathological changes in the nervous system in shell-shock and gas poisoning, as well as the discussion of the clinical phases of these affections; (2) to the neurologist, to the family physician, to the reconstruction worker, and, through these, to the patient's family and the community at large, because of the discussion of treatment and after-treatment of the patient and his disability; (3) to the medicomilitary establishment, because of the clear demonstration of the importance, in recruiting and subsequently in assigning the individual to a category for military service, "of studying what a man is born with and what happened after birth;" and (4) to the pension department, whatever form the governmental financial after-care of the disabled soldier may assume.

It is well remembered that early in the war Mott directed attention to the importance of predisposing factors of war psychoneuroses; continued experience amply proved the correctness of this view, and fully warrants his emphasis, in this volume, of the fallacy of trying to convert men with an acquired or inborn predisposition of emotivity into good military material. From a study of one hundred cases of war psychoneuroses and one hundred cases of somatic injuries produced in the firing-line, Mott found that cases of war neurosis were very rarely associated with external or somatic wounds. The vast majority of the psychoneurotic cases were among soldiers who had a neuropathic or psychopathic soil. In 74 per cent of these cases a family history of neurotic or psychotic stigmata, including insanity, epilepsy, alcoholism, and nervousness, was obtained, while a previous neuropathic constitution in the patient himself was present in 72 per cent. A gradual psychic shock from long-continued fear, together with the sudden change from quiet, peaceful environment to the extraordinary stress and strain of trench fighting, is assigned as the chief predisposing cause of war psychoneurosis in soldiers with this neuropathic predisposition. Indeed, these factors may be the cause of the neurosis *per se*. The significance of these and many similar findings is emphasized, and illustrative cases are described and illustrated.

The subject of treatment falls under the prevention of gas poisoning and accidents in mines; the treatment of carbon monoxide poisoning; the general treatment of shell-shock and neurasthenia; mental hygiene in later stages; the treatment of hysterical paralyses, contracture, mutism and other disabilities; the atmosphere of cure; exercises for convalescent cases of war neurosis; the treatment of hysterical sensory conditions; physiopsychotherapy in the treatment of mutism; the treatment of stammering and stuttering; physiopsychotherapy in the treatment of paralysis and analgesia; the gymnasium in the treatment after functional paralysis and contractures; and after-treatment by occupation.

Society Reports.

THE AMERICAN PEDIATRIC SOCIETY.

Thirty-first Annual Meeting, Held in Atlantic City, N. J., June 16, 17, and 18, 1919.

THE PRESIDENT, DR. EDWIN E. GRAHAM, IN THE CHAIR.

(*Concluded from page 37.*)

The Cause of a Sporadic Case of Cerebrospinal Meningitis—Dr. HENRY L. K. SHAW of Albany reported this case, which developed in an infant five months old, breast-fed, and living on a farm. All who came to the house during the previous week could be found and examined because of the isolated position of the farm; no former cases were recorded in this place. The baby had been fondled on January 28 by an enlisted man who had been to France and had returned that month, being discharged from Camp Upton on the 27th. The baby was taken ill in a few days. The soldier claimed that as far as he knew he had never seen, been in contact with, or heard of a case of meningitis in his regiment, but he was found to be a meningococcus carrier. All other visitors to the farm gave negative nasal cultures. The meningococci obtained from the soldier were agglutinated by the fluid from the spine of the baby and were also proven identical by cultural growth. The organisms still remained on this carrier on June 10, which was an interesting fact. All attempts to rid the soldier of the meningococci by irrigations of all kinds under a nose and throat specialist failed, and his condition was pitiable—he could not return to the army; though in perfect health, he was in quarantine, thus being unable to support himself or his family, and the War Risk Insurance Bureau, Public Health Service, and Red Cross all claimed they had neither funds nor authority to reimburse him. Discussing so-called sporadic cases and those which had apparently been traced to fomites, Dr. Shaw expressed the opinion that such cases could always be traced back to a previous case if full facts were obtained. Failure to comprehend modes of infection, both by the laity and the medical profession, was the cause why full facts were not obtained. That persons, not things, were the cause for the transmission of communicable disease was difficult to bring before the public and even those of the medical profession. In many cases alleged fomites infection was really carrier infection. It was much more likely that persons on whom the germs were growing were the agents of infection than objects on which the germs were dying. Many observers agreed that the transmission of disease through the air and by fomites had been disproven, and that the present explanation of communication was by infected persons, unrecognized cases, and healthy carriers. Epidemiologists claimed that after a communicable disease had become established and carriers numerous, isolation and quarantine were of little avail. Contagious disease could be checked by prompt and strict isolation and an early and diligent hunt for carriers. In the case above they had cut off all chance for development by detecting the carrier and by isolation. Had this carrier lived in a city and had he had a number of nieces, nephews, and admirers, it would have meant a wider distribution of cases and a large number of carriers. Then isolation, quarantine, and disinfection would not have controlled the situation. As the disposition of carriers was largely a public health measure, a questionnaire was sent to the various State departments of health in order to ascertain their mode of procedure regarding carriers of meningitis. The answers quoted showed little uniformity in isolation and in dealing with carriers. There was nothing for the detection of healthy carriers and the compulsory bacteriological examination of contacts. To limit the spread of communicable disease public health legislation was imperative. The duty of pediatricians was to keep abreast of public health progress and assist in educating our communities to the new order of things. From the study of this case the writer felt right in claiming that it was caused by contact with a healthy passive carrier, that sporadic cases were in reality untraced cases, and that the human carrier was the cause for cases appearing either singly or in epidemics.

Dr. FRITZ B. TALBOT of Boston said that this paper was very important and timely, as it served to bring out the susceptibility of the young to infectious diseases. It was the practice in the armies in Europe when they found a carrier to send him to a camp where there was below a certain number of carriers and in that way they diluted the infection, and if the infection was sufficiently diluted no epidemic occurred. He thought Dr. Shaw's case was suggestive of what would happen in civil life if that plan were adopted.

Dr. L. EMMETT HOLT cited a case which paralleled that reported by Dr. Shaw. He urged the importance of recognizing that many thousands of returning soldiers were distributed through the community and that undoubtedly a number of them were carriers of disease and as a consequence they would be likely to see many of these cases cropping up.

Dr. HENRY KOPLIK discussed the many difficulties that presented themselves in connection with the problem of dealing with carriers. He expressed the opinion that it would be impossible to care for all carriers. He also cited another case somewhat similar to Dr. Shaw's.

Dr. HENRY HEIMAN of New York related the case of an infant six weeks old that contracted meningitis though it had never been out of the house and was in charge of a nurse. They had made it a practice to take two nose and throat cultures of all those who had come into contact with a case of meningococcus meningitis in order to label the carriers, but they had found that they could not do much for them, as it was extremely difficult to get rid of the organisms. They were now beginning to see cases of trench mouth, an infection that was being brought home by the soldiers.

Cerebrospinal Involvement in Hereditary Syphilis.—Dr. P. C. JEANS of St. Louis presented this paper, in which he stated that evidence showed that about 30 per cent. of syphilitic infants had changes in the cerebrospinal fluid of such a character and degree as to make the diagnosis of syphilitic involvement of the nervous system seem quite certain. There might or might not be associated clinical manifestations indicating neurosyphilis. Intravenous and intramuscular treatment would result in most instances in the disappearance of the abnormal findings both in the cerebrospinal fluid and in the blood. Similarly, routine spinal puncture in older children having either latent or active syphilis showed evidence of neurosyphilis in about 30 per cent. of those examined. Clinical signs of neurosyphilis might be present or absent. Prolonged intravenous or intramuscular treatment would eventually result in a negative blood Wassermann, while the cerebrospinal fluid might or might not continue to show changes indicating neurosyphilis. Intraspinal treatment would cause the disappearance of pathological changes in the spinal fluid when these had persisted. Justice to their syphilitic patients demanded that the state of the nervous system, as indicated by the cerebrospinal fluid, be known in each case. Great injustice was done when the patient was discharged after being treated to clinical recovery and negative blood reaction without knowing the condition of the central nervous system as shown by the cerebrospinal fluid.

Dr. W. MCKIM MARRIOTT of St. Louis pointed out that these studies were of more than academic interest as they had a direct bearing on prognosis and treatment. Dr. Jeans had made careful observations on the spinal fluid after the administration of arsenic when mercury had not been given first. He found that the administration of arsenic before mercury was given might result in the serious Herxheimer reaction. A further practical application of Dr. Jeans', work was that if they watched the spinal fluid in cases that were apparently cured, after being treated in the usual way and after the blood had become negative as shown by the Wassermann test, the cerebrospinal fluid might still be positive.

Dr. L. R. DEBUYS of New Orleans stated that one should not be too ready to exclude syphilis in the presence of a negative blood Wassermann. The cerebrospinal fluid should be examined in every case in which congenital lues was suspected.

A Health Study in a Boys' School.—Dr. RICHARD M. SMITH of Boston read this paper, in which he reviewed the work done thus far in the care of school children regarding the detection and correction of physical defects and the provision of proper food for the undernourished. He stated that many schools used his plan entirely, and that all schools used some part of it. Very few schools had studied the health of the children regarding all the factors in the child's life and their interrelation. In this matter the public schools were ahead of the private schools; and some private schools had entirely neglected the question of health. As pediatrists, chiefly responsible for the health of school children, there were certain matters to be definitely acted upon and certain minimum standards of health supervision to which every school child was entitled. These were: (1) Every school child should have a complete physical examination at least once a year and corrective measures should be taken for defects and diseases. The children should be watched that no defects or diseases developed while in school. In refutation of the statement that it was impossible to undress children for examination, he felt that parents would not object if they understood that it was necessary for a satisfactory examination. (2) As school nurses were really health instructors, proper qualifications in efficiency should be insisted upon. (3) Better understanding and closer cooperation should come between school authorities, the family physician, and the dentist. Unity of action must be had for the child's health. If minimum standards for school children were established and taught there would be no conflict of advice. This involved the introduction of the teaching of school hygiene in the medical schools, a development which was sure to come in time and which they should try to secure at once. (4) They should not confine their attention simply to those with malnutrition, but should look to the good of all, and to this end, that all might be kept in good nutritional order, good school lunches should be served and correct supervision be given to the method of eating. In viewing the future extension of health supervision there were additional features to be attended to. These were: (1) There must be a general recognition of the importance of good health. Draft records showed that our present health methods did not yield satisfactory results. Health was necessary for progress. (2) School authorities, both public and private, must see that health was considered as important as scholarship, and that health did not pay for education. (3) There was the need of cooperation from parents in protecting the health of their children. Parents were careless about planning activities for their children outside of school hours; activities should be planned in connection with school work. School master, parent, those interested in child welfare, and the physician must act together to see that the child's life as a whole was lived to protect his health. (4) It was important that the pupils themselves should receive instruction regarding health. The teaching of health to pupils must eventually be in the hands of school authorities. This could be only when the school authorities recognized the importance of health and after they had received from physicians information as to the proper things to teach. This made it necessary for them to be ready to submit courses of instruction for teaching health to children. Dr. Smith then described the methods used in Mr. Rivers' Open Air School for Boys, established in Boston in 1915. There was in connection with his school an advisory medical committee to whom the details of the curriculum were submitted in order that education and health might be considered in relation to each other. The work of the school was conducted in open air classrooms. The food was approved by the medical advisory committee. The children had rest periods each day as a definite part of the curriculum, and adapatd to the varying needs of the boy at different ages. Each boy's program was explained in detail to his parents and the importance of planning his home time in relation to this program. The school sent the boy to his family physician for advice when the progress in school or the health of the boy was suffering from a physical condition needing correction. There was a school matron whose sole duty was to look after the health of the children, under the supervision of the head of the school and the medical advisory committee. The complete application of the program required the cooperation of the parents. From the writer's experience in the study of boys in school over a period of several years he had arrived at standard percentages to be given to study, inactivity, and activity, at different ages from six to fifteen years. Charts were presented showing that illness was usually the reason for absence from school. Other charts showed the progress of undernourished children under careful supervision, both as to their improved physical condition and their progress in scholarship.

Dr. FRITZ B. TALBOT of Boston said he considered Dr. Smith's paper very important because he had had an experimental laboratory in which to try out what physicians thought should be done in schools, and so far as he knew it was the first time that everything had been done as the physician wished. The tendency among educational authorities to maintain all the features of a health program without the advice of a physician was to be deplored. The paper, while emphasizing the importance of undernutrition, made it plain that the basis of the study of nutrition was not sound. This Dr. Holt had pointed out when he made his study of the weights and heights of boys in a private school. The great difficulty they had encountered in their nutritional studies was that of determining the standards for the normal child. This was the most important point to settle.

Dr. SAMUEL MCC. HAMILL of Philadelphia, after congratulating Dr. Smith on being the first to emphasize the need of medical supervision in a boys' boarding school, said he had had the opportunity of coming into contact with boarding schools and was astonished at the neglect of medical supervision. He placed emphasis on the point that it was not only the undernourished boy who needed attention, but that the boy who was consuming an amount of food that he was utterly unable to take care of was just as greatly in need of attention. The boys' school offered an opportunity to make some observation with reference to what constituted a normal food intake for boys of school age in twenty-four hours.

Dr. THOMAS S. SOUTHWORTH of New York emphasized the advantages of an extension of school medical supervision in an advisory capacity to the home. He cited the case of a boy overworked by extra studies and instructive holiday excursions so that he was left no time for mental recuperation in order to illustrate the effect on the child of undue forcing and to show the need for closer cooperation between the home and the school.

Dr. L. E. LA FETRA expressed his approval of the plan of having regular periods of activity and inactivity for the boys. He said that perhaps Dr. Smith had not sufficiently emphasized the advantages of having periods of rest between study periods. Efficiency engineers had found that by the introduction of short rest periods of five or ten minutes every forty-five or fifty minutes, the degree of fatigue, the number of absences, and the labor turnover were greatly decreased. The same principle should be applied to the growing child. Another factor of importance, not so much in private as in public schools, was that the lunch period was too short. The lunch period should be long enough to permit the child to eat his lunch in comfort and to allow him a period of repose before going back to school.

Dr. ISAAC ABT of Chicago said that if teachers knew more about health and doctors knew more about education better results would be obtained. Too many doctors went into the work of school inspection unprepared. The matter of school inspection had a brilliant future, but at present it was a failure. Medical inspection in the schools should be left to the best men in the community and not to the young men who knew little or nothing about it.

Dr. HENRY F. HELMHOLZ of Chicago spoke of the responsibility of the society from the standpoint of preventive medicine. As pediatrists, he said, they had strangely neglected this phase of their work. They should devote more attention to preventive medicine. Once every year or every second year they should devote a session to the discussion of some phase of preventive medicine as it related to pediatrics.

Dr. HENRY L. K. SHAW of Albany emphasized a number of the points brought out in the discussion and agreed with Dr. Abt that one of the reasons medical inspection of the schools was a failure to a certain degree was due to their lack of knowledge and their indifference to the subject. He made a plea for better training in pediatrics and public health work in our medical schools. During the last few years the term "medical school inspection" had been superseded by the more desirable term "medical school health supervision."

Dr. L. EMMETT HOLT of New York said that they all realized the situation, but the question was "What was the remedy?" The public could only be awakened to a realization of the situation by the education of public opinion, and that was what this society should make an effort to do.

Dr. HENRY HEIMAN of New York advocated an extension of health supervision such as Dr. Smith had described to the summer camps for children.

The Predominance of Seborrheic Eczema in Early Life.—Dr. THOMAS S. SOUTHWORTH of New York presented this communication. He referred to the recent trend of pediatric literature which considered the majority of infantile eczemas to be due to dietetic or other internal causes. He did not wish in any way to detract from the value of that work; both from the etiological and therapeutical standpoints he acknowledged its value. Nevertheless, it appeared that the part played by seborrhea had been overlooked and had failed to receive the recognition it deserved. His observation had been that a preponderance of the cases of eczema presenting themselves in the ordinary routine of pediatric practice were associated with seborrhea, many of which were so mild that they would never reach the dermatological specialist. The writer had traced the seborrheic factor in both the mild and severe types of eczema. The clue to such basic causation was found about the ears and upon the scalp. The ear signs in seborrhea might vary from a mere adherent dry exfoliation to a moist and exuding surface where two surfaces were in contact. There was something significent also in the predilection of such eczemas for fat babies on breast milk rich in fats and for bottle babies suffering from disturbed digestion caused by a relatively excessive intake of fat. Towle and Talbot, in their description of cases of eczema associated with faulty digestion of fat, had noted the tendency of the exudative eruption to remain limited to the regions of the head for an appreciable length of time. There seemed to be some local predisposition. In nearly every case of marked facial eczema some characteristic lesion would be found, if sought for, above or below the ear. No attention had hitherto been called to this association, and it had generally been overlooked. The acceptance of a seborrheic predisposition appeared also to afford an explanation of the fact that facial eczemas tended to involve the hairy scalp rather than the neck and chest. The recognition of a seborrheic basis for a lesion by no means excluded the possibility of other microscopic invasion. As to treatment, oxide of zinc ointment, so helpful in other types, was, as a rule, useless by itself in seborrheic cases of even the simplest form. The soothing bland ointments, in the writer's experience, were unavailing until to them were added ammoniated mercury or tar, or resorcin, to destroy the microorganisms present. The part played by diet, both in the causation and cure of facial eczemas of infancy, was recognized by all, and this dietetic factor must be differentiated and corrected before the larger number of cases would yield to treatment.

Aneurysm of the Ascending Arch of the Aorta in a Boy of Thirteen Years.—Dr. HENRY HEIMAN of New York reported this case. He stated that the boy's illness began eight years ago with the gradual onset of dyspnea on exertion, precordial pain, and a slight cough. He gave a history of having had several attacks of articular rheumatism. In addition to physical signs, the electrocardiogram showed marked left ventricular preponderance, and the fluoroscope revealed an aneurysm of the ascending arch of the aorta. The boy's Wassermann test was 4 plus and the mother's reaction was 4 plus. In the epigastrium was a hard mass, about six cm. in diameter, movable and not tender, probably a gumma. The case was reported because of the great rarity of aneurysm of the thoracic aorta in children, there being only about 20 cases reported in the literature. The etiology in the majority of cases was very indefinite. So far as the writer had been able to ascertain, this was the first case in a child of unquestionable proven leutic aneurysm. The patient had been treated with 2 per cent. unguentum hydrargyri and up to the present time no improvement was noted.

Congenital Disseminated Atelectasis with X-Ray Findings.—Dr. JOHN RUHRÄH of Baltimore reported this case, because in the experience of at least three *x*-ray establishments in Baltimore not a single instance of this condition had been discovered. The patient was a girl, born July 27, 1917, who gained normally for a short time and then her weight became stationary. When first seen on November 15, 1917, the child had already passed through the hands of four doctors, and had been regarded as a case of difficult feeding. On examination a certain amount of cyanosis was observed which became very marked on crying. There was clubbing of the fingers and toes and a curious duskiness of the skin of the abdomen and enlarged superficial veins running up the chest. The most striking feature was the rapid respirations, rarely under 50, and many times 75 or 80 or more. The heart was normal as far as could be determined. The *x*-ray plate showed disseminated patches of unexpanded lung. With proper care and attention to feeding the child gradually improved. At present she weighed 25 pounds and was apparently normal.

A Case of Scorbutic Hematuria.—Dr. PERCIVAL J. EATON of Pittsburgh reported this case, which he was called to see because of suspected stone in the bladder. The child had had a history of hematuria for several weeks, and had been fed on patent foods and then on cooked foods, but never on fresh food. The child had no scorbutic symptoms so far as its gums were concerned. It was not particularly sore on being handled. However, the condition seemed to point more toward scurvy than calculus, and the child was accordingly given a diet of fresh, raw milk, beef juice, and orange juice. The hematuria rapidly disappeared and the child made a good recovery. This was the second case of scorbutic hematuria which the writer had seen. He had not looked up the literature, but was under the impression that such cases were rare.

A Case of Calculus.—Dr. PERCIVAL J. EATON of Pittsburgh reported this case, which occurred in a boy, 6 years of age, who gave a history of incontinence by day as well as night. At first there was no pain on urination and then later paroxysmal pain became more and more severe. A recent circumcision had not relieved the incontinence. The usual methods of treatment had no effect on the incontinence. The *x*-ray showed a good-sizd oval stone in the bladder. Its presence was confirmed by the sound. Through a suprapubic incision an 18.25 gram stone was removed. The boy made an uneventful recovery. The history of the boy revealed no apparent reason for the occurrence of the stone. He had not lived where the water was hard. The case was also interesting because of the long time the stone occupied the bladder without producing symptoms.

A Case of Anomaly of the Diaphragm with a Gastric and Intestinal Obstruction.—Dr. LAURENCE R. DEBUYS of New Orleans reported this case. He said the child, four months old, gave history of having been well up to the age of three months, when she had a peculiar attack of colic with twisting and straining. She had had two similar attacks, having been admitted to the hospital after the last one. At the time of admission to the hsopital she was acutely ill, with rapid respiration and pulse. Inspection showed less movement of the left side of the chest both anteriorly and posteriorly. Resiliency was absent on the left side. The heart was displaced to the right. The apex beat was in the median line. The abdomen presented a tumor in the epigastrium and left hypochondriac region, about the roundness of a banana and three or four inches long. The radiograph showed an obstruction suggestive of intussusception. An operation for the relief of the obstruction revealed a diaphragmatic hernia. On palpating the tumor there was a sudden gush of blood-tinged watery fluid through the mouth and nose. At this point breathing ceased and all efforts at resuscitation

were futile. A complete exploration of the upper abdomen showed the tumor attached to the hilum of the liver. The transverse colon and greater omentum were found in the thoracic cavity. The tumor consisted of the pyloric portion of the stomach twisted on its axis at the hiatus behind the diaphragm. The transverse colon and omenum had slipped up behind the stomach. The left lung was collapsed but showed no evidence of pneumonia. The left suprarenal body was found enlarged and hemorrhagic. At the posterior left half of the diaphragm there was no attachment; there was a hard cord bridging over this area in dome-like manner. There was a second twist in the stomach anterior to the pyloric orifice. The twisting in these two portions of the stomach had cut off the circulation, resulting in gangrenous necrosis of stomach wall. A point of interest in connection with this case was the absence of tenesmus with bloody stools in an obstruction involving the descending colon which would exclude the diagnosis of intussusception. Another point was that the radiograph gave no evidence of air in the thorax. This hernia belonged to the false variety of the congenital type of diaphragmatic hernia, being differentiated from the true variety by not having a sac. In this instance there were two conditions not mentioned in the various classifications of diaphragmatic hernia, namely, strangulation and palpable abdominal tumor.

A Case of Trichiniasis.—Dr. HOWARD CHILDS CARPENTER of Philadelphia reported this case, which occurred in a boy of 13 years of age taken suddenly sick with diarrhea, vomiting, and pain in the epigastrium. Eight days later pains became general all over the body, with swelling of the muscles and pain on pressure or on motion. The child had been sick for three months at the time he came under the writer's care, and had been treated for various conditions, such as muscular rheumatism, growing pains, etc. Examination showed the muscles swollen, tender, firmer than normal, and hard infiltrations were felt in the masseters, biceps, triceps, and gastrocnemius. The history which was obtained revealed the fact that the onset of the illness occurred after eating raw sausage. Several other members of the family who were ill following the eating of this pork still showed high eosinophile counts three months after the infection. Because of the severity of the disease in this boy, the pork which he ate must have been heavily infested. One of the reasons frequently given why children have milder attacks was because of their peculiar susceptibility to diarrhea, which tended to eliminate many of the intestinal trichinæ. From the history of this patient and of the other infected children in this family epidemic, the statement that the disease was mild in children was not borne out, as three of the children had been extremely ill. The differential diagnosis had to be made from nephritis, typhoid fever, meningitis, rheumatism, influenza, bronchopneumonia, and pleurisy. A point on making the diagnosis from nephritis was that the edema which was present in trichiniasis was not seen in the scrotum or labia. The eosinophilia which was so important in making the diagnosis might persist for months after the infection. The eosinophils usually numbered from 10 to 35 per cent. This diagnostic aid was also available early in the disease, as an eosinophilia had been reported about the time the young parasites entered into the muscles. Other parasitic conditions were excluded by failure in repeated attempts to find the ova of any intestinal parasite in the stools, and the absence of any parasitic skin infections. It was interesting to note that this child three months after the infection still had a decided increase in his leucocytes (16,000) and still had a marked eosinophilia (15 per cent.). The writer believed that not a few cases of so-called muscular rheumatism were really chronic trichiniasis. Trichiniasis should not be overlooked in this delicatessen age, when the mother on her way home from the club all too frequently stopped and purchased bologna sausage for the family's supper. The prognosis was uncertain at first, but was usually good after the seventh week. The mortality varied widely, being given by different observers as varying from 6 to 22 per cent. The prognosis of the patient here reported was good as to life, but it would undoubtedly be months before he could be brought back to normal health as far as his general nutrition was concerned. There was no specific treatment for cases seen after the migration of the embryos. Salvarsan had been tried with no effect. Serum from convalescent animals had no curative value. The writer emphasized the importance of making microscopical examinations for trichinæ at autopsies in our children's hospitals.

Two Cases of Pyelitis and a Case of Suppression of Urine for Four Days.—Dr. ROWLAND G. FREEMAN of New York reported these cases. He stated that the first case of pyelitis occurred in a female baby about nine months of age, and was of interest because, while the child had constitutional symptoms from the pyelitis, each effort to cure the child, whether by the alkali treatment or by hexamethylenamin, seemed to make the condition worse both in respect to the fever and the number of leucocytes in the urine. Within three days after the cessation of treatment the urine became normal and the child apparently recovered, although it was left with pyelitis without constitutional symptoms. The child was finally cured at a later stage, when neither large doses of bicarbonate with the addition of Kalak water, nor the large doses of hexamethylenamin caused any apparent disturbance of the child's health. The second case occurred in a frail child who weighed only five pounds at birth, but who did well until the latter part of the first year, when she had an attack of colitis. She then did well until four years later, when she was found to have pyelitis. In this case, too, large doses of alkali failed to cure and the mother becoming discouraged withdrew the child from treatment. Two years later the child was brought to the writer because of an injury to the face from a fall. The urine at this time still showed the presence of pus. The child was seen only five times and again taken away. About six months later he was again consulted, the mother reporting that during the interval the urine had been smoky looking and contained blood. Examination of the urine showed the presence of large amounts of pus. The child had a blood pressure of 220. Bowel washings, laxatives, counterirritants, and small doses of hexamethylenamin were of no avail, and the child died in about a week. This case was of interest as showing the importance of curing, if possible, every case of pyelitis whether associated with constitutional symptoms or not, as well as the necessity for frequent examinations of the urine in order to detect such cases of pyelitis when present without constitutional symptoms. The third case was that of a boy three years of age who had an attack of colitis for several days and then passed very little water. A small specimen of urine, sent to the State Laboratory at Albany, was reported to contain albumin and casts. For four days there was complete suppression of urine, during which time there was an increasing edema. The family were assured that the child would probably recover and that the urine when passed would contain considerable amounts of blood for several days. At the end of the fourth day the boy began to pass urine and during the first two hours passed from one and a half to two quarts. From that time the boy gradually improved and entirely recovered. This case was interesting, Dr. Freeman said, not because of the long period of suppression, because suppression during a longer period had been reported, but because it was not associated with inflammation of the kidney, but was probably congestion or at least complete suppression of function.

A Few Roentgenograms Demonstrating Gastrointestinal Abnormalities.—Dr. CHARLES GILMORE KERLEY made this presentation, which included illustrations of elongated, displaced, and sacculated sigmoids, dilated stomachs, plates showing the different degrees of gastric retention in cases of pylorospasm, pyloric obstruction, etc. One point brought out by the roentgenograms was that where there was an elongated and sacculated sigmoid the emptying time of the stomach was always slow. There seemed to be an association between the emptying time of the stomach and that of the large intestine. These abnormalities were found in children who suffered from obstinate constipation; some had recurrent vomiting and acidosis. The pictures served to demonstrate the importance of having an *x*-ray picture taken in case of complaining of obstinate constipation and other gastrointestinal disturbances that did not yield readily to ordinray methods of treatment.

Acrocephaly with Deformities of the Extremities.—

Dr. E. A. Park and Dr. G. F. Powers of Baltimore presented this paper, which was read by Dr. Park. They stated that in 1908 Apert described a child who was the subject of acrocephaly and syndactylism, collected eight other cases, and put forward the combination as a clinical entity under the title of "Acrocephaly-syndactylism." Since that time two other cases of a similar nature had been reported. The writers had been able to collect from the literature more than 21 cases. The clinical picture was very striking, and not easily forgotten. The syndactylism did not differ, however, from the syndactylism occurring without malformation of the head, and cranial deformity did not differ from that in acrocephaly uncomplicated by syndactylism. All the writers on this subject discussed at considerable length the nature of the malformations of the skull, and agreed that it was due to premature synostosis of the sutures. No writer, however, seemed to have considered the malformations of the hands and feet. Several writers had sought to correlate the malformation of the skull and extremities as being both due to hereditary syphilis or amniotic adhesions; others had left the malformations of the head undetermined, but had explained the malformations of the extremities as being secondary to the malformations of the head, either as a result of the injury of a center situated in the base of the skull or contiguous portion of the brain governing the growth of the extremities or to interference with the normal development of the hypophysis. The writers of this paper did not believe that the cranial deformity in acrocephaly was produced by premature synostisos of the cranial bones, or that the malformation of the extremities could possibly be regarded as secondary to the malformations of the skull. They brought forward embryological evidence indicating an origin altogether antedating ossification. It was not generally appreciated that malformations of the extremities, other than syndactylism, not infrequently occurred in the subjects of acrocephaly. In other words, acrocephaly tended to have in association other skeletal defects, and no such clinical entity as "acrocephaly-syndactylism" existed.

Dr. Charles Herrman of New York stated that in trying to explain these anomalies it was important that congenital syphilis should not be emphasized as an etiological factor. There was scarcely a paper written on this subject that did not lay stress on the importance of congenital syphilis as an etiological factor. The finding of a negative Wassermann in these cases had proved that they bore no relation to congenital syphilis. The same was true in regard to achondroplasia. Most writers on this subject emphasized the part played by some abnormality of the pituitary. In these congenital anomalies they were dealing with an entirely different phenomenon. There was no doubt but that heredity played a part in polydactylism. It was not necessary that the identical anomaly should be reproduced in order to show a hereditary factor. It simply meant that there was an anomalous tendency in the family which showed itself in various ways.

Dr. Park stated that there was no family history of anomaly in this case and no history of a defective germ plasm.

The Incidence and Significance of the Rheumatic Nodules in Children.—Dr. Joseph Brennemann of Chicago read this paper. He said that the rheumatic nodules that had received so much attention from British writers on rheumatism in children were almost universally considered a rare condition in this country. As a result of his own observations he believed that they were just as frequent in this country as they were in England in an equal number of similar cases of rheumatism. The chief object of the paper was to stimulate an interest in the subject so that widely distributed observers might settle the question of whether these nodules were a definite quantitative accompaniment of rheumatism, or whether they had a very selective geographical habitat. He gave a detailed description of the morphology and distribution of the nodules and discussed their significance. They practically never occurred in rheumatism uncomplicated by endocarditis or pericarditis. They are relatively rare in mild cases of rheumatism or chorea with cardiac complications, but occurred with great regularity and usually very abundantly in chronic or recurrent and active endocarditis, especially in those cases that for weeks and months swayed between life and death, not alone because of a broken compensation, but even more because of a smouldering, uncontrollable infection that ever and anon lit up again. Inasmuch as rheumatic nodules were pathognomonic of rheumatism with carditis, they were often of considerable diagnostic value. A new and abundant crop also had often an ominous significance in showing that a new and serious cardiac invasion had taken place. Rheumatic nodules unless very carefully looked for were apt to be overlooked. The author believed that careful search would reveal them much more often than was commonly thought, and that the only reason they had attracted more attention in England than in this country was because they had more and severer rheumatism there than here.

Osteogenesis Imperfecta-Congenita.—Dr. H. M. McClanahan and Dr. W. W. Willard of Omaha reported this case. Dr. McClanahan stated that up to 1906, 140 cases of this condition had been reported. Lovett and Nichols, after studying these cases, concluded that only 14 of them were cases of true osteogenesis imperfecta-congenita. Two types of the condition were recognized, namely, osteogenesis imperfecta-congenita, and osteogenesis imperfecta-tarda. Osteogenesis imperfecta-congenita was a rare disease, characterized by imperfect bone development, numerous fractures, and excessive callus formation. After reviewing the various theories advanced to account for the condition, the writers concluded that whatever the theories, the fact was that bone formation from the periosteum remained in the fibrous state. The study of the bone in this case showed evidence that the osteoblasts rising from a fibrous bone marrow because of insufficient nourishment or some toxic influence did not develop properly, but remained polygonal and later underwent metaplasia into osteoclasts. The case reported was that of a male child, three months old, in whom the deformity was apparent at birth, when several fractures were present. At the time of admission to the hospital masses of callus could be felt on the shafts of the arms, thighs, and legs. The mother was certain the baby had grown. The bowels were regular, the urine free, and the Wassermann was negative. The von Pirquet was also negative. The baby remained in the hospital from October 1 to November 16, 1918, during which time its temperature varied between 103° and 105° F., and respirations from 60 to 90. The legs were constantly flexed and the arms were splinted at right angles to the body. Examination of the chest a few days before death revealed fine râles over the posterior chest with small areas of dullness on percussion. Death occurred from exhaustion on November 18. As far as the writer could ascertain, this was the youngest case with a fatal issue which had been reported in which a careful histological study was made. The conclusions reached by Dr. Willard agreed very closely with those recorded by Nichols upon an infant dying at the age of ten months. All the histological and post-mortem findings were recorded.

Dr. Joseph Brennemann of Chicago said they ordinarily thought of these cases as being in a serious condition. He had seen one child with this condition who appeared to be in normal health. In this instance, after some nutritional disturbance the child's arm became sore, and it was found to have a flail joint. A few days later the other arm became sore. The *x*-ray showed that all four bones of the forearm were fractured, the fractures being absolutely transverse. The child was kept under observation, and no other fractures occurred.

Dr. L. Emmett Holt of New York recalled the case of a child eleven months old who had a fracture at the middle of the tibia. Six months later a fracture occurred on the other side. The *x*-ray taken at this time showed that there had been a fracture in the meantime that was not resognized by symptoms. Another case coming to the hospital some time ago was diagnosed as a case of scurvy because of the tenderness over the bones. The *x*-ray examination showed typical fractures. It was apparent that heredity was of some importance in these cases. This type of fracture had nothing in common with the green stick fracture.

Dr. Charles Herrman of New York stated that only

about one-half of these cases gave a family history of fragility of the bones; it was probable, however, that there was a hereditary factor. It was not only the bones that were abnormal but the ligaments, and other structures. Another feature in these cases was the blue color of the sclera, which was present in about one-half of the cases; this also showed that the condition was a disease not confined to the bones, but that probably all the tissues of the body were somewhat abnormal.

Care and Treatment of Whooping Cough Patients.—Dr. JOSEPH WINTERS of New York read this paper, in which he cited statistics showing the high death rate from whooping cough. He said that in 1916 it caused almost as many deaths as scarlet fever and typhoid fever combined, both in New York City and New York State. In 1917 it caused almost twice as many deaths as scarlet fever. Three-fourths of the deaths from whooping cough occurred in children under one year of age. It caused more deaths during the first year of life than any other disease. During the first year of life whooping cough was carried to the child in clothing infected by the whooping cough patient. Carelessness in attendants disseminated it. Prevention in children was permanent prevention, as immunity was attained at about the tenth year. Adults supposed to have whooping cough were usually cured by purgation and the cough shown to be a digestive reflex cough. The whooping cough patient should be kept indoors at a temperature of 65 degrees F., with fresh air but no draft. The bedroom must not be cooler than 65 degrees F. Variations in temperature induced repeated coughing attacks and complications, and it was the complications that were responsible for most of the fatalities of whooping cough. Codeine and bromides might be given. After whooping cough children were extremely susceptible to repeated attacks of bronchitis and were also predisposed to tuberculosis.

Dr. SAMUEL S. ADAMS of Washington took issue with several of the statements made by Dr. Winters. He said he felt that many could not accept the statement that whooping cough was conveyed by the clothing. He recalled a symposium on whooping cough before the Society some years ago. At that time the consensus of opinion was that climate did not have much influence on the course of the disease, that the child with whooping cough should have good food, fresh air, and hygienic surroundings and should then be left alone so far as treatment was concerned. As to the treatment of whooping cough with vaccines, a variety of opinions were expressed in the literature. He was of the opinion that vaccines had no effect in preventing the disease or in controlling the paroxysms. Some children got along well without much treatment while others required nerve sedatives. He could see no reason for making a mistake in differentiating a digestive reflex cough from the paroxysmal cough of whooping cough.

Do Calories Measure the True Values of Foods?—Dr. HENRY DWIGHT CHAPIN of New York presented this communication. He stated that the caloric method of feeding was based on the assumption that nutrition processes depended solely on the oxidation of food and that heat given off as the result of oxidation was the measure of the value of food. In practice the tendency was to keep a table of caloric values and the diet was laid out by arithmetic. The physician was apt to think that if the caloric count was correct the food problem was correctly solved. In the experimental study of nutrition it was soon found that nutrition was not a simple oxidation process. Bayliss stated that heat and combustion did not necessarily give accurately the energy of foodstuffs as available in the organism. In the animal body energy which was the result of chemical combinations was converted into various other forms without the necessity of passing through the form of heat. Large quantities of the common foods consumed by animals were used by anaerobic organisms, as the air was not essential for animal life in all cases. Food must be selected for its right physiological value for each individual. That what was the right physiological value for one individual might not be right for another might be due to anaerobic metabolism in one instance and aerobic metabolism in the other. The system of teaching must be constructed so that it was based on the knowledge of the physiological properties of the various food elements and the fact that there were mixed types of metabolism. It was hence a question whether it was not time to weigh the caloric method of feeding and possibly abandon it.

Dr. FRITZ B. TALBOT of Boston said that, while he disliked to disagree with Dr. Chapin, he thought that all physiologists were agreed that conclusions drawn from observations made on animals could not always be applied to living children. He could not agree that oxygen was not necessary in the presence of muscular contractions. It had been conclusively proven in the Carnegie Laboratory that every time a muscle moved it increased the production of carbon dioxide, and carbon dioxide could not be formed without oxygen. The trouble that had come from the caloric method of feeding in the past was due to lack of knowledge of the foundation upon which it was based. The assumption that in using the caloric method of feeding one was using an accurate method was very inaccurate. In their experiments they had found out a number of facts not generally known. One of these was that the caloric value of lactose was not 4.1, as was usually given, but 3.7. Another factor to be taken into account was the loss of a certain amount of food in the feces. Energy was also used in the digestion of food. For instance, if 100 grams of lactose were given, seven were used in the preparation of the remainder for use in the body. Twenty per cent. of all protein taken in was consumed in making the remainder ready for use. As to the caloric method in relation to infant feeding, the baby must first be fed what agreed with it and what it could digest. In the second place, it must have food that was well balanced. In the third place, one must see that the baby got enough, and when a normal baby was getting enough food that agreed with it and was well balanced it was getting what the physiologist showed was the proper number of calories. Dr. Talbot emphasized the point that while he did not believe in any method of feeding, he did not think they should omit anything of value in determining whether a baby was getting what was correct or not, and the determination of calories sometimes helped.

Dr. J. P. SEDGWICK of Minneapolis said that he also felt that the determination of the caloric value of food was a very valuable aid in estimating the quantity of food an infant was getting. But the estimation of the caloric value of food was not a method of feeding. One could feed protein or fat or carbohydrate entirely and still have the requisite number of calories, hence it was very incorrect to use the term "caloric method of feeding."

Dr. F. W. SCHLUTZ of Minneapolis said he also felt that the caloric measure of food was something they should not altogether discard, since it was about the only way they had of measuring the intake of food. It was, however, a mathematical measure and not a method of feeding.

Dr. W. MCKIM MARRIOTT of St. Louis said that another difficulty in the use of the caloric estimation of the food intake was that they had not estimated the amount used by the energy output, which might be very variable in different individuals. He thought that the error was not in the caloric measure of food but in the fact that their method of making the estimations was wrong.

Dr. L. EMMETT HOLT of New York said he was glad this subject had been brought up in order to let them all know that the estimation of caloric values of foods was not a method of feeding. When Dr. Roche introduced percentage feeding it came by misnomer to be known as "the percentage method"; in the same way the caloric measure of food had come to be known as the "caloric method." The estimation of percentages was exceedingly important, and he regretted that it had been lost sight of. It seemed to him of the utmost importance in balancing diets that they should know what part was fat, what part carbohydrate, and what part protein. Likewise the caloric estimation of food values was of importance, but it was a method of statement and not a method of feeding.

Dr. CHAPIN, in closing, said he could not agree with Dr. Talbot's statement that observations on lower animals could not be applied to human beings. That was an error frequently made. One cell lived and breathed and grew just as did a higher cellular animal. Evolu-

tion started with the living cell and went up. One of the serious errors physicians had been making was that of detaching the higher from the lower in animal life. He thoroughly agreed with the statement that the caloric determination of the food value alone was a very inaccurate method of feeding. His reason for bringing it up was not primarily for the members of the American Pediatric Society, but for those not so well informed. There were many men all over the country writing out calories and feeling that the final solution of infant feeding had been reached. The important point he wished to bring out was that many processes of life might take place without oxidation, and if we accepted that fact it threw off a great deal of the value of the estimation of calories.

A Study of the Stools of Institutional Children to Determine the Existence of Intestinal Parasitic Infection—Dr. LAURENCE R. DEBUYS of New Orleans made this presentation, based on the study of 597 children in seven institutions. He said that the frequency of the infections by the various parasites in the order named were: *Trichuris trichiura, Ascaris lumbricoides, Hymenolepis nana, Oxyuris vermicularis, Strongyloides stercoralis, Necator americanus,* and *Hymenolepis diminuta.* The hygiene, general care, duration of residence in the institutions, previous environment, association with dogs, eating of dirt, and absence of systematic medical inspection seemed to have a direct bearing upon the frequency of intestinal parasitic infection. The two institutions where systematic medical inspection was made showed the lowest percentages of infection. The two institutions with the heaviest infections were those in which the population was transient and where there were no medical inspections, the infections in these institutions being 94.2 per cent. and 83.33 per cent. respectively. The youngest child infected was two years of age and was an inmate of the least sanitary of the institutions. This child had a quadruple infection. The relation of age to infection seemed to be negligible, except that there were no infections among infants. The maximum number of infections was at 11 years of age. The maximum age of infections in boys was 11 and 12 years and in girls 13 years. The symptoms usually attributed to "having worms" were as frequent, and some a little more frequent, in those not infected than in those infected. The eosinophilia was a valuable aid in the diagnosis of infection with intestinal parasites. It was, however, not pathognomonic and its absence did not exclude an infection. The eosinophiles were found as high as 28 per cent. in the positive cases and 18 per cent. in the negative cases. No parasite in this study seemed to have a definite eosinophilia. Infection by any of the parasites in this study could exist with an absence of eosinophiles. This was found in their single infections with the exception of the *Necator americanus* and *Hymenolepis diminuta. Necator americanus* was found in single infections in only two cases, in which instances the eosinophiles were 12 and 13 per cent. respectively. However, in mixed infections of this parasite with *Trichuris trichiura* and *Hymenolepis nana* the eosinophiles were as low as one per cent. *Hymenolepis diminuta* was not found in single infection, but in combination with *Trichuris trichiura* and *Ascaris lumbricoides* the eosinophile count was 13 per cent. Minimum eosinophile counts in double and triple infections were 0 per cent., while the maximum was 28 per cent in each. Two quadruple infections upon which blood counts were made showed 8 and 9 per cent. eosinophiles, respectively. The only way in which to make a positive diagnosis of the presence of intestinal parasites was by either finding the parasites or the ova in the stool of the individual. Vermifuges should therefore not be given to the defenceless child unless it was known that the infection existed and its character was ascertained, when the specific drug might be given to combat the particular infection.

Dr. J. P. SEDGWICK of Minneapolis emphasized the need of medical inspection in institutions, and said that if intestinal parasites were looked for systematically they would be found oftener than was thought.

Dr. JOSEPH BRENNEMANN said that in the United States when one spoke of "worms" they usually thought of *Ascaris lumbricoides;* nevertheless, he had heard Dr. Kerley say that he had met with this parasite only a few times in New York City. Patients coming under his observation with this parasite had shown no characteristic symptoms, and the presence of the parasites was not recognized until they were found in the stools. He would like to know whether the others had observed symptoms attributable to these parasites.

Dr. OSCAR M. SCHLOSS of New York said that he had examined many cases for intestinal parasites, and had classified them. He thought the symptoms depended upon the grade of infection. Occasionally there were very distinct symptoms. He recalled one instance in which the child had a very severe diarrhea with blood and mucus in the stools without apparent cause. In this instance it took months of heroic treatment to get rid of the parasite, and long after the infection was cleared up the ova continued to be found in the stools. The *Oxyuris vermicularis* might be present in great numbers without causing symptoms. In the ordinary life cycle of this parasite the ova were not discharged, and the only way they could be demonstrated was by the administration of santonin. One symptom to which Sill had called attention was pain in the right iliac region. In several instances he had seen marked anemia due to the presence of the dwarf tapeworm. The symptoms, however, in proportion to the amount of infection, were very slight. It was very uncommon to find intestinal parasites in private patients in New York, but they were quite common in certain classes of dispensary patients. The dwarf tapeworm was frequently found among Italians. This parasite was very common in certain parts of Italy and Sicily, where in certain districts as many as 10 per cent. of the population were said to be infected.

Dr. HOWARD CHILDS CARPENTER of Philadelphia described an epidemic of *hymenolepis nana* in an institution in Philadelphia, where they had made a careful study to determine, if possible, the mode of transmission. They had trapped and examined rats, but found them normal so far as this parasite was concerned. It seemed to him that the transmission was from one child to another, a direct hand-to-mouth infection. It was well to remember that scabies might also cause an esoinophilia.

Dr. W. MCKIM MARRIOTT of St. Louis cited a case in which a boy was operated on for appendicitis, and examination of the appendix showed that it contained the *Oxyuris vermicularis.* Of course usual method of treatment would have no effect on the parasite in this locality.

Dr. A. G. MITCHELL of Philadelphia said that he had observed a number of children in France, where infection with the *Ascaris lumbricoides* was very common. Some of them had acute symptoms which cleared up when the infection was eliminated. Some gave gastric symptoms when the worms got into the stomach, and others had intestinal symptoms. Whether the worms were the cause of the symptoms he could not say, but he knew that the general nutrition of the children improved when the infection was eliminated.

Dr. E. A. PARK of Washington, D. C., related his experience with intestinal parasites in France. There they had made it a routine procedure to examine the stools for intestinal parasites. He described an investigation carried out on 50 cases infected with *Ascaris lumbricoides* to ascertain if there were symptoms that could be definitely attributed to the parasites. They had found that the symtoms disappeared when other conditions were made normal. It was extremely difficult to get rid of the parasites.

Dr. DEBUYS, in closing, said it was his impression that a great many of these parasites did not cause symptoms. The American hookworm caused anemia, and interfered with growth and development. He had seen the *Ascaris lumbricoides* cause severe symptoms. He knew of one instance which was found at operation in the appendix. He had known it to cause intestinal obstruction, and in one case it had loosened a Murphy button. The finding of the *Oxyuris vermicularis* in the appendix was interesting, as that parasite was not usually found so high up in the intestinal tract. *Hcmenolepis nana* might be overcome by the use of male fern.

Dextrose Tolerance in Atrophic Infants.—Dr. H. F. HELMHOLZ and Dr. L. W. SAUER of Chicago presented this paper which was read by Dr. Helmholz. He stated

that in making their investigations they had used the Woodyatt apparatus and a dextrose manufactured by the Corn Products Company. Solutions of approximately 10, 15, and 20 per cent. were used, the actual concentration being determined polariscopically. It was immaterial so far as tolerance was concerned whether 10 grams of glucose was injected in a volume of 10 c.c. or in a volume of 100 c.c., provided it was injected evenly in a given unit of time. At the start a rate of injection was chosen that would not be likely to exceed the tolerance, for if the sugar appeared at the first rate of injection the injections had to be resumed on a subsequent day. If no urine was obtained after thirty minutes, glycosuria would not occur even after several hours of continuous injection. The rate of injection was increased by one-tenth of a gram per kilo per hour until sugar appeared in the urine. Injections were made in five infants who were nearly normal weight for their ages, and the tolerance of these did not exceed 1.1 gram per kilo per hour. In contrast to these findings the tolerance of atrophic infants ranged from 1.5 to 1.8 per kilo per hour. While the number of cases observed was too small to warrant any definite conclusions as to the possible therapeutic value of the intravenous injections of glucose, in two cases the injections were followed by gain in weight without change in diet; in one case there was a gain in weight, but the diet had also been changed, and in three cases there was no beneficial effect. It would appear that the sugar tolerance of normal infants did not differ much from that of normal adults. The tolerance of atrophic infants for glucose given intravenously was considerably greater than that of normal infants.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

MANUAL OF OBSTETRICS. By EDWARD P. DAVIS. 478 pages with illustrations. Published by W. B. Saunders & Company, Philadelphia.

PATHOGENIC BACTERIA AND PROTOZOA. By JOSEPH MCFARLAND. 829 pages with 30 illustrations. Published by W. B. Saunders & Company, Philadelphia.

NERVOUS AND MENTAL DISEASES. By CHURCH and PETERSON. 949 pages with 350 illustrations. Published by W. B. Saunders & Company, Philadelphia.

FATIGUE STUDY. By FRANK B. GILBRETH. 169 pages with illustrations. Published by The Macmillan Co., New York.

SANITATION FOR PUBLIC HEALTH NURSES. By HIBBERT WINSLOW HILL. 211 pages. Published by The Macmillan Co., New York.

EXAMENS DE LABORATOIRE DU MÉDECIN PRACTICIEN. By GUY LAROCHE. 411 pages with 111 illustrations. Published by Masson et Cie, Paris.

THE SURGICAL CLINICS OF CHICAGO. 1532 pages with illustrations. Published by W. B. Saunders Co., Philadelphia.

ON FACIAL NEURALGIA AND ITS TREATMENT By J. HUTCHINSON, F.C.B.S. 216 pages with illustrations. Published by William Wood & Co., New York.

PROGRESSIVE MEDICINE. Edited by HOBART AMORY HARE, M.D. 418 pages with illustrations. Published by Lea & Febiger, New York.

REPORT OF THE SURGEON GENERAL U. S. ARMY, 1919. Volume I, 1014 pages; Volume II, 2149 pages. Published by Washington Government Printing Office.

DEFECTS FOUND IN DRAFTED MEN. By ALBERT G. LOVE, M.D., and CHARLES B. DAVENPORT.. 351 pages. Published by Washington Government Printing Office.

THE MEDICAL CLINICS OF NORTH AMERICA. September, 1919. 549 pages. Published by W. B. Saunders Co., Philadelphia.

PRAKTIKUM DER GERICHTLICHEN MEDIZIN. By HUGO MARX. 293 pages with 25 illustrations. Published by August Hirschwald, Berlin.

Therapeutic Hints.

Treatment of Bronchial Asthma.—In a letter to the editor, W. B. Crawford, of Goldsboro, N. C., reports the successful use of "almost a specific for asthma," the formula of which he found in an old notebook belonging to a deceased uncle, and credited to *The Medical Summary* of more than a quarter of a century before. The prescription, which was used in a distressing case of bronchial asthma, in a patient nearly seventy years of age, and which was "simply magical" in its effects, is as follows:

℞ Tincture gelsemium ..... ℥j
Tincture lobelia ..... ℥j
Potassium bromide ..... ℥ss

M. Sig.—Twenty drops in water every three hours. —*The Medical Summary.*

Treatment of Acne Vulgaris.—Levin holds that acne vulgaris is a hyperkeratosis of the skin associated with a disturbance of the carbohydrate metabolism, usually accompanied by gastrointestinal derangements. The acne bacillus, if it is an etiological factor, becomes active only upon the development of a favorable soil for its growth. The general treatment of the condition, therefore, includes all the procedures employed for the detection and correction of abnormal functioning of the internal organs. The local treatment includes measures for the removal of the thickened horny tissue and the grease and cell detritus; to improve the cutaneous circulation, and to prevent and remove infection. In the office the skin is scrubbed with benzine to remove dirt, grease, and cell detritus, and to aid in loosening comedones, followed by mechanical extraction of comedones. The smaller pustules are opened. The promotion of hyperemia by the use of suction cups is sometimes beneficial. The skin is subsequently cleansed with alcohol and tincture of iodine applied to the interior of the ruptured and incised lesions. The ultraviolet rays emitted by the mercury vapor lamp are then employed, the applications being made at intervals of from five to seven days. For the home treatment, before going to bed at night, after washing the affected skin with hot water and soap, then with cold water and soap, and the extraction of as many blackheads as will come away easily, the following lotion is to be rubbed well into the skin for ten minutes, with a piece of flannel:

Zinc sulphate .....℥i-℥iv
Rose water ..... ℥ii
Mix and add,
Potassium sulphate .....℥i--℥iv
Rose water ..... ℥ii

For boggy and indurated masses, and folliculitis of acne keloid, which at times accompanies acne vulgaris, Levin recommends the following ointment:

Sulphur ointment ..... ℥iii
Red oxide of mercury ointment.....℥iss
Zinc oxide ointment.....q. s. ad ℥i

—*New York Medical Journal.*

Ringworm of the Scalp.

℞ Iodine ..... ℥i
Rectified oil of tar..... ℥i

Mt. et ft. pasta. Sig.: Apply every six or seven days, washing the scalp with mixture of green soap before removing the application.—Coster.

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DIAGNOSTIC PITFALLS IN PULMONARY TUBERCULOSIS.*

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ABOUT fifteen years ago we were taught that one of the most important duties of the physician to his patients is to diagnose tuberculosis in its early stage, and that neglect in this regard is in a great measure responsible for the high mortality caused by the tubercle bacilli. As a result of this warning the vast majority of practising physicians have been on the alert, and have diagnosed tuberculosis on the principle that it is better in doubtful cases to keep the patient under treatment, urge a vacation, or admit him to a sanatorium, than to overlook a tuberculous lesion in the lungs and thus deprive him of the benefits of early and prompt treatment. That this policy has not been satisfactory to either physician or patient is shown by the fact that most writers on the subject at present insist that there are many diseases which simulate pulmonary tuberculosis to an exquisite degree, and that it is important that every practitioner should be on the alert in all suspicious cases, thus avoiding the isolation of persons who suffer from non-tuberculous pulmonary diseases and sparing them the troubles, tribulations, and expense of treatment of tuberculosis.

The recent World War has shown that not all who have heretofore been classed as "suspects," or "incipients," must be subjected to the hardships and expense of modern treatment for tuberculosis. A large proportion of such individuals were admitted into the various armies and they made good. And if many "suspects" survived the hardships of war we may safely conclude that they could easily be treated at home and both the patients and society would be gainers.

But while attempting to differentiate tuberculosis from diseases which simulate it, there are many pitfalls in the way of the physician who conscientiously pursues his calling. He is loath to pronounce a patient tuberculous without positive proof of the existence of active disease in the lung, but he fears failure to diagnose this disease when it actually lurks in the lungs, thus working havoc by postponing proper treatment; and while this is not always as deadly as has been stated by some writers, yet it is, in many cases, quite dangerous to both the patient and the physician, at least to the latter's reputation.

It is my object to-night to indicate briefly the pitfalls which are likely to be met with by the average physician in his daily practice and to indicate some ways of avoiding them. In dealing with the subject I shall try to show you the pitfalls into which I have at various times fallen myself, and the lessons I have learned while being in these holes. You know how often a physician learns from mistakes; usually more than from so-called brilliant diagnoses.

Experience has taught me that bias has had the most baneful influences in our attempts at differentiation of the chronic diseases of the lungs. Because pulmonary tuberculosis is a very common disease, of frequently insidious onset, and because of the importance of prompt diagnosis, it has been suspected in every case of cough, blood spitting, emaciation, etc. While it is important to bear it in mind when considering an obscure case, it is more important to remember on all occasions that there are many causes of mild fever, cough, emaciation, hemoptysis, singly or collectively, and that pulmonary tuberculosis is but one of these causes. With tuberculosis, as is true of all other matters of diagnosis, the physician who approaches his patient with an open mind, and is influenced only by real clinical facts, carefully observed and correlated, will avoid pitfalls. If you are not biased in favor of tuberculosis, you will very often be surprised to find that your patient who spits blood is troubled with disease of the heart, kidneys, bronchi (bronchiectasis), or simply of the rhinopharynx; you may even be amazed at times to find that the blood expectorated is derived from the posterior nares, in some cases of epistaxis.

Very few physicians are biased against tuberculosis when the family history of the patient shows that none of his blood relatives and collaterals have ever had the disease, but many are liable to diagnose this disease in obscure cases merely because there have been other cases in the family. Of course, familial tuberculosis, which is rather common, is responsible for this prejudice. But we have all observed that not all the offspring of tuberculous parentage develop phthisis. In fact, statistics have distinctly shown that a family history of phthisis may be elicited among non-tuberculous patients almost as frequently as among tuberculous.

In a doubtful case do not diagnose tuberculosis merely because you elicit a history of exposure to infection. There are so many tuberculosis "carriers" in any modern industrial city, that I would like to be shown a man or woman who has never

*Read before the Williamsburgh Medical Society, Brooklyn, N. Y., December 8, 1919.

been in contact with a tuberculosis patient. Because a man died from tuberculosis do not pronounce his wife tuberculous when she coughs or loses in weight during the first few months of widowhood. Despite the intimate contact with a tuberculous person, conjugal tuberculosis is exceedingly rare. I have seen but few cases. Similarly, physicians and nurses whose work is mainly conducted in hospitals and sanatoriums for tuberculous patients have hardly ever been observed to contract the disease while pursuing their vocation. You will avoid a diagnostic pitfall by disregarding altogether exposure to tuberculous infection in adults.

When noting signs of tuberculous disease of the glands, joints, or bones do not hastily diagnose pulmonary tuberculosis when your patient coughs. Scars of this nature are diagnostic pitfalls. If you bear in mind that chronic pulmonary tuberculosis is exceedingly rare in persons showing such scars on the neck, or deformities of joints or bones, you may avoid the trap.

A diagnostic trap, into which many physicians fall and drag their patients with them, is a history of some disease which is reputed to be of etiological moment in tuberculosis. Among these, pleurisy and influenza are perhaps the most important. It is well known that the vast majority of cases of pleurisy are tuberculous in character, and more than fifty per cent. of patients suffering from so-called idiopathic pleurisy, dry or moist, subsequently develop pulmonary tuberculosis. But we are apt to forget that nearly fifty per cent. pass through life without ever becoming tuberculous in the clinical sense. It is therefore wrong to tell every patient with pleurisy that he is surely doomed to succumb to tuberculosis in the near future. If he, after recovering from the acute pleural inflammation, does not cough, has no fever, and maintains his normal weight or gains, he is to be considered well for the time being, though he may be warned that in case he begins to be annoyed by any of the symptoms of tuberculosis he should at once call for a careful examination and study of his case. He may also be told that in the event he does develop pulmonary tuberculosis, the fact that he had had pleurisy is very much in his favor; the disease is likely to pursue an exceedingly chronic course and tend to recovery.

Contrary to the teachings of writers of previous generations, the recent epidemic of influenza has shown that this disease is not etiologically related to tuberculosis. Of the hundreds of cases which have come under my observation during the past year in which cough, expectoration, fever, etc., have persisted after an attack of influenza, only one turned out to be tuberculosis. The pulmonary sequelæ of influenza are hardly ever tuberculous in character. Most of these patients suffer from bronchitis, bronchiectasis, pleurisy, abscess of the lung, etc. They should not be considered tuberculous, and should not be banished to distant climes or to sanatoriums. If you will bear this in mind you will avoid one of the most common diagnostic pitfalls in your way.

I have already mentioned the hemoptoic pitfall. But it will bear repetition that while the vast majority of patients who spit blood suffer from tuberculosis, there are many who do not. In about one-third of the patients with hemoptysis who have consulted me within the past three years the etiology was altogether different. Perhaps the most frequent cause, after tuberculosis, is heart disease, especially mitral stenosis. Patients with mitral stenosis often cough, lose in weight, have mild fever, spit blood, and show physical signs of a localized lesion in the lungs. They are very frequently treated for tuberculosis by physicians in the municipal clinics, and kept in sanatoriums for months. Considering that the symptoms may be relieved by the judicious administration of digitalis or its congeners, it is obvious that this diagnostic pitfall is a very serious one. Moreover, this pitfall may be avoided by carefully examining the heart in each case presenting pulmonary symptoms, especially hemoptysis. When you find the rate of the pulse slow, perhaps more or less irregular, when the volume of the heart is made out larger than normal, and on auscultation a presystolic murmur or a slapping first sound is audible; when the main subjective symptoms complained of are dyspnea on slight exertion, palpitation, congestion of the face and lips, edema of the ankles, etc., you may make up your mind that heart disease is responsible for the hemoptysis and not tuberculosis. And never diagnose tuberculosis in the presence of mitral stenosis unless the sputum contains tubercle bacilli. Cardiacs, with the exception of those suffering from pulmonary stenosis, hardly ever develop active pulmonary tuberculosis.

Pulmonary infarction is another not very uncommon cause of more or less copious hemorrhage, and the site of the infarction may show signs of a localized lesion in the lung,—dulness, feeble or bronchial breath sounds, and later moist râles, all localized and circumscribed over a limited area of the chest. But a careful examination of the heart and blood vessels will clear up the diagnosis in practically all cases.

It is not generally appreciated that patients suffering from pulmonary emphysema and bronchitis at times spit blood. This is especially true of patients with chronic bronchitis and bronchiectasis. Those with bronchiectasis may bleed very copiously for days. Of course it is precarious to diagnosticate these cases as tuberculosis, as is often done. This diagnostic pitfall may be avoided by paying attention to the following points: In diffuse bronchitis the percussion findings over the upper lobes of the lungs are negative while on auscultation adventitious sounds will be discovered all over the chest. It is commonly secondary, and a cause should be sought and found—heart disease, nephritis, pulmonary emphysema, etc. The toxic symptoms of phthisis are lacking, there is no fever, no tachycardia, etc., and the blood pressure may be rather high, though the patient coughs and expectorates profusely. With such diffuse tuberculous lesions emaciation is the rule in tuberculosis, while in bronchitis the patient may appear well nourished.

Bronchiectatic lesions are commonly found in the lower lobes of the lungs. And if you want to avoid one of the most dangerous diagnostic pitfalls, do not diagnose tuberculosis in a patient whose lesion is localized in one of the lower lobes of the lung exclusively, unless you find tubercle bacilli in the sputum, and this will occur only on exceedingly rare occa-

sions. In other words, if you find that the resonance and breath sounds over the upper lobes are normal and adventitious sounds are lacking in those locations, do not diagnose tuberculosis, no matter what signs are elicited over the lower lobes of the lungs. Moreover, in cases with tuberculous lesions in the lower lobes, a lesion will almost invariably be found in one of the upper lobes and the constitutional symptoms will be clear cut—cadaveric appearance due to emaciation, a hectic flush, fever, nightsweats, tachycardia, etc. With bronchiectatic lesions, as a rule, the general condition, the nutrition of the patient leaves little to be desired; he may be rather stout, and the rate of the pulse may be normal, a phenomenon very infrequent in tuberculosis with cavities in the lower lobes of the lungs. Clubbed fingers in these cases speak in favor of a non-tuberculous lesion.

Finally I should mention that hemoptysis is very often an annoying symptom of congestion of the posterior nares and tonsils. Most of the streaky sputum which often alarms a patient and, at times, a physician, is derived from the throat. In many cases a careful inquiry reveals that there was epistaxis, but in a large proportion of this class of cases the blood, derived from the back of the nose, trickles down into the throat and is expectorated. A careful examination of the posterior nares should be made in every case of streaky sputum. A history of an acute rhinopharyngeal condition speaks against tuberculosis.

You will be surprised when I also speak of hematemesis as a source of error in this regard. But when you find that many a keen and experienced clinician at times is unable to decide at once whether large quantities of blood brought out by a patient are derived from the stomach or the lungs, you may in some cases give some thought to this problem. The differential signs given in text books are clear cut to be sure. In hematemesis the blood is vomited, in hemoptysis, it is coughed up. So far so good. But many tuberculous patients swallow the blood and then vomit it out again. On the other hand blood derived from the stomach may be aspirated and then coughed up. Whether the material brought out is alkaline or acid in reaction is immaterial in these cases. In several cases, seen for the first time, I have been unable to decide the source of the blood. But there is one sign which is very helpful. Watch your patient for a day or two. If, after the large gushes of blood have ceased, he keeps on expectorating streaky sputum for several days, the blood came from the lungs. On the other hand, if the patient in whom the physical signs are indefinite, has a large hemorrhage which suddenly stops, and then no streaky sputum is brought out, the blood in all probabilities was derived from the stomach; you may then find the stools contain blood. However, blood may be detected in the stools of tuberculous patients who have swallowed same during a pulmonary hemorrhage.

We have yet to consider the most serious pitfall in the diagnosis of tuberculosis and one into which many a physician has fallen. I refer to the signs elicited by physical exploration of the chest. There are thousands of persons in this country who have been wrongly deprived of the benefits of life insurance, numerous families have been broken up, and a multitude of individuals have become hypochondriacs because of faulty interpretation of signs found by physical diagnostic methods.

In this regard the diagnosis of tuberculosis is not unique. There was a time, not so very long ago, when a physician, hearing a murmur over the cardiac region immediately pronounced his patient dangerously sick with heart disease. Sir James Mackenzie strongly emphasized the fallacy of this assumption that murmurs are invariably positive signs of diseased hearts requiring treatment. You probably recall his brilliant remarks on this subject: "It is questionable whether the discovery of auscultation so far has done more harm than good. Human nature is so constituted that the evil is usually associated with what is mysterious. This particularly applies to noises and sounds whose cause is unknown. The modification of the sounds which are perfectly consistent with a healthy heart has never been thoroughly understood, and in consequence a false standard has been set up of what is normal and what is pathological. As a result we find a great many perfectly healthy people looked upon as diseased, and treated as suffering from a serious complaint, and their future life restricted, because of the presence of some signs, as a murmur or an irregularity, which owing to an imperfect knowledge of the real nature of the sign, and a confused conception of what constituted heart failure, has misled the physician in estimating its significance."

In phthisiology Auenbrugger's and Laennec's inventions have been even more abused than in cardiology. There is no doubt that without a physical examination of the chest no lesion in the deeper respiratory tract could be localized with any degree of reliability; to my mind even radiography cannot replace it satisfactorily. But one who makes a fetich of physical diagnosis, and relies exclusively on signs of slight alterations in the resonance of the chest and modifications in the breath sounds, is liable to prove more mischievous to his patients than one who knows nothing at all of percussion and auscultation. In the field of physical diagnosis my experience with medical men has proven the truth of the old dictum that a little knowledge is worse than sheer ignorance.

A physician with a smattering of physical diagnosis expects that every human being he examines must have a perfect chest; that no pathological changes should have occurred during the entire lifetime of the person. But this is as rare as a perfect man in other regards. For this reason perfect symmetry of the two sides of the chest, which would be required in a healthy man, is hardly ever encountered. There are anatomical causes, consistent with perfect health, why the resonance should be less pronounced and the breath sounds harsher, and perhaps the expiratory murmur more prolonged over the right apex than over the left. This is, in fact, found to be the case in a large proportion of quite healthy people. But when these persons cough because of some rhinopharyngeal catarrh, tonsillitis, etc., the uninitiated in physical diagnosis, the one whose perspective is rather narrow, finding the resonance slightly impaired, and the expiratory murmur somewhat prolonged over the upper lobe of the right lung, at once jumps to

the conclusion that he is dealing with a case of incipient tuberculosis. It is here that a physician, feeling that physical diagnosis is not one of his laudable attainments, will hardly ever fall into a diagnostic pitfall; the one who believes that he has mastered the mysteries of physical diagnosis to an extent that he can detect slight changes in the resonance and breath sounds of the chest promptly falls into a trap which may prove costly to his patient and to his own reputation.

These pitfalls may be avoided by bearing in mind the following maxims: Do not diagnose pulmonary tuberculosis merely because there are slight changes in the resonance of the chest, or alteration in the breath sounds heard on auscultation, unless the patient is troubled with constitutional symptoms of phthisis. If your patient has no fever his pulse rate is normal, and his cough may be attributed to some rhinopharyngeal condition which is clearly visible, you may disregard slight changes in the resonance and breath sounds, for the time being at least. You will only rarely fall into a diagnostic trap if you follow this rule. If you hear râles in the chest do not yet diagnose tuberculosis unless they are found exclusively over a circumscribed area in the lung apex. The more widespread over the chest they are audible, the less likely they are of tuberculous origin; when heard exclusively over one or both lower lobes, the chances of their being of tuberculous origin are very remote.

It is noteworthy that this fact is not appreciated, and we very often find physicians diagnosing tuberculosis of the lower lobes of the lungs in patients in whom the apices are free apparently from any pathological changes. The fact that the sputum in these cases, though abundant, is always free from tubercle bacilli does not matter very much to them; they are the "negative sputum" cases in sanatoriums where they are often kept for months and discharged "advanced" though perhaps improved.

These moist râles heard over the base of the lung indicate various nontuberculous processes. In those in whom they are found bilaterally they are due to primary or secondary bronchitis; though bilateral bronchiectasis is occasionally encountered. In most cases these coarse, moist râles are heard over only one base and they indicate bronchiectasis, nonspecific pulmonary infections, especially those following influenza, unresolved pneumonia, pulmonary abscess, chronic pleurisy, gangrene of the lung, and pulmonary infarction. When you find the upper lobes of the lungs free from signs of disease, you may make up your mind that you are not dealing with any tuberculous process; nor should you fear that the disease may turn into tuberculosis as some patients and, at times, physicians think.

The differentiation of these variegated diseases of the lower lobes of the lungs is very simple in most cass when several points are borne in mind: Chronic bronchitis is bilateral and is usually secondary to pulmonary emphysema, cardiac or renal disease. Examining the patient carefully, and discovering the primary disease, may save us from a diagnostic pitfall. Nonspecific pulmonary infections are unilateral, but here we have a history of influenza or pneumonia from which the patients had not recovered, but kept on coughing and expectorating material devoid of tubercle bacilli, despite its abundance. Always remember that it is exceedingly rare for tuberculosis to follow influenza or pneumonia. Moreover, despite the distressing cough and copious expectoration, there are few, if any, of the constitutional and toxic symptoms characteristic of advanced phthisis in which the lower lobes are involved. The temperature may be normal, excepting for acute exacerbations now and then when the bronchus communicating with the bronchiectatic cavity is clogged; the pulse rate may be normal—a phenomenon exceedingly rare in tuberculosis with signs of extensive involvement. In addition, there is a striking discordance between the symptoms and signs of disease on the one hand, and the general condition, especially the nutrition, of the patient on the other. Despite the severe cough and profuse expectoration, and the signs of large excavation in the lower lobe of one lung, he appears quite well nourished; he may even be gaining in weight.

In the uncommon cases of nonspecific pulmonary infections of the upper lobe, the diagnosis is not easy, and many mistakes are often made even by those who are most careful and experienced. Here only repeated examinations of the sputum decide.

Pulmonary abscess should never be mistaken for tuberculosis; but it is, as many physicians with hospital experience will attest. In pulmonary abscess we have a history of some preceding disease, especially pneumonia, influenza, etc.; of some pyemic process, as appendicitis, abscess of the liver, etc.; a surgical operation in which profound anesthesia was induced, especially tonsillectomy, or operations on the jaw in diabetic subjects. If the disease began soon after one of these diseases or surgical operations, the chances of its being tuberculous are negligible. Besides, the sputum is often fetid—rarely in phthisis, and no tubercle bacilli can be found. Gangrene of the lung is differentiated along similar lines. The extremely fetid and nauseating odor of the sputum, combined with the acuity of the symptoms, should render the diagnosis unmistakable. The sudden onset with pain in the chest, hemoptysis, etc., and a history and signs of the disease of the heart or blood vessels, especially phlebitis, should prevent the pitfall of pulmonary infarction being confused with tuberculosis in all cases in which the physician is only moderately careful.

Radiography has of late been extensively utilized in the diagnosis of the chest and many physicians rely on it almost to the exclusion of all other diagnostic methods. When the radiographer reports shadows or opacities on the plate, the patient is unhesitatingly pronounced tuberculous. There is no doubt that the Roentgen rays may supply information unavailable by other methods of diagnosis. No one appreciates this fact more than the writer who uses the *x*-rays in hospital and private practice almost daily, and who believes that while attempting to decipher the exact lesions in many of the advanced cases of tuberculosis, radiography has proved indispensable. But it is also a fact that in the diagnosis of early lesions in the lungs, and in the differentiation between active and inactive tuberculous lesions, radiography is only exceptionally of value. The main reliance is placed by radiographers on shadows, indicating airless lung tissue, or parenchyma converted into fibrous tissue or which has

become calcified. But airless tissue in the lung is not invariably due to tuberculosis; any change in the lung, pleura, hilus glands, and even in the skeleton of the thorax, of ancient or recent origin, will reveal itself on a good radiographic plate. These changes may be due to old disease processes which have healed long ago, but they do cast shadows on the plate which are the more pronounced the older the lesion and the more perfectly sclerosed or calcified it is. It is for this reason that radiographers who have never practised medicine, nor examined and followed up cases, not to mention those who have never attempted to verify their interpretations of plates with autopsy findings, report so often tuberculous disease in persons who are, and remain healthy.

It is clear that patients consult us with a view of finding out whether there is any disease requiring treatment; and tuberculous disease is a costly and tedious affair. They are no more interested whether there are any scars in the pleuræ or lungs, remnants of old and healed lesions, tuberculous and others, than they are interested in scars on their skins, the results of former injuries or disease. It does not matter to them to discover that at some past period of their existence there was an active inflammatory process, even if tuberculous in nature, in the chest which is now sclerosed or calcified. But it is just these changes in the thoracic viscera which radiography reveals best, and in many cases in which the radiogram shows a tuberculous lesion in an apex, that lesion has healed long ago and is of no more interest to the patient.

In many cases in which the radiogram shows opacities or shadows in the apices of the lungs we are in about the same position as when we hear a murmur in the cardiac region. Even when it is decided that the murmur is due to some defect in one of the valves; even when we find that the heart is hypertrophied, we do not invariably sound an alarm, instruct the patient to give up, or change the character of his occupation and institute rigorous rest treatment, unless there are symptoms of failure of compensation. It is dyspnea, pain in the chest, cyanosis, edema, enlarged liver, etc., that decide the course to be taken and not the murmur. Similarly in cases showing radiographic signs of lung lesions, even if beyond any doubt of tuberculous origin, it must first be determined whether the patient has any of the constitutional symptoms of phthisis before he is pronounced sick with this disease, before he is told to give up his life activities, separated from his family, prohibited from getting married, or banished to some distant clime or an institution. In other words, a patient who does not cough, expectorate, has no fever, night-sweats, emaciation, tachycardia, etc., is not sick with pulmonary tuberculosis, no matter what are the *x*-ray findings. For my part, I permit many of my patients showing undisputed signs of tuberculous cavitation in the lungs, both on physical examination and radiography of the chest, to continue at their avocations, if they are not of the hazardous types, as long as there are no constitutional symptoms of phthisis.

The pitfall of faultily interpreted radiography of the chest has swallowed many acute clinicians during the past eight or ten years. The result is that now you meet with many physicians of discrimination and experience who have lost the greater part of their faith in this diagnostic method. Too many patients who have been pronounced tuberculous by radiographers have kept up in good health without any treatment; numbers have gone through the hardships of warfare and returned healthier than before enlistment; too many lesions discovered by radiographers during the life of patients have been found either nonexistent or merely perfectly healed scars, when the lungs were removed from the chest after death and carefully examined. The result is that now the pendulum has swung rather too far in the other direction and many able and conscientious physicians are dispensing with radiography of the chest, which is again wrong. Taken in connection with the semiology of tuberculosis, and correlated with the subjective and objective symptoms and signs elicited by the clinician, the *x*-rays are undoubtedly valuable in the diagonis of tuberculosis.

We will now discuss the most important and, at the same time, the most nefarious of pitfalls in the diagnosis of tuberculosis. I refer to the determination of the activity of the disease. The patient calls on his physician for an opinion whether he is sick, not whether he has been infected with tubercle bacilli. Infection could be determined by any one merely by the application of a drop of tuberculin on the skin in the proper manner and it will be found that nearly every one would react. Even our army during the recent war did not attempt to decide whether the young men called to the colors had been infected with tubercle bacilli; no tuberculin test was used by the military surgeons.

And if the information our patients seek is whether they are sick and require treatment, every observant physician should be able to supply this information reliably. There is no acute need for any special training to qualify for this task. One need not be a virtuoso in physical diagnosis, nor a sharp in reading and interpreting plates to make a diagnosis of tuberculous disease of the lungs. The fact must never be lost sight of that a patient who does not cough, has no fever, has a normal pulse rate and maintains his body weight is, with but very few exceptions, not tuberculous; if you bear this maxim in mind, you will avoid one of the most common diagnostic pitfalls in the path of medical practice. If in your attempts at localization of a lesion in the lung in a patient who coughs, loses in weight, etc., you find that the apices are free from pathological changes, but that there are discoverable alterations in the resonance and breath sounds in the lower lobes, the case is, in all probabilities, nontuberculous in character. If you find râles over one or both lower lobes in such a case, the chances of the lesion being tuberculous are remote. If your patient spits blood despite the fact that he has no fever, tachycardia, etc., examine his nose and throat and you may find the source of the bleeding, but above all examine his heart, and inquire carefully into a history of rheumatism, and symptoms referable to cardiac disease, such as dyspnea, pain in the precordium, etc. If your patient's complaints are mainly dyspnea on slight exertion in addition to the cough and hemoptysis he, in all probability, suffers from heart disease and not from tubercu-

losis. In youthful individuals who cough and in whom one may find a fine tremor, dermography, flushed face, sweating of the hands which are cold, tuberculosis is very frequently diagnosed because in addition to these symptoms the patient is usually under weight and is easily fatigued. But it is always advisable to think of hyperthyroidism before banishing such a patient to Colorado, where he may do very badly.

While discussing the diagnostic pitfalls which are encountered on every step of the physician who attempts to decipher obscure diseases of the chest I have barely scratched the surface, but I cannot conclude without mentioning pulmonary tuberculosis in children of school age—a disease which is more often described in books and articles, and diagnosed by medical men, than really exists. I have seen some cases in children between eight and twelve years of age; very few in younger children, but on the whole it is exceedingly rare. Just contemplate the number of school children in any community, and then find out how many are admitted to sanatoriums for treatment and you will find that the proportion suffering from tuberculosis of the lungs is practically negligible. May I also whisper to you that even of the small number that is being cared for in institutions, clinics, and day camps, the vast majority never showed positive signs of tuberculous disease of the lungs; very few indeed have expectorated sputum in which tubercle bacilli were found.

Tuberculous tracheobronchial adenopathy, on the other hand, is very frequent. But no physician should frighten parents by the bogey of tuberculosis when he finds that a child has tuberculous glands in the chest. They are of no more significance than enlarged glands on the neck of children, tuberculous or others. To be sure, enlarged glands on the neck and within the chest are troublesome, but they are not deadly. It is indeed criminal to terrorize parents, to deprive children of an education, to separate them from their parents, because of signs of enlarged glands in the chest. Death due to this cause is as rare as death due to enlarged cervical glands. You may find now and then a case reported in a medical journal, but on the whole it is so rare that many experienced and wide-awake physicians have never encounterd one. Nearly all get well while continuing at school. You may recommend extra nourishment, a vacation in the country for a couple of months, administer some iodides, calcium, or cod liver oil, but by all means assure the parents that the child is in no danger worth mentioning.

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Neosalvarsan (Neoarsphenamine) in Yaws.—In Belgian Congo, West Africa, many of the natives suffer from frambesia. The head of the Mission of the Disciples of Christ located in that region, repeats that the results in the treatment of yaws by neosalvarsan were little short of a miracle to the natives who frequently go to the mission and ask for "the medicine of the needle." Dr. Pierson, the mission physician, says that most doctors there see from 200 to 400 cases of yaws in a year and that most of them when taken in the early stages, can be cured by a single injection of neosalvarsan, whereas if it were impossible to obtain the drug, the cases would go on to the tertiary stage, with all its suffering, and many of the unfortunates would be doomed for life.

SOME POINTS OF GENESIS AND DIAGNOSIS OF MENTAL DISEASES.*

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The physicians of Connecticut commit about 1500 patients every year to the State Hospital for the Insane, and about as many are admitted voluntarily or are committed to the ten private institutions for the insane in this State. Until now, in most cases, the physician is required to testify only that the patient in question is insane. He is usually not able to determine what form of insanity the case represents or what the patient is suffering from. Such an unsatisfactory state of affairs is the result of insufficient facilities for clinical observation which are offered to the general practitioner.

However, we all recognize the importance of mental diseases as a public health problem. The United Public Health Service will soon expect the physician to make more definite diagnoses of mental disorders in order to be able to cooperate in the new program of mental hygiene. The new project was published in the Public Health Report issued Feb. 14, 1919. The United States Public Health service, in an effort to better the care and treatment of the insane, mental defectives, and the like, intends to enforce or secure: (1) the adoption of a model law providing for the early treatment of mental disorders, (2) the enactment of a model committment law, (3) the establishment of psychopathic pavilions in general hospitals, and (4) the adoption of a law making certain types of mental diseases reportable to the health authorities, etc.

The above mentioned problems and the interdependence of psychiatry with other branches of medicine make this paper interesting for the general practitioner. The points which will be brought out here may prove helpful in selecting cases of mental disorders which should be treated at home or in the psychiatric wards of the general hospitals. The importance of recognizing and selecting such cases will be understood when we turn our attention to the group of symptomatic psychoses and the group of psychoneuroses to which the so-called borderland cases belong. In the cases of the first group, *i. e.* the symptomatic psychoses, a day or even an hour wasted for formalities of commitment or transportation to a State institution is very frequently fatal to the patient. In the cases of the second group, the borderland cases, the commitment to a State or any other institution is sometimes undesirable, because the dissociation with his usual environment proves to be injurious to the future welfare of the patient.

To the group of symptomatic psychoses belong those mental disturbances which are the result of a distinct physical disorder. The mental disorders which are associated with distinct endocrinous disturbances or with distinct organic changes in the brain do not belong to this group. From the etiological standpoint we distinguish the exogenous

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group and the endogenous group of symptomatic psychoses. The exogenous group comprises the symptomatic psychoses due to acute or chronic bacterial infection.

The symptomatic psychoses due to chronic bacterial infection are rare and are caused by the usual pus bacilli, the original seat being the teeth or the tonsils. We all know the relation of infected teeth to acute or chronic arthritis; in a similar manner the bacilli may, and do, reach other organs, such as the stomach, intestinal tract, gall-bladder, kidney, etc., and frequently, if not eliminated from these secondary foci, the removal of the infected teeth or tonsils will be of no avail.

Dr. Cotton of Trenton has published important observations on "Focal Infections in Mental Disorders" in the March, 1919, issue of the *Journal of Nervous and Mental Diseases.* The conclusions from this work are as follows: (1) chronic, masked, or focal infections play an important role in the etiology of the psychoses; (2) the origin of most chronic streptococcus infections is in blind alveolar or apical abscesses; (3) the organisms concerned in this infection spread from the teeth to other organs, notably the tonsils, stomach, duodenum, and lower intestinal tract, and these infections may persist even after the teeth have been extracted; (4) the organisms concerned in this focal infection belong to the short-chain or non-hemolytic streptococcus group; the *Staphylococcus aureus* and virulent colon bacilli are the most common in this type of infection; (5) the roentgenogram of the teeth often showed very little, if any, disease at the root, but the granuloma, surrounding the tooth just below the gum or between the roots of molars, was found to be filled with bacteria of the above mentioned type when cultured. The form of the psychoses due to chronic infections was the manic depressive type although they all had some aberrations from the classical cases of manic depressive insanity.

The acute symptomatic psychoses due to bacterial infections, *i. e.* the acute toxemias, are associated with or follow scarlet fever, typhoid, influenza, smallpox, malaria, and various other diseases. Only three infectious diseases do not produce such effects, namely, diphtheria, tetanus and tuberculosis, when they are not complicated or "crossed."

The chief characteristic of the mental disorders due to the acute toxemias are deliria with prevalence of visual hallucinations and confusion. There can occur different catatonic manifestations, convulsions, violence, suicidal tendencies with depressed or manic conditions. *The presence of visual hallucinations or illusions should always be considered either as an earmark of exhaustion or as a feature of more or less acute toxicosis.*

In time we may be able to differentiate the various forms of symptomatic psychoses from the etiological standpoint, but we lack, as yet, sufficient clinical material for it. However, we know that the delirium in smallpox is very intense and is accompanied by violence or suicide, while in typhoid it is attended more by manic excitement, and in malaria the delirium is very intense and takes place during the paroxysms. The deliria in septic processes are of a low muttering type and are accompanied by catatonic manifestations. The deliria which are observed in rheumatism develop either at the climax of the fever, or simultaneously with the subsiding of the swelling of the joints.

The endogenous group of the symptomatic psychoses represents autointoxications as the result of the disturbed function of the viscera. The chief characteristic of this group is the fact that the mental disturbances subside simultaneously with the improvement of the function of the affected viscera, or simultaneously with the elimination of those toxins which produce the autointoxication (as we see, for instance, in uremia). The chief representatives of this group are the mental disorders due to the disturbances of the function of the heart or kidney.

The mental disorders due to cardiac disturbances are of two types, namely, *the cardiac confusion and cardiac neurasthenia.* The *cardiac confusion* manifests itself through acute delirium, sometimes with violence and hallucinations or illusions of hearing and sight. The emotional condition is one of elation or mild fear with lacrymosity. This form of mental disturbance occurs in acute dilatation of the heart of any form of cardiac decompensation of acute origin. We all know that the approaching cardiac decompensation produces, as a rule, terrifying dreams and restlessness at night so that it serves us as a diagnostic point and a warning when we have a case of articular rheumatism or any other case, where cardiac complications are likely to arise. The acute confusions of cardiac origin subside sometimes in the course of 24 hours if proper measures are instituted. *The cardiac neurasthenia* is of a more chronic type and we may not discover any signs of decompensation or valvular involvement. The condition of the heart in these cases may be termed susceptible. The patients are clear, introspective, despondent, and experience a premonition of death; they cling to their people begging them not to leave them alone because they are "dying." Sometimes they are only irritable and complain of unpleasant sensations in the sterno-cardiac region. This condition may last several weeks or months and occurs mostly in younger individuals.

The mental disturbances due to the disturbed function of the kidneys, represent, besides those usual manifestations of coma, epileptiform convulsions and melancholic conditions, also certain fear conditions of acute character. The patients are terrified by their hallucinations or illusions of hearing or sight. Orientation remains partly if not completely preserved in all fields. The patients are in continuous fear and may commit suicide at the first opportunity. This mental disorder occurs during exacerbations in chronic nephritis where the specific gravity of the urine is not fixed.

It is clear that in these mental disorders of cardiac or renal origin proper measures should be instituted as soon as the diagnosis is made, and the treatment should be carried out in a psychopathic ward or under strict supervision at home.

Mental disturbances associated with diabetes are rare; they are, however, worth consideration. The picture is that of a melancholy process with ideas of self-accusation, auditory hallucinations, stupidity, and deterioration of habits. The patients improve simultaneously with the improving of the diabetic condition.

For a more detailed review of the symptomatic psychoses I can refer to my work published in the November, 1918, issue of the *Journal of Nervous and Mental Disease.*

Another important group of mental disorders which interests the general practitioner is the group of psychoneuroses, the so-called borderland cases. To them belong the obsessions and anxiety neuroses, mutism, and paralysis on a neurotic basis. The "shell shock" or war neurosis which was seen so often during the recent world war belongs to this class. The cases of neurasthenia or simple nerve exhaustion with its excessive fatigue—be it physical or mental—should be excluded from this group.

The genesis of this group will be understood if we analyze a few cases which came under my observation during the past few years.

CASE I.—A woman of 42 suffered from mysophobic ideas for a number of years. She was of Jewish faith, very intelligent, religious, and superstitious. During the six months before admission she developed an obsession which consisted in washing her hands according to a *certain code* before every meal and before going to bed. The code consisted in washing her fingers, wrists, forearms, and upperarms a number of times in such a complicated order that she would lose the sequence of the code and would be compelled to begin the process of washing her hands again and again. For this reason the washing would continue indefinitely, sometimes for 48 hours, and the patient would never be ready to feed herself or to go to bed of her own accord. She would scream every time she lost the continuity of the code, if compelled to go to bed or to take food when the hand washing was not completed. This condition became a menace to her own life and caused untold misery to her family. When compelled to go to bed without completing the hand washing she would not sleep and would hold her arms stretched out in such a manner that they could not touch the bed-covers. With the hands unwashed she would not touch anything in the house and compelled her nurse to burn or wash with soap and water those things which she touched by accident. There were no delusions of persecution nor did she manifest any evidence of hallucinations.

What does this process of handwashing represent? It undoubtedly represents an obsession. This obsession suggested new fear of contamination, which became so generalized that the patient began to consider every secretion and excretion from her body a menace to the outside world.

From analysis I found that she incorporated into the code of handwashing the number of the house in which she met her husband, the number of the house in which her marriage took place, her age, and date of her marriage. It was found that the woman had a personal conflict dating back to a meeting with a certain man. She "loved" that man for over 20 years but did not show her love to him. It was against her principles to be untrue to the man she had married. She always suppressed any thoughts or desires relative to the other man, *and in order to be more successful in combating this personal conflict she "unconsciously" established the above-mentioned code* which served her as a *"defense mechanism."* This defense mechanism "strengthened" her loyalty to her husband and satisfied her conscientious principles of morality. The code of washing the hands was abandoned as soon as the patient was told of the meaning of the figures she had incorporated in it and of the significance of the code as a defense mechanism; it required, however, a few weeks before the patient could again adjust herself to normal life. It is interesting to note here that a few months after apparent recovery the woman had a relapse of fear which was brought on by an attempt at sexual intercourse with her husband. Because mysophobia created ideas that her menses might be the source of contamination she demanded removal of her ovaries. This was done and the patient has been well since.

The woman revealed her personal conflict during the first examination when she said "my wedding cemetery" instead of "my wedding ceremony." She was not aware of the mistake until her attention was called to it. This mistake of speech—which at once reveals the tragedy of her life—indicates the importance of the function of the "subconscious mind."

While it is not my object to present a complete analysis of the case in this paper I wish to mention another mental mechanism of an obsession manifested by the same patient. When she was six years old she was strongly impressed when a girl in her class was punished for asking permission to leave the room during the hour. After this the patient used to vomit every morning before going to school. This lasted for about eight months until the patient's parents demanded that the teachers should not punish the children for such a request. However—although the patient ceased vomiting—she always, until she came under my care, suffered with difficulty in holding her urine and felt nauseated whenever she was in a crowd in a temple or theater. This is an example of an obsession as a reflex process through an association with a certain event.

CASE II.—A woman, 31 years of age, highly intelligent, married, has two children living. The history showed that the patient had been in a "delirious" state for ten days before she came under my care. During that "delirium" she would attempt to leave the house at any time during the day or night disregarding her personal appearance, clothing, and the temperature outdoors. She was taken to an institution where she was kept restrained in bed most of the time because of her tendency to fight violently when she was not allowed to leave the room during her "'delirious" states. It was thought that her condition was due to alcoholism.

A few minutes of examination showed that there was no "delirium" and that the patient never imbibed alcohol. The patient was in a continuous somnolent state from which she could be partially aroused. In the latter state she would converse very coherently but would fall asleep as soon as her attention was no longer absorbed. I instructed the nurse, who was with her all night, not to oppose the patient's attempt to get out of the room and informed her, also in the patient's presence, that the door would be locked on the outside. The patient attempted to open the door several times during the first night but always returned to her bed without any trouble. The following morning, in a half-somnolent state, the patient reported that she had dreamt during the night and that the same dream had recurred often during the past two years, although with some modifications.

The analysis showed that the dream was a wish fulfillment and that the persistent desire to leave the room occurred when certain events approached realization during the dream. Her moral obligation to her family did not allow her to compromise herself beyond a certain point even in her dreams.

In the first session the patient was told the meaning of the dream and the desire to leave the room during her somnolent states; she was told that she had a *personal conflict and that, as the result of that conflict, she had established a defense mechanism which prevented the realization of those desires which were repulsive to her moral principles.* The woman recovered after that session. The somnolent state together with the obsession to leave the room or the house never recurred.

This obsession represents a defense mechanism as the result of a conflict between the instincts of propagation and the sense of moral duty. Although the somnolent state was a medium of self-enjoyment, a basis for "dreams" from which she derived pleasure, yet she was compelled to leave the room every time the enjoyment began to transgress a certain limit. This compulsory action represented the obsession which served as a defense mechanism.

In this case institutional treatment was not imperative.

CASE III.—A man of 29 was picked up in the streets of Norwalk and brought to the Westport Sanitarium. He was a robust, healthy looking man, with normal expression and was slightly dazed. He did not know his name, his age, or his residence; said that he had walked from Willimantic and replied apparently relevantly to questions not concerning recent events. When asked to write his name he could copy it and could pronounce it when he saw it on a card which was found in his pocket. When asked about his name without the card he could not recall it. His physical condition was negative. For three days he remained in the same condition, not knowing where he came from, where he was, whether he was married or not, and whether he had children or not; but he conducted himself properly, enjoyed smoking his pipe, attended his meals, associated with others and conversed with them. Suddenly he "woke up", as he expressed himself, became perfectly oriented in every respect and requested writing paper for a letter to his wife.

This is a case of amnesia on a neurotic basis. It is similar to those cases of war neurosis which were seen so often during the recent war, when a soldier or officer would be found wandering some distance from his camp or from the battlefield not knowing his name or the regiment to which he belonged.

The psychic mechanism in this case and in the cases of war neurosis is similar. The history showed that the man was in great difficulties as the result of business. Penniless, and not being able to stand the pressure of the situation any longer or return home (his home was in New Haven), he relieved his mind through a compromise which expressed itself in amnesia.

CASE IV.—A man of 31 was suffering from an obsession of the following character: he was afraid to be near a high building or a tower; afraid to be in the street where there was a trolley track, a trolley car, or an automobile; he was afraid to be in a room in which there was a knife or an open window. The history showed that the man first experienced fear of being killed while working as a painter on the top of a high building. While working there he saw his mother passing by; he felt dizzy and was afraid that he was going to fall down. Since that time the patient had been afraid of everything which could remind him of a similar situation. Any high building, any tower (even though he himself was on the ground) produced fear. Furthermore, anything which could be associated with an accident or an injury produced a similar condition in him.

This is another example of an obsession as the result of an association with a certain event.

The conclusion which can be drawn from the analysis of the first three cases is the following: When the most important primitive instincts of man—the instinct of self-preservation and propagation—come in conflict with the ego of the patient or his personality, *i. e.* when a patient, being driven by those primitive instincts, comes in conflict with the laws and ethics of society, he develops a conflict which results in an above mentioned or a similar manifestation.

In Case IV and in Case I (when the patient suffered from nausea, vomiting, and inability to hold her urine while in a crowd) we have examples of an obsession which was evidently a reflex process through the association with a certain event. In the war neuroses the instinct of selfpreservation and the sense of duty created a conflict. *The neurosis is, therefore, either a defense mechanism against a conflict or a symbol of compromised satisfaction of a wish.*

Cases in civil life differ from war neuroses in that they are usually of longer standing and that the patient's resistance and, in most cases, the complexity of his mental mechanism is stronger developed.

It is possible that in all cases of psychoneurosis the mental mechanism is a complex reflex process. Mutism, amnesia, hysterical blindness, and paralysis are defense mechanisms of some reflex nature, but the solution of the problem is complete, there are no further compromises.

The obsessions which represent mental mechanisms similar to those we see in the code of washing the hands or in the necessity to leave the room, as presented above, are not complete solutions of the conflict. The patient continues to compromise himself, "subconsciously" building mechanisms which defend him from ideas which conflict with the ego and, at the same time, permit him to be influenced by the instinct of propagation.

Why should one patient dissolve the conflict completely and another partially? The answer to this might be found in the everyday experience. It is established that hysterical paralysis, mutism, deafness, amnesia, etc., occur in civil life among individuals who are less intellectual and on the battlefield among soldiers who are less qualified to be officers, while the qualified officer as well as the more intellectual element in civil life usually establish some kind of a defense mechanism in the form of an obsession. It is possible that the more intellectual type and the more qualified officer have a stronger sense of moral obligation towards their environment or superior officers and that this does not allow them to reveal their conflict. This factor, namely the sense of moral obligation, was understood and utilized in the treatment of these cases on the battlefields.

At the beginning of the war the patients suffering from war neuroses were immediately removed from the firing line and were sent to the interior of the country for treatment. It was soon established, however, that these cases were never cured. The procedure was then changed; the cases were treated and kept near the firing line or wherever the neurosis developed until it was eliminated. The patient was made to understand the causative factor—his primitive emotions—and was made to rationalize the ideas which were set up. In this way his discipline and his self-respect were taught to take command again.

In civil life the same holds true for a great many cases where the obsession is not very complex and not of very long standing. In my experience I have found it sufficient—in the majority of intelligent cases—to explain to the patient, after a thorough enquiry into his history, that the neurosis is an obsession as the result of a personal conflict and that the obsession is a defense mechanism against,

or a symbol of, that conflict. *The symbols appear equivalent to the desires but are usually transferred into a compromised satisfaction, a compromised wish fulfillment.* I also found that in obsessions of long standing the improvement did not follow immediately upon the solution of the conflict; it required a considerable period for his reeducation and readjustment to life.

Most cases of obsession, where there are no actual disturbances of the process of association, should be treated at home because it is important to keep the patient in contact with his environment. The patient who is mute, deaf, or paralyzed on a psychic basis often reaches the general hospital, but it is seldom necessary to place him in a psychiatric institution, because his recovery under proper treatment usually takes place before any such steps can be taken. These obsessions are frequently mistaken for real delusions of a melancholic condition or stereotypy of dementia præcox. A complete history and thorough acquaintance with the make-up of the patient will prevent such mistakes.

The Freudian theory gave us very important explanations as to the activity of the subconscious mind, but for the general practitioner it has no further value than to show what part mental mechanisms play in the formation of such obsessions. In every case we should obtain a complete history from the patient himself and should get acquainted with his mental makeup. If we are convinced that we deal with an obsession of this nature we should explain its meaning to the patient and, in general, its mental mechanism. The elaborate method of "catharsis," so much advocated by the Freudians, is superfluous in most cases, if not in all.

It is true that the patient must be able to understand the explanation of such mental mechanisms, and fortunately most of the neurotics who develop obsessions on the basis of such mental mechanisms are intelligent enough to understand—at least in a short period—the psychological basis of such formations.

In cases where the patient is not willing to cooperate with the physician it becomes necessary to apply a more extensive method of analysis and free association. This method evidently removes the distrust of the patient and reduces the modest feeling which plays part in the resistance. There are some other factors which prompt the patient not to cooperate with the physician but in most cases they may be disregarded.

The content of the dreams should not always be considered as a wish fulfillment. It is a realization of a compulsory thought, be it a wish for, or fear of, a certain event, *i. e.* the dream which is not of an accidental nature is the result of a thought which occupies the person's mind in a persistent or compulsory manner.

The brief consideration of these few borderland cases shows that a preventable disease is not always of bacterial origin. Much of our sick wastage is due to misdirected or dissociated thoughts. Although we know that neurotics are not made but are born, yet, we also know, that maladjustment is the cause of the above-mentioned manifestations, and if we direct the patient's mind and energy into the proper channels he will again become a useful unit in our society.

REFLEX PHENOMENA IN A RECENT SERIES OF INFLUENZA CASES.*

By SOLOMON GINSBURG, M.D.,

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THE value of reflex phenomena as an aid in diagnosis was well known to the medical profession before James Mackenzie published his brilliant and fascinating work, "Symptoms and Their Interpretation." However, with the publication of this book, this genius of clinical medicine has helped considerably to stimulate greater interest in this most important subject.

At no time was I impressed as much with the great aid in diagnosis to be derived from a thorough study of reflex phenomena as during last year's pandemic of influenza. During the rush of the epidemic when vast numbers of patients were examined daily, among the unique clinical features of this disease two chief characteristics especially impressed themselves upon my mind in connection with the influenza cases that distinguished them from the ordinary cases of la grippe.

These two chief characteristics were:

(1) The almost constant presence of pleuropulmonary involvement in every case of pandemic influenza, no matter how mild the clinical course of the disease. (2) The almost invariable accompaniment of reflex phenomena in the neck, chest, abdomen, or back, whenever pleuropulmonary involvement was found on physical examination at some time during the course of the disease. It was striking indeed to find patient after patient, on the first day of the disease, complaining of reflex pain with no lung signs, later to develop pleuropulmonary signs in accordance with the reflex phenomena.

Many of the mild cases of influenza probably had never been examined by a physician, for the patients hardly considered themselves ill at all. If they did consult a physician it was more because of the scare of the "flu" than because they felt sufficiently ill to seek medical advice. Great was my surprise more than once to meet with these walking pneumonias, and to find an extensive pulmonary involvement in one lower lobe and a minor involvement on the other side in a patient who gave the appearance of almost perfect health. On careful questioning, however, these apparently mild cases would admit that, in addition to a slight cough, they had been suffering for some days with a sticking pain either in the neck, chest, abdomen, or back, which they would ascribe to a "touch" of rheumatism or a cold.

It was this frequent association of reflex phenomena, with pleuropulmonary involvement, which made me exceedingly wary in diagnosing myalgia, neuralgia, pleurodynia, or lumbago as a clinical entity even in the absence of definitely demonstrable disease in a viscus. And frequently on further watching of the case I was able to find the proof that a diseased viscus was responsible for the visceromotor and viscerosensory phenomena.

During the past few weeks in my private practice I have come across a series of cases, probably due to the attenuated virus of pandemic influenza,

*Read at a meeting of the Beth Israel Hospital Alumni Association, November 6, 1919.

which again show this frequent association of pleuropulmonary involvement and reflex phenomena. I therefore thought it of sufficient interest to record these cases, both because of their clinical value and for the warning they give of a possible recrudescence of great numbers of cases of influenza during the next few months.

CASE I.—P. D., aged 50 yrs., housewife. Previous history negative. On October 17, 1919, she suddenly developed severe aching pain in the left shoulder and scapular region, followed several hours later by a marked dull ache in the epigastrium radiating to the back. The pain was intensified on breathing and motion. She experienced slight nausea and dryness of the mouth, but there were no abdominal cramps, no chills, fever, or any other constitutional symptoms. On physical examination her temperature was 98.4° F., pulse 104, respirations 16. Throat slightly congested. Heart negative.

Lungs: At the left base showers of crepitant râles were present. There was no dulness on percussion, nor any change in vocal fremitus or resonance. The left trapezius showed hyperalgesia and there was tenderness in the left hypochondrium and in the epigastrium.

Diagnosis: Acute influenza, low pleural involvement including diaphragmatic portion of pleura, with a possible pulmonary involvement (capillary bronchitis).

CASE II.—A. G., aged 40 yrs., housewife, was suddenly taken ill with severe pain in the lumbar region most marked on the right side, very much aggravated on motion, hardly on breathing. Coincidently with this there were slight running of the nose, dryness of the throat, and slight prostration. On the fourth day after the onset of the illness, a slight cough and mucopurulent expectoration were present. Her highest temperature until the fifth day of her illness, when she was first seen by me, was 100.5° F., pulse 80.

On physical examination moderate tenderness was found to be present in the right hypochondriac region and in the right costovertebral angle. At the base of the right lower lobe numerous fine moist râles were present.

Diagnosis: Acute influenza with right pleurisy and bronchitis.

CASE III.—L. C., aged 43 years, ironworker. Has suffered from chronic bronchitis for several years. In August, 1919, he was treated for a cellulitis of the right index finger. A routine examination of his chest showed a moderate emphysema with numerous sibilant and sonorous râles and slightly prolonged expiration. On October 18 he consulted me at the office with the following history: One week ago he developed slight chilliness, fever, cough, mucopurulent expectoration, and pain in the left lumbar region. The pain was sharp and cutting in character, was not aggravated on coughing, deep breathing, or bending, but only on position: reclining in bed on the left side was very painful.

Physical examination showed no dyspnea, cyanosis, or prostration. Temperature 98.4° F.; pulse 72; respiration 24; heart negative. Lungs: Left chest posteriorly from angle of scapula down presented diminished breathing, showers of crepitant râles, and a few medium moist râles. There was no tenderness in the lumbar region, but the left trapesius was moderately hyperalgesic.

Diagnosis: Acute influenza, left pleurisy, including diaphragmatic portion of pleura and capillary bronchitis.

CASE IV.—M. G., aged 56 years, business man, has been suffering for 6 years from cough, mucopurulent expectoration, with many exacerbations and emissions, never any hemoptysis. Was never confined to bed for his respiratory condition. Since onset of "bronchitis," six years ago, he has had repeated attacks of left hemicrania, occurring every three weeks, and usually lasting a few days each time. During the past six months he began to have interscapular pain at night, only when lying in bed, or taking an afternoon nap. His present illness dates back to October 1, 1919, nineteen days before consulting me. At that time there was sudden onset with pain in the lumbar region and nocturnal urinary frequency, voiding at least three or four times at night. Slight weakness, nausea, poor appetite and headaches. No chills or fever.

Physical examination showed normal temperature; pulse 60; respiration 18.

His lungs showed moderate emphysema, and posteriorly over the left chest from the angle of the scapula down there were dulness, diminished breathing, numerous small moist râles and crepitations; at the right base a few moist râles were also present. He had pain on stooping forward and his left trapezius showed moderate hyperalgesia. His urine was negative on several examinations. Rectal examination and prostatic massage failed to show any prostatitis.

Diagnosis: Acute influenza, left-sided pleurisy, including the diaphragmatic portion of the pleura, capillary bronchitis.

CASE V.—I. K., aged 36 years, housewife, has been suffering from repeated attacks of bronchial asthma for the past four years. She was first seen on September 9, 1919, in a very severe attack of asthma; the ordinary sedative treatment not only failed to relieve her, but seemed to aggravate her condition. An autogenous vaccine containing *Staphylococcus albus* and *Streptococcus viridans* was prepared from her sputum, and injections were administered at five-day intervals. She seemed to improve nicely under the vaccine therapy. Physical examination on October 14 showed only an occasional dry râle and no prolonged expiration, although hyperresonance was still quite marked.

On October 22 she suddenly developed sticking pain in the left axillary, hypochondriac, and lumbar regions, aggravated on coughing, deep breathing, and lying on the affected side. Physical examination showed pleuritic crepitations in the left axilla. No asthmatic breathing and no moist râles. There was moderate tenderness along the left lower intercostals in the axillary region, and moderate tenderness and slight rigidity in the left hypochondrium.

Diagnosis: Acute influenza, left-sided pleurisy.

CASE VI.—P. M., aged 12 years, has both mitral and aortic valvular lesions with cardiac hypertrophy and dilatation and chronically enlarged liver, reaching about four fingers below the costal margin. She has been under my care since March 25, 1919, for slight myocardial insufficiency, which responded to digitalis therapy and general care. During the past few months she was able to attend school, was getting on fairly well in her class work, and could walk a distance of several blocks without dyspnea, and felt comparatively well. On October 17, 1919, she experienced slight malaise. Next morning there was loss of appetite. In the afternoon of the same day she suddenly stiffened out and began to scream at the top of her voice, "The world is coming down," "Father is going to Germany." For several minutes she kept repeating these words. She grew violent and would have jumped through the window if she had not been restrained. When she quieted down she had no distinct recollection of her behavior or utterances. A colleague, who was called, failed to find any pulmonary signs in her chest, and suspected gastrointestinal intoxication. When seen the next day, on the third day of her illness, she complained of slight sticking pain in her left axilla and slight cough.

On physical examination her temperature was 100° F.; pulse 104, slightly of the Corrigan type; respiration 20. Her throat was slightly congested. Her heart showed no acute condition except her old defects. The apex was found in the seventh interspace, anterior axillary line, one interspace further to the left than found six weeks ago. The lungs: In the left lower lobe from the angle of the scapula down there were showers of crepitant râles and a few medium moist râles. No hyperalgesia of muscles.

Diagnosis: Acute influenza, left side pleurisy, and bronchitis.

CASE VII.—C. H., aged 10 years, was first seen by me September 29, 1919, when she gave the following history: Two days ago she was suddenly taken ill with chilliness and fever. Cough and mucopurulent expectoration followed shortly after, and she experienced slight substernal pain on coughing. On physical examination her temperature was 100.2 F.; pulse 96; respiration 16. A careful examination of the lungs failed to show any abnormal physical signs.

The next day she was suddenly seized with a very severe pain in the lumbar region, so intense and excruciating that the child almost grew hysterical with the pain, and begged vehemently for quick medical relief. When I arrived one hour after the onset of the pain I met a colleague, who had been called in emergency, to relieve the intense pain. A physical examination of the lungs showed but a few dry râles scattered in both lungs, but no pleuropulmonary involvement. However, I diagnosed pleural involvement without being able to prove or localize the pleurisy, for I considered the pain to be due to a reflex visceromotor and viscerosensory phenomenon in the muscles of the erector spinæ group. When seen the next day a few fine, moist râles were discovered at the left base, but no pleuritic friction signs or dullness or diminished breathing. On October 5, six days after the attack of severe lumbar pain, the child was running a practically normal temperature for two days, although the dorsolumbar pain kept recurring, and was especially aggravated on coughing. Examination of her lungs now revealed on the left side posteriorly from the angle of the scapula down, dullness merging into flatness, distant bronchophony over a small area, pleuritic and medium moist râles. The left rectus and the left trapezius were neither tender nor rigid; the reflex was entirely confined to the muscles of the erector spinæ group.

Diagnosis: Acute influenza, pleurisy with a patch of bronchopneumonia.

Case VIII.—H. W., aged 26 years, lawyer, consulted me October 8, 1919, at my office. There was nothing in the past history that had any bearing on the present illness. She had been subject to attacks of "colds," but had never suffered a similar attack. On October 5 she suddenly developed a slight running of the nose and a slight sore throat with nausea, and once vomiting; slight chilliness, fever, and headache. The next day she suffered a fairly severe attack of pain, not cramp like, in the right side of the abdomen, aggravated on motion, hardly by respiration. A physician was called in to see her and diagnosed cholecystitis. When seen in the office, October 8, her chief complaints were cough, mucopurulent expectoration, and pain in the right side of the abdomen.

On physical examination her pulse was 76; respiration 18; temperature 99.4° F. Nose and throat congested; heart negative; lungs, diminished breathing at the right base, no râles, hardly any dullness. Abdominal examination showed marked tenderness in the right side down to McBurney's point; no enlargement of the liver, no palpable gall bladder. Urine negative. Right trapezius not tender.

October 13, five days later, patient was re-examined. The tenderness and rigidity were almost entirely gone. She coughed and expectorated less. There was still diminished breathing at the right base, but no râles.

Diagnosis: Acute influenza, right-sided pleurisy.

The correctness of the diagnosis may be questioned, but in view of the acute respiratory condition and in the light of the correspondence of this case with the above series of cases the diagnosis of pleurisy and not cholecystitis seems justifiable.

Case IX.—R. C., aged 58 years, gives a history of ureteral colic, high blood pressure, and hematuria once, six months ago. On October 23, 1919, she experienced malaise and weakness; next day there was a sudden onset of severe sticking pain in the left lower axilla, aggravated on motion and respiration; there were no chills, fever, or other constitutional symptoms. Two days later she developed severe pain in the following regions: retrosternal, right breast, right upper abdomen and right shoulder, intensified on breathing and accompanied by slight headache, chilliness, fever, and cough. The next day there was pain in the lumbar region.

Physical examination showed a moderately obese woman, no prostration, dyspnea, or cyanosis. Temperature 99.8° F.; pulse 80; respiration 20; blood pressure 240/110. Heart and aorta both enlarged. Lungs: an occasional fine râle at the right base.

Reflex phenomena: Moderate hyperalgesia of right trapezius, breast, pectoral muscles, scapular muscles, and upper rectus. Slight hyperalgesia of left breast, pectoral muscles, and upper rectus. There was moderate tenderness in both costovertebral regions. On re-examination October 28 she felt much improved, but there were numerous fine râles at the left base. Urine showed a trace of albumin, no casts, pus, or blood.

Diagnosis: Acute influenza, bilateral pleurisy.

Conclusion.—A number of cases probably due to the attenuated virus of pandemic influenza are here recorded, which present the following interesting clinical features:

1. The presence of pleural or pleuropulmonary involvement with relatively low temperature and very slight constitutional symptoms.

2. An almost constant presence of reflex visceromotor and viscerosensory phenomena in the neck, chest, abdomen, or back, which aroused the suspicion of pleuropulmonary involvement, entirely verified on careful physical examination at some time during the course of the disease.

1451 Prospect Avenue.

RADIOGRAPHY IN ARTIFICIAL PNEUMOPERITONEUM. *

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The utilization of Kelling's discovery,[1] that gas introduced into the peritoneal cavity would render visible the contour and size of the solid abdominal viscera, has proved to be a valuable supplement to the usual radiologic examination of the gastrointestinal tract.

The opaque test meal is a simple and efficacious method of demonstrating the appearance of the inside of the hollow abdominal organs, but the roentgen ray tells us little or nothing about the outer aspect of these same organs or of the solid organs like the liver, spleen, gallbladder, kidneys, or uterus.

Jacobaeus[2] in 1910 and Rist and Maingot[3] in 1912 demonstrated the remarkable contrast effect produced whenever a solid body was radiographed in the presence of a gas under slightly increased pressure. The solid body apparently became more dense and the gaseous area more evanescent than when the two were radiographed separately. Experiments in artificially induced pneumothorax showed that this phenomenon held true for the human body and that radiographs of the chest showed cardiac shadows the more dense, the greater the degree of pneumothorax induced.

Ulrichs[4] in 1913 introduced oxygen gas into the peritoneal cavity and radiographed the liver and spleen of several subjects. Many doubted the wisdom of causing the patient to endure this uncertain procedure, although Godwin[5] in 1912 and Bainbridge[6] in 1913 both showed that oxygen could be injected into the peritoneal cavity for therapeutic reasons. Postoperative shock, peritonitis, and tuberculosis of the peritoneum seemed to respond to this type of "oxygen treatment."

The results of previous investigators apparently lay forgotten until 1918 when Goetze[7] described it as a new diagnostic procedure in radiology. Some-

*From the Radiologic Service of the Long Island Hospital.

what more recently the radiologic contrast phenomenon of gases and solid bodies has been used by Dandy[8] in demonstrating the cavities of the brain by injecting the spinal canal with air.

Stein and Stewart[9] in an excellent paper report their results in a score of cases and they voice their enthusiasm about the possibilities of this new adjunct in radiologic diagnosis.

The radiographic examination of the abdominal organs by the artificial pneumoperitoneum method has been a routine procedure at the Long Island Hospital for some time, and we believe that a brief report of our investigations will perhaps not be without value to others who are interested in this most recent of diagnostic methods.

Theoretically, the principal factor of the technique is simple. Oxygen gas is injected through a needle into the peritoneal cavity. Stein and Stewart describe their method as follows: After the patient is prepared in the usual way for roentgen examination he is put flat upon his back and the abdomen is inflated with from three to four liters of oxygen. The skin at the area of the insertion of the needle is painted with iodine and anesthetized by novocaine-adrenalin solution. The spot of choice is two to three fingers to the left of the umbilicus and about one and a half inches below it. The needle is pushed through until it touches the fascia. After a halt of a few seconds it is pushed through fascia, muscle, and peritoneum. The abdomen is inflated in from four to five minutes and about three liters of oxygen are introduced. The ordinary gas-oxygen anesthetizing apparatus is used; the oxygen is allowed to run into the mixing bag and is measured, and then it is forced through a rubber tube connected with the trocar.

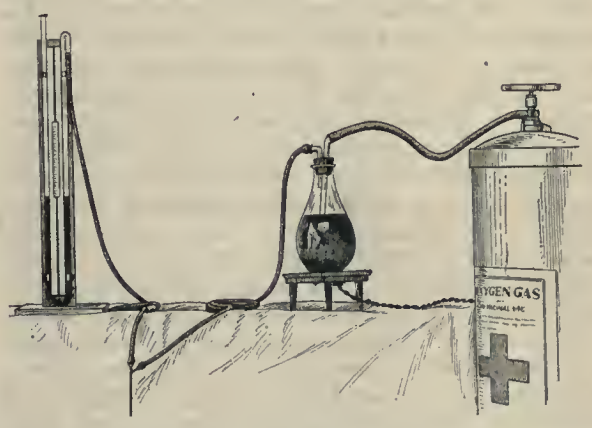
The authors report no bad results from this method, but we have not been so fortunate. The danger of injecting pathologic bacteria with the gas can not be over emphasized. Our first patients having shown a low grade peritonitis from which they slowly recovered, we undertook a rather elaborate bacteriologic investigation of the gas as it is supplied to hospitals in commercial tanks or cylinders. With the kind and able assistance of Dr. Katherine McCarthy of the Pathological Department of the Long Island Hospital, we were able to demonstrate the presence of staphylococci and streptococci in 60 per cent. of the various tanks that were examined.

Cultures of the gas coming from the rubber mixing bag of the nitrous oxide anesthetizing apparatus showed many colonies of *Staphylococcus aureus* and *albus* as well as many nonpathogens. A similar examination of two other rubber mixing bags which the hospital possesses demonstrated the same bacteriologic findings.

The obvious conclusion to be drawn from this work is that passing oxygen directly from a tank or from a rubber-mixing bag into the peritoneal cavity is not without some danger to the patient in that pathogenic bacteria may be introduced with the gas and a peritonitis of varying severity may develop.

The chief function of the gas-bag in Stein and Stewart's method is apparently to measure the quantity of gas injected into the abdominal cavity. They suggest the use of three to four liters of gas. In our experience, this has proved to be an unsatisfactory procedure, due undoubtedly to the great differences in the possible capacity of the peritoneal cavity in each patient. Some other device must be used if we wish all to receive a standardized amount of gas.

Intraabdominal pressure is easily measured by a water manometer. Normally, there is a negative pressure of about 25 mm. of water at the end of expiration and a positive pressure of 10 mm. at the end of inspiration[10]. If the patient strains vigorously the pressure will rise to 200 or 250 mm. Using this as the physiological maximum of intra-abdominal pressure we have found that the best results radiographically with the least discomfort to the patient have been obtained when oxygen gas has been injected until a pressure of 200 mm. has been reached. The quantity of gas may vary considerably with each patient. Small subjects will attain a pressure of 200 mm. with about one litre of gas, while large persons frequently require seven to eight litres of gas before 200 mm. is reached. We believe that this method is far more accurate and that the radiographs show richer contrast effects than when the gas is introduced by volume only.



Apparatus for inflating peritoneal cavity with warm, sterile oxygen gas for radiographic diagnosis.

A simple apparatus for the inflation of the peritoneal cavity with warm sterile oxygen gas is shown in the illustration below. The rubber tubing, side-arm trocar, flask, and glass tubes are made sterile by boiling; the nozzle of the outlet valve on the oxygen tank is made sterile with alcoholic solution. A sterile attendant then connects the oxygen tank to the filtering flask with a large-bore rubber tubing. The flask is two-thirds filled with hot liquid petrolatum and is in turn connected by rubber tubing to the trocar. A water manometer is attached to the side arm of the trocar. The petrolatum can be kept at boiling point, though not actually boiling, by an electric hot-plate or other heating device.

This superheated oil has a double function—first, it acts as a filter for those organisms that may be in the gas as it comes from the tank. An exceedingly short exposure to oil at this temperature (590° F.) is sufficient to coagulate bacterial protein. Secondly, the gas is warmed as it passes through the heated oil. Previous investigators have apparently overlooked the fact that as a gas is delivered from a tank it expands, and this expansion is accompanied by

a remarkable lowering of the temperature according to well-known gas laws. The frozen section apparatus of the pathologic laboratory is based upon this principle. We have found that the temerature of the oxygen gas coming from a compressed tank through 30 inches of rubber tubing averages about 27° F. in a series of ten experiments performed in order to determine this point.

So far as we have been able to discover, there has been no direct experimental work showing the effect produced by injecting very cold gases into the peritoneal cavity, but if one can remember that exposure of the peritoneum and intestines to the air at room temperature during operation is conducive to post-operative shock, then there seems to be no doubt but that a pneumoperitoneum produced by an icy cold gas would cause the patient a tremendous amount of shock and possibly collapse.

The oxygen gas as it emerges from the trocar of the apparatus above has been found to be sterile on repeated bacteriologic examination. The temperature of the gas will vary from 95° to 110° F. Together with the water manometer we believe this apparatus to be the safest and simplest method of injecting a standardized amount of gas into the peritoneal cavity for diagnostic purposes.

When the desired pressure has been reached, the trocar is removed and the small wound is covered with a bit of sterile cotton soaked in collodion. After resting for a few moments upon his back, the patient is instructed to take the knee-chest position for about 15 or 20 minutes. This manipulation allows the gas to rise into the pelvis and removes the peculiar but not particularly unpleasant sensation which most patients feel in their shoulders and back, due apparently to pressure on the dome of the diaphragm from the gas. (Compare, for example, pain from the gallbladder localized in the right shoulder.) The patient then lies in the prone position for about one-half hour longer in order to allow the gas to pass behind the liver, spleen, and stomach. Examination by fluoroscope and radiograph can now be made. The oxygen is usually entirely absorbed at the end of 24 hours.

It is interesting, at this time, to note that Rosenblatt,[4] working with a pneumothorax apparatus, accidentally produced a pneumoperitoneum by injecting air below the diaphragm. Radiographs taken of the patient showed shadows of the liver and spleen. This invites the question as to whether air can be substituted for oxygen and still be as innocuous as the latter. Further work is needed along this direction.

Artificial pneumoperitoneum for radiologic diagnosis is indicated in all obscure conditions concerned with the liver, spleen, stomach, kidneys, and uterus. The size, shape, and relations of these organs can be demonstrated with surprising exactness. Occasionally, the gallbladder and sigmoid are seen.

Perhaps the condition, *par excellence*, for this method of diagnosis lies in that group of cases complicated by ascites. Examination of the liver and spleen in these cases is usually impossible, yet the diagnosis depends for the most part upon what these same organs can demonstrate. The method becomes exceedingly simple here, for an abdominal paracentesis having been performed to remove the ascitic fluid, oxygen can be introduced through the same needle and radiographs taken without causing the patient the slightest additional discomfort. Therapeutically, also, artificial pneumoperitoneum is indicated in these cases; many patients suffer from disturbances of circulation with vertigo, nausea, syncope, and the like upon sudden removal of pressure from their large abdominal vessels. The introduction of gas under pressure tends to reduce these ill effects, and as it is absorbed in 24 hours it allows the change to occur more slowly and with far less distress to the patient.

From *a priori* reasoning, one might imagine that artificial pneumoperitoneum combined with the opaque test meal would give a remarkable radiographic presentation of the gastrointestinal tract and the solid organs at the same time. Our results with the combined methods have been disappointing. Increasing intraabdominal pressure apparently disturbs the motor activity of the alimentary canal so that radiographs of the stomach and intestines are usually very poor in detail. This may also be the explanation of the unsatisfactory results of barium studies in cases of ascites, although the prevailing theory seems to consider the presence of fluid in the abdominal cavity as the chief cause of poor pictures.

We believe that a more accurate radiologic diagnosis can be made when the two methods are used separately. For this reason, the procedure which we have developed at the Long Island Hospital for the diagnosis of intraabdominal conditions is as follows: Patients are prepared for barium studies by having their alimentary tract thoroughly cleansed by catharsis and enemata twenty-four hours preceding the examination. Only liquids are given the night before. At 9 A. M. a barium test meal is given and a sufficient number of fluoroscopies and radiographs are done for the next twenty-four hours as are necessary to make a diagnosis. The patient is given active catharsis on the second day to expel any remaining barium and on the following morning he receives his oxygen inflation. Radiologic examination is again made. The two sets of plates are then carefully reviewed together. One is frequently astonished how much one set of plates will supplement the other.

While we do not advocate that every gastrointestinal study should receive a pneumoperitoneum diagnosis, yet in view of the simplicity and safeness of the method, we believe that it should be adopted as a supplementary mode of diagnosis in all cases where the test meal does not demonstrate the condition accurately enough to reveal the cause of the symptoms, and we especially recommend the method for the study of the pathologic conditions of the liver, spleen, and kidneys.

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30 Bicknell Street.

COMMUNITY HEALTH UNITS AND HEALTH INSURANCE.

By A. C. BURNHAM, M.D.

NEW YORK.

THE New York County Medical Society, in a recent meeting, placed itself on record as almost unanimously opposed to Compulsory Health Insurance. At the election for president of the society the successful candidate stated his views as follows: "I am emphatically opposed to Compulsory Health Insurance, and to all the impracticable forms of paternalism that have seized upon the minds of some of the erratic advanced thinkers of the present day."

Curiously enough, the same mail which contained the letter setting forth the views of the candidate also brought an appeal for a donation to the United Hospital Fund, stating that the hospitals were in desperate need of funds for the care of the sick. On the same day the *Journal of the American Medical Association* (November 22, 1919) contained the following editorial comment: "The question of obtaining efficient medical diagnosis and treatment for cases of obscure disease is one of the live questions of the day. It is doubtful whether it can be met by diagnostic clinics unless they are heavily subsidized organizations along the lines of existing dispensaries but differing from them in the fact that a small fee is charged. Attempts have been made to meet the situation in this way, but as yet there has been no widespread effort to care for the man of moderate means. As individuals of this group furnish the great bulk of patients, some machinery must be devised which will enable them to have inexpensive but adequate care when they develop obscure diseases."

Is it any wonder that the average physician is puzzled and undecided in his attitude toward any form of Health Insurance? On the one hand we are told that sickness is broadcast and that the man in moderate circumstances is not receiving proper medical care, and on the other hand we find some of our best medical men putting themselves on record as opposed to the one plan that has been brought forward for the relief of the present situation.

It does not speak well for the medical profession that among innumerable letters received opposing Health Insurance not one contained a word regarding any measure which might overcome the evils which Health Insurance attempts to remedy. For there can be no doubt that the evils do exist, and that, owing to the complexity of modern practice and with the tendency toward specialization, the problem of securing adequate medical care is becoming more and more difficult for the family in moderate circumstances. The inadequacy of medical treatment is emphasized by the report on Social Insurance issued by the American Medical Association (Social Insurance. Report of the Special Committee of the American Medical Association. Social Insurance Series, Pamphlet XI, 1919), which says on page 45: "All sickness surveys show a considerable number of sick persons who receive no medical attention at all, or receive it too late to prevent the illness from becoming serious." They found that in six surveys covering 13,000 seriously ill persons, 30 per cent. were having no medical care. In the Chelsea District, New York City, there were among 356 sick persons no less than 38 per cent. who were not under the care of a physician.

In speaking of dispensary treatment, the report says: "Perhaps the most serious feature of our large dispensary population is that of delayed treatment. Of 1,726 dispensary patients studied in Boston, 72 per cent. had had no previous medical care. Of these, 35 per cent. had been sick for more than three months."

If this situation exists, and there can be no doubt that it does exist, it behooves the medical profession to bestir itself and to present a workable plan for the care of the large number of seriously ill, who at present are receiving no treatment or inadequate medical attention, instead of leaving the whole question to organized charity, or, what is worse, to unorganized financial and medical aid which are often both inefficient and ineffectual.

Much has been done and will continue to be done by the community for the relief of sickness in spite of a certain amount of opposition by the medical profession. The excellent work which has been done by the New York City Board of Health in the control of infectious diseases, including pulmonary tuberculosis, may be cited as an example of what may be done by community effort properly controlled. Similar health control is undertaken by the New York State Department of Health, with equally satisfactory results. However, the writer has more than once heard the Board of Health condemned because of what is considered a trespass on private practice and upon the rights of the individual.

In the presentation of the following plan for Community Health Units the author disclaims any credit for originality. The system as suggested is based upon what has come recently to be known as "group medicine," and has been familiar to medical men for a long time in dispensary and hospital practice, modified to meet the demands which will be made upon the physician by the Health Insurance Act and modeled somewhat along the lines followed by the Department of Health in the care of tuberculosis.

The Health Insurance Act provides that the insured shall receive medical and surgical care and that funds shall be provided for proper laboratory and other facilities for diagnosis and treatment.

How may this best be secured for a given community with least expense and greatest benefit to the patient?

Given a group of, let us say, ten thousand insured in the same community, how many we best secure adequate medical and surgical treatment, including laboratory and hospital facilities? Leaving out of the question entirely the income of the physician, there can be no doubt that for such a community the most efficient services could be secured by means of a definite group of individuals working somewhat on the plan of a group clinic or dispensary. The physicians would be paid a salary according to the time devoted to the work and the experience of the physician.

As a tentative plan for such a unit the following division might be made of the personnel: 1 Medical consultant (part time); 1 surgeon (part time); 1 assistant surgeon (part time); 1 eye, ear, nose, and throat surgeon (part time); 1 gynecologist (part time); 1 neurologist (part time); 1 pathologist (part time); 1 obstetrician (part time); 1 dentist (full time); 5 visiting physicians (full time); 5 visiting nurses (full time); 1 chief clerk (full time); 3 assistant clerks (full time); 1 laboratory technician (full time); 1 *x*-ray technician (full time).

It is believed that such a working force could give all care contemplated in the Health Insurance Bill to a community of 10,000 persons located in a city, or in a closely settled suburban district where the calls could be made without too great a loss of time. It is estimated that in New York City such a clinic could be run for approximately $50,000 yearly, including salaries, rent and incidentals, or $5 per insured person. It is understood, of course, that many of the more seriously ill would be taken care of in the hospitals, and that the group could be enlarged or contracted in case of epidemic or during any period when the medical work was especially heavy. If found desirable the *x*-ray work and laboratory examinations might be made more conveniently at a nearby hospital. This would probably be cheaper and more satisfactory in every way.

How many persons would be treated by such a clinic? In a health survey made in Farmingham, Mass., it was found that among 6,582 persons 407 were ill, a sickness rate of about 6 per cent. This would mean that in 10,000 persons there would be approximately 600 sick all the time. Of this number about one-half would be unable to work and from 10 to 20 per cent. of all cases sick would be sick in bed. It seems fair to presume that the average number of house visits would not be more than ten to fifteen a day for each of the five general practitioners. These figures, of course, are not definite, but it is believed that they represent fairly closely what ought to be expected.

Could the better type of physician be secured for this work? Would he be willing to devote his entire time to work of this sort? I believe he would if the service was arranged so that the physician was paid a living wage during the time he spent as a full-time physician and promotion was so arranged as to offer him a career as a health officer. The hours of duty and type of work done must be so arranged that the physician in the course of his work is encouraged to specialize just as he is in the army. He would be assigned to duty with one of the specialists during the clinic hours, and would naturally drift toward that specialty. After a comparatively few years he would be qualified as a specialist and promoted to a position as consultant when a vacancy occurs, and then placed on part-time duty. This would enable him to develop a private practice in addition to his work in the Health Unit and his position would be much the same as the specialist who, in addition to his practice, devotes a large part of his time to hospital and dispensary practice.

It has been stated that Health Insurance will do away with private practice and the development of scientific medicine. This is not true. Indeed, the result has been directly the opposite in countries which have adopted health insurance. The well-to-do continue to employ the best medical advice obtainable regardless of expense, while the unemployed continue to depend on charity. The medical schools and colleges continue to attract the best type of medical skill, even at comparatively low salaries, just as they do in this country. The physician practising under Health Insurance will have as much chance of a career as at the present time. The physician is in the largest sense of the word a public officer. He has his obligation to the community and to the individual. If he is not ready and willing to serve the community he should not be permitted to practise medicine. If he does not give to the individual the best that modern practice prescribes, he is unfair to the patient. If he serves them both to the best of his ability he also serves himself.

How would an individual case be cared for by such a scheme? Let us suppose a case of acute bronchitis occurs. The clinic is notified and word is sent by telephone or otherwise to one of the visiting physicians who is then on duty. (In the case of night calls one physician would be designated who would be on call for emergencies on that particular night.) The physician visits the case and prescribes treatment. He then notifies the visiting nurse, who makes up the clinical record and sees that the physician's orders are properly carried out. If the patient is desperately ill the medical consultant may be asked to see the patient, and, if necessary, hospital treatment may be advised or laboratory examination secured. In an uncomplicated case the physician makes daily visits while the man is seriously ill, but during convalescence visits are made chiefly by the visiting nurse, who makes periodical reports as to his condition. When ready to return to work he reports at the clinic for a final examination.

Free choice of physicians is the chief obstacle to a plan of treatment such as outlined above. It is supposed to be the inherent right of a patient to pick his own physician. Just why this is true, when he is not allowed to pick his instructor in school or his professor in college is difficult to understand. When a man is admitted to the average New York hospital he is assigned to a certain ward and seldom has anything to say about free choice. In the army and navy there has never been any free choice, and on the whole the medical service is excellent and the patients are entirely satisfied. Free choice of

physicians and efficient service cannot be combined to give adequate medical treatment at a low price.

In presenting the above outline the writer has attempted to present only a tentative plan in order to invite discussion along the general lines of group treatment. The plan is in accordance with what has already been accomplished in group dispensaries and diagnostic clinics, and is in keeping with the modern trend of scientific medicine and social welfare.

Since the above article was written the *Journal of the American Medical Association* (November 29, 1919) has referred editorially to a similar plan to be carried out in Glasgow. The experiment proposes the institution of "a complete medical service, furnishing unrestricted treatment of every citizen needing it, and involving the enrollment of the medical profession and the public control of all general hospitals and infirmaries."

In reference to the free choice of physicians the *Journal* says, in part: "An interesting side light is thrown on the provision for free choice of physicians under the social insurance plan now in operation. A careful study of the district shows that since the introduction of social insurance and the panel system in Glasgow those affected have not made an effort to exercise any choice in the selection of physicians but have gone to the nearest and most conveniently located physician."

11 East Forty-eighth Street.

THE LEGISLATIVE HISTORY OF COMPULSORY HEALTH INSURANCE IN THE STATE OF NEW YORK.*

By JOHN P. DAVIN, M.D.,
NEW YORK.

The first bill for compulsory health insurance in New York State was defeated at the 1916 session of the Legislature. In 1917 it was reintroduced. As the representative of the Medical Society of the County of New York I was delegated to oppose this measure, not only in practice, but in principle. I also opposed the plan for a commission to study and report upon it, and for any appropriation of public funds for this purpose. At this session the manufacturers, the labor unions and the great commercial organizations were also represented in opposition; in fact, Capital, Labor, and Medicine were as one in opposing compulsory health insurance.

What then was the power behind this measure? It was the so-called "Uplift" or "Social Service," a movement which I described in the following words taken from an article on "Adolescent Insanity and the National Health," by Professor Charles W. Burr of the University of Pennsylvania:

> The kind of altruism which is being widely preached in America at the present time is making life much easier for a great many lazy people, but which, instead of improving the race, is injuring it. In too many instances it is aiding people to live whom it were better to allow to die. It forgets too often that the strong and healthy also have rights. Its honest adherents are so ruled by their emotions, or rather by their sensations, that they do not stop to think before they act. They see an evil and in their hurry to correct it inflict much greater evils. It increases tremendously the parasitic class who to-day, as always, are perfectly willing to live off the fruits of other people's industry. The specific movement, technically called "social service," the result of a genuine spirit of altruism, needs a little reform in its methods and a somewhat greater care in the choice of its agents, or its possible usefulness will be greatly diminished. The idea that a man is his brother's keeper is a beautiful and normal thought, but when it is interpreted to mean that the strong man is to be "wet nurse" to the weakling, and carry him through life, and work that he, without exertion, may enjoy the luxury of living, the weakling is going to enjoy himself without responsibility, propagate his kind, and weaken the race. No work needs greater wisdom and maturity of mind than social service, yet far too often its agents are enthusiastic, ignorant, and conceited young men and maidens, who, feeling that they have a call to save the world, entertain unlimited pity for the unfortunate, an overwhelming sense of the wickedness of the strong and successful, have no idea of justice, no training of any kind, little or no worldly wisdom, but, also, not unfrequently a desire to earn a living without hard work.

Even at that time I discerned the political possibilities that lay within this form of legislation, and declared it to be a fight to a finish between practical politics and the practice of medicine, adding at the same time that when politics began to tinker with life and death it was time to call a halt.

Compulsory health insurance, I told the Legislature was the most ambitious medical proposition that had been advanced since Colonel Sellers first offered his internal, external, and eternal remedy for human ills. In advocating this promotion Dr. Warren of the Public Health Service computed that there was something like a billion in it for the doctors, whereas Colonel Sellers only claimed for his remedy a matter of some millions in it for his dupes.

On the other hand, but for the limitless wealth of the public treasury and for the modern craze for lay interference with the care of the sick, a measure such as this one would not receive serious consideration anywhere outside of an economic Bedlam.

Although the bill was defeated, a commission was appointed to study the subject and report upon it. No appropriation was granted, however, for this purpose, although this largess was favored by all the opposing interests except the one I represented. At the next session of the Legislature, labor had changed its front, and favored this measure. The other opposing forces were divided, and politics began to take a hand in the project. The chief spokesman for the measure was an official of the State Industrial Commission, a body largely under the control of the State Federation of Labor, and the one under which this law would be administered if it were passed. It was admitted by this official that his body had spent a hundred thousand dollars in investigating this subject, although an appropriation for this purpose had been refused at the previous session of the Legislature. Again this measure failed to pass the Legislature.

Representing then an independent medical organization, I again appeared in opposition at the 1919 session of the Legislature. At this time I concentrated my attack upon what I considered the most formidable body among our opponents, the labor unions. It was my opinion that if they succeeded in getting the medical profession under their control they would change our working day even of twenty-four hours when necessary into one of eight hours, while the time of an epidemic would be the

*An address delivered by invitation at an informal meeting of the Medical Society of the State of New Jersey, held in Newark, on January 6, 1920.

one in which they would be most likely to call us out on strike. It was no disgrace, I averred, for labor to work for its pocket all the time, but if they applied this rule to us it would be against all the established principles of our once honored profession.

Owing to the determined stand of one man, the speaker of the Assembly, who prevented this bill from coming out of committee, this measure again failed, against the united efforts of the Governor and of both parties in the Legislature.

We are now confronted with the declared intention of Governor Smith, backed by the State Federation of Labor, and by the political advocates of so-called welfare legislation in both parties, to pass a measure for compulsory health insurance at the next session of the Legislature. In this determination Governor Smith seems anxious to emulate Bismarck and Lloyd George in making the medical profession in this country an adjunct of the State under political control instead of an independent vocation such as it has been up to the present time. As such, unaided by the State, medicine has exerted a beneficent influence in the affairs of mankind which has more than equaled the individual achievements of politics, jurisprudence, and industry, so far as they relate to the welfare of mankind in general.

What is there in the history of politics in New York State to justify the project for making the practice of medicine subservient to the politician, and a public instead of a private duty? Has it ever been proved that medical service to the poor was either insufficient or inefficient? Is there any complaint even to-day of the high cost of medical attention to the people? Has Governor Smith as a poor boy brought up in New York any proof of a lack of medical service to the poor at any time during his career among them? It has been said that taxes and death are inescapable obligations of mankind. At the present time we have the highest tax rate and the lowest death rate ever recorded in the history of New York.

The levying of taxes is the duty of politics; the delaying of death the responsibility of the physician. Does any one imagine that the expectation of life would be increased if politics assumed both of these duties at the present time? To-day the medical profession in New York State is unanimously opposed, to compulsory health insurance with the single important exception which proves the rule. This one exception is the president of the American Medical Association, who has recently declared that we should remember in our opposition to compulsory health insurance that we are only 15,000 among 8,000,000 in New York. In this respect it may be said that he is only one among 15,000, no matter how high placed he may be. I have advised at the present time that the medical profession of New York refrain from again appearing in opposition to compulsory health insurance at the hearing before the Legislature at its coming session, but that we should register instead our unanimous opposition to it before the Governor and this body.

We have just seen two parties to a trade dispute summoned to the Capitol at Albany to arrange their difficulties. This dispute is among the highest paid form of labor, the needle workers, who number 90,000 and who vote as their interest dictates. These workers are treated with a respect that has never been given to the medical profession, the most charitably inclined, the most poorly paid, and the least influential class politically in the country. Is it not high time for us to act with the unanimity of the ladies' tailors, 98 per cent. of the members of which trade were declared some years ago by a Federal health survey to be diseased. Either this diagnosis was wrong or the diseases from which this trade then suffered were those which money could cure.

The medical profession of New Jersey is to be congratulated upon the unanimity with which it is opposing the first measure for compulsory health insurance in their State. In this opposition to "an act to promote conservation of human life by creating a bureau of health insurance in the Department of Labor," New York wishes them every success in their initial contest with the forces we have met and defeated four times, and which we are again to meet for the final struggle this year.

117 West Seventy-sixth Street.

LAPSUS OF MEMORY.

By H. LAVESON, M.D.,

NEW YORK.

Freud has shown in his "Psychopathology of Everyday Life" that we tend to forget the things that are displeasing to us, that unconsciously we avoid what has once caused us pain. The objection has been raised to this theory that as a matter of fact it is the painful things that we never forget, and that these impress themselves most on us. Such critics might have taken it for granted that the scientist who laid down the principles that the nemoses which date from the earliest painful love experiences which are never forgotten, but merely repressed and unconscious, would not have overlooked their objections. Certainly we do not forget painful things, but nature has so provided that we have a tendency to repress into our unconscious annoying events and go on our way as if they had never happened, only in symptomatic acts, mistakes, slips of the tongue, and otherwise do we betray ourselves. The man whose wife has lied never forgets it if he has loved her. But if he has, let us say, been slighted by a person who has not been playing a principal part in his life, he will go on living as if that person had never existed for him. He may unconsciously avoid the street where that man lives, and forget about him, until some occasion may arise where he may betray his dislike of the person in a manner he never intended; the action is nevertheless, the voice of his unconscious. Analysis of name forgetting almost always shows that the name withheld shows some relation to a theme which concerns one's own person, and is apt to provoke in one strong and often painful emotions. The same thing might be expressed in the following form: The name withheld has touched a "personal complex." The relation of the name to my person is an unexpected one and is mostly brought about through superficial associations (words of double meaning and of similar sounds); it may generally be designated as a side association. The mech-

anism of forgetting, or rather of losing or temporary forgetting of a name consists in the disturbance of the intended reproduction of the name through a strange stream of thought unconscious at the time. Between the disturbed name and the disturbing complex there exists a connection either from the beginning or such a connection has been formed—perhaps by artificial means—through superficial association. The self reference complex proves to be the most effective of the disturbing complexes.

To avoid the wakening of pain through memory is one of the objects among the motives of these disturbances. In general one may distinguish two principal cases of name forgetting; when the name itself touches something unpleasant, or when it is brought into connection with other associations which are influenced by such effects. The mechanism similar to that pointed out in the forgetting of names may also play a part in the phenomena of speech—blunders. The speech disturbance which manifests itself as a speech-blunder may in the first place be caused by the influence of another component of the same speech, that is, through a fore-sound or an echo, or through another meaning within the sentence or context which differs from that which the speaker wishes to utter. In the second place, however, the disturbance could be brought about through influences outside this word, sentence, or context, from elements which we did not intend to express, and of whose incitement we became conscious only through the disturbance.

No psychological theory has yet been able to account for the connection between the fundamental p henomena of remembering and forgetting; indeed, even the complete analysis of that which one can actually observe has as yet scarcely been grasped. To-day forgetting has perhaps grown more puzzling than remembering, especially since we have learned from the study of dreams and pathological states that even what for a long time we believed forgotten may suddenly return to consciousness.

No other group of phenomena is better qualified to demonstrate the thesis that lack of attention does not in itself suffice to explain faulty acts, as the forgetting of intentions. An intention is an impulse for an action which has already found approbation, but whose execution is postponed for a suitable occasion. Now, in the interval thus created sufficient change may take place in the motive to prevent the intention from coming to execution. It is not, however, forgotten, it is simply revised and omitted.

We are naturally not in the habit of explaining the forgetting of intentions which we daily experience in every possible situation as being due to a recent change in the adjustment of motives. We generally leave it unexplained, or we seek a psychological explanation in the assumption that at the time of execution the required attention for the action, which was an indispensable condition for the occurrence of the intention, and was then at the disposal of the same action, no longer exists. Observations of our normal behavior toward intentions urge us to reject this tentative explanation as arbitrary. If I resolve in the morning to carry out a certain intention in the evening, I may be reminded of it several times in the course of the day, but it is not at all necessary that it should become conscious throughout the day, as the time for its execution approaches it suddenly occurs to me and induces me to make the necessary preparation for the intended action. If I go walking and take a letter with me to be posted, it is not at all necessary that I, as a normal not nervous individual, should carry it in my hand and continually look for a letter box. As a matter of fact I am accustomed to put it in my pocket and give my thoughts free rein on my way, feeling confident that the first letter box will attract my attention and cause me to put my hand in my pocket and draw out the letter. This normal behavior in a formed intention corresponds with the experimentally produced conduct of persons who are under a so-called "past-hypnotic suggestion" to perform something after a certain time. We are accustomed to describe the phenomenon in the following manner: the suggested intention slumbers in the person concerned until the time for its execution approaches. Then it awakes and excites the action.

We have invariably found that intentions of some importance are forgotten when obscure motives arise to disturb them. In still less important intentions we find a second mechanism of forgetting. Here a counter-will becomes transferred to the resolution from something else after an external association has been formed between the latter and the content of the resolution. Errors of memory are distinguished from forgetting and false recollections through one feature only, namely, that the error (false recollection) is not recognized as such but finds credence. However, the use of the expression "error" seems to depend on still another condition. We speak of "erring" instead of "falsely recollecting" where the character of the objective reality is emphasized in the psychic material to be reproduced—that is, where something other than a fact of my own psychic life is to be remembered or rather something that may be confirmed or refuted through the memory of others. The reverse of the error in memory in this sense is formed by ignorance. The mechanism of the occurrence of the error invariably indicates that the mental activity concerned had to struggle with some disturbing influence, although the nature of the error need not be determined by the quality of the disturbing idea, which may have remained obscure. It is not out of place to add that the same state of affairs may be assumed in many simple cases of lapses in speaking and writing.

511 East Eleventh Street.

The Return to Barbarism.—The war has left an aftermath characterized as a return to barbarism through regression and inversion of social values. A laboring man earns more than a physician, a chauffeur than a professor in the Sorbonne, while the mopmen are the best paid of any of the university personnel. It is an era of bad taste, egoism, and brutality, and materialism overrides intelligence—a logical demonstration of the outcome of Marxism had the latter ever been successfully introduced. The arm is now more powerful than the brain, for with complete equality conceded one of the two must go under.—*Journal des praticiens.*

Medicolegal Notes.

Practising Medicine — Chiropractor. — The Supreme Court of Illinois holds that Laws 1899, page 273, as amended by Laws 1917, page 579, making it an offense to practise medicine or surgery or treat human ailments without a certificate from the State board of health, was enacted in the exercise of the police power, for the protection of the lives and health of the people, and it is valid unless infringing on constitutional rights. A chiropractor, whose practice consists of adjusting the vertebræ of the spinal column, professes, that court says, a method of treating physical ailments, injuries or deformities that is not within the common meaning of the term "practising medicine," but the General Assembly had a right to define the practice of medicine for the purposes of the act so as to include that method.

Within constitutional limits the General Assembly is the sole judge of what laws shall be enacted for the protection of the public health, and so long as it does not infringe upon inherent or constitutional rights, its determination of what measures and regulations shall be adopted is held by the courts to be conclusive. The Legislature cannot, however, arbitrarily interfere with the enjoyment of rights guaranteed by the Constitution, and cannot invest any board or commission with arbitrary discretion which may be exercised in the interest of a favored few, or which affords opportunity for unjust discrimination. The act provided for examinations of persons applying for licenses to practise medicine and as to those desiring to practise medicine and surgery in all branches, prescribed general rules for an examination. As to those who desired to practise any other system or science of treating human ailments, who did not use medicines internally or externally, or practise operative surgery, it required that examinations should be of a character sufficiently strict to test their qualifications as practitioners. That provision, standing alone, conferred upon the State board of health arbitrary power to grant or refuse licenses in its own discretion and upon its own judgment as to what examination would be sufficient to test the qualification of each applicant for a license. It furnished no standard and no guide and no security to an applicant by which the courts could determine whether the requirements of the board were reasonable or not. The act, however, provided that all examinations should be conducted under rules and regulations prescribed by the board, which should provide for a fair and wholly impartial method of examination. Such rules and regulations, if made would be subject to review by the courts to determine whether reasonable or not. It was held that the statute did not violate any constitutional right.

The action was in debt to recover damages, the statute authorizing a recovery of $100 for the first offense and $200 for each subsequent offense. On the third trial there was a verdict for the plaintiff and assessing damages at $500. The Illinois Supreme Court holds that as the offense did not consist in treating some individual, but in practising medicine generally by treating the public, a first offense meant a first conviction, and as there could not be a judgment for five first offenses, the judgment must be reversed for that reason.—People v. Kane (Ill.), 123 N. E. 265.

Liability for Substitute.—In an action against a physician for breach of contract to attend the plaintiff's wife in childbirth and for the alleged malpractice of a substitute sent by the defendant with the plaintiff's consent, the material facts proven were that the defendant had an agreement to treat the plaintiff's wife, that he found that, owing to pressing professional engagements he would not be able to do so, that it was the custom among physicians in the district in such circumstances to arrange with another physician to take the case, that the defendant did so, that the defendant made no objection to the substitute at the time, but paid him his fee. The trial court charged the jury that the law required the exercise of ordinary care by the defendant in his personal attention on the patient, and also required the exercise of ordinary care by him in the selection of another physician for her. The trial court refused requests to charge that any negligence or lack of skill on the part of the substitute, resulting in injury to the patient, was chargeable to the defendant, regardless of the care exercised by the defendant in his selection of a substitute. The controlling question before the Texas Supreme Court was whether the action of the trial court was correct in giving and refusing these charges.

It was held that the defendant's duty was to exercise ordinary care in the selection of the physician to be sent, as the jury was instructed by the trial court. The defendant could not be held liable for the substitute's negligence or lack of skill, in the absence of facts to establish that the latter was acting as the defendant's agent when he was treating the patient. From the very nature of the employment, the physician who takes the place of another must, while he alone is treating the patient, exercise his own judgment and his own skill; and he is truly an independent contractor. The law applicable to the liability of one medical practitioner for the acts of another who undertakes to look after the former's patients, and the reason therefor, is well condensed in De Forrest v. Wright, 2 Mich. 369, 370, as follows: "To hold that every person, under all circumstances, would be responsible for injuries committed by another person while employed in his behalf involves an absurdity no one would countenance. It would create a penalty from which few could escape; for every man is or ought to be directly or indirectly, nearly or remotely, engaged in the service or on behalf of his fellow man. But from an examination and comparison of the adjudged cases, the rule now seems very clearly to be this: That where the person employed is in the exercise of an independent and distinct employment, and not under the immediate control, direction, or supervision of the employer, the latter is not responsible for the negligence or misdoings of the former." That case was followed by the New Jersey Court of Errors and Appeals in Myers v. Holborn, 58 N. J. Law 193, 33 Atl. 389, or facts very similar to the present case, the court saying: "Dr. P. (the substitute) and the defendant were each of them practicing physicians of this state, having no business connection with one another, except that Dr. P. was attending the patients of the latter while he was temporarily absent. Even if it be admitted, therefore, that Dr. P. was employed by the defendant to attend upon the wife of the plaintiff, that fact did not render the defendant liable for his negligence or want of skill in the performance of this service." It was also held that where it was the long-established custom among physicians in the vicinity for one to send another to those patients the former was unable to attend, the defendant's statement to the physician selected by him that it would be a partnership case could not be construed otherwise than as meaning that the defendant expected to resume charge when his other engagements would permit, and that each for his services would be entitled to compensation. The judgment of the trial court for the defendant was therefore affirmed.—Moore v. Lee (Tex.), 211 S. W. 214.

Expert Evidence—Electric Voltage Sufficient to Cause Death.—In an action for the death of a railroad repairman from a shock from an electric light he was carrying, three regularly practicing physicians who had had some experience in the use of electricity, qualified as experts and testified from their general knowledge, obtained from observation and research in their profession, that the voltage, 115. was sufficient to produce death. One gave the opinion that 65 volts was sufficient to cause death under favorable circumstances, such as existed in the case (the deceased was standing on a wet floor at the time of the accident). Another testified that in his opinion from 50 volts up might produce death under these conditions, and the third testified that 110 volts might be dangerous to life under the most favorable conditions, depending upon the length of time connected. One of the plaintiff's witnesses testified that by coming in contact with a similar domestic wire used in an automobile shop he received a shock that knocked him 10 or 12 feet and rendered him unconscious. The defendant did not introduce any medical experts, but relied solely on the testimony of its electrical experts, who testified that 115 voltage was not sufficient to produce death. It was held to be abundantly proved by the expert witnesses that the voltage received by the deceased was sufficient, under the circumstances, to cause death.—Clinton & O. W. K. Co. v. Dunlap, Oklahoma Supreme Court, 181 Pac. 312.

MEDICAL RECORD.

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LIFE EXPECTANCY AFTER OPERATIONS FOR GASTRIC AND DUODENAL ULCER.

A PAPER on this subject, read before the American Surgical Association last June by Donald C. Balfour (*Annals of Surgery*, November, 1919), reports the results of investigations by the Actuarial Society of America, under the direction of Mr. Arthur Hunter, Chief Actuary of the New York Life Insurance Company, of all cases of gastric and duodenal ulcer operated upon at the Mayo Clinic between 1906 and 1915. As Balfour says, unfortunately there is no basis on which the results of the investigation can be compared with the results in nonoperated cases, for not only are no statistics available as to life expectancy in nonoperated cases of gastric and duodenal ulcer, but accurate statistics in this group will probably never be entirely possible, because the uncertainties of diagnosis discount more or less the dependability of such figures. On the other hand, surgical statistics are based on proved lesions, and on lesions in which the medical treatment has failed.

In these observations the results in the gastric and duodenal ulcer groups were compared, then each group's mortality was compared with that of a similar number of the general population corresponding in age and sex. Of 2431 patients operated upon for gastric and duodenal ulcer between 1906 and 1915, all but 108 were traced—certainly a remarkable piece of work in itself. The average age at operation for gastric ulcer was: males, 47; females, 43; for duodenal ulcer, males, 44; females, 42. The operative mortality from all causes in 545 cases of gastric ulcer was 4.5 per cent.; while in 1684 cases of duodenal ulcer it was 2 per cent. Gastric ulcer, therefore, carries twice the operative risk of duodenal ulcer.

Investigation of the mortality in the years following operation shows the following facts: 521 gastric ulcer cases were under observation on an average of 3.6 years, and in that time 88 (17 per cent.) died from all causes; 1,651 duodenal ulcer cases were under observation on an average of 3.4 years, and in that time 85 (approximately 5 per cent.) died from all causes, and 91 cases of both gastric and duodenal ulcer were under observation on an average of 3.8 years, and in that time 9 (10 per cent.) died from all causes. In connection with these figures Mr. Hunter, as quoted by Balfour, says that, while we cannot tell how many lives have been saved by reason of operation for duodenal ulcer, it may safely be stated that the survival of 95 per cent. for three and one-half years after operation is a high tribute to surgery. With such a serious condition as gastric ulcer, a death rate in three and a half years of 17 per cent. of those operated upon seems to be low. While unable to prove the statement, Mr. Hunter believes that a much larger proportion of persons would have died but for operation, and that many years of life in the aggregate were saved through surgical treatment.

The comparative tables showing the number of deaths in the group of 521 persons operated upon for gastric ulcer and 521 persons of the general population with like distribution as to age and sex give the following:

Time following operation.	Deaths in operated.	Deaths in gen. population.
First year	36	8.2
Second year	21	6.5
Third year	11	4.9
Fourth year	7	4.1
Fifth year	7	3.
Sixth year and subsequent..	6	5.6
	88	32.3

A similar comparison of the deaths in 1651 duodenal ulcer cases operated upon shows:

Time following operation.	Deaths in operated.	Deaths in gen. population.
First year	22	24.
Second year	20	18.6
Third year	9	14.3
Fourth year	10	11.2
Fifth year	11	8.3
Sixth year and subsequent..	13	16.7
	85	93.1

In this last series it is rather astonishing to see that the total number of deaths in the first two years after operation is exactly the same as that of the general population group, and that after the second year the mortality is actually less than in the general population group. As Balfour says, these statistics illustrate very strikingly the fact which has always been recognized by surgeons, namely, that gastric ulcer is a much more serious condition than duodenal ulcer, not only from an operative standpoint, but from a standpoint of after-results; and that the patient with a gastric ulcer shows, as a rule, much more evidence of impaired general health than does the patient with duodenal ulcer.

THE SYMPTOMATOLOGY OF EXTRAMEMBRANOUS PREGNANCY.

AN extramembranous pregnancy is when the fetus during gestation escapes through the membranes and comes directly in contact with the

uterine walls. This form of pregnancy offers no one symptom which will affirm the diagnosis before labor takes place, but there is a series of symptoms sufficiently characteristic to lead the practitioner to suspect this abnormal state of affairs, although examination of the after-birth is the only means of making an exact diagnosis.

During a normal gestation, suddenly, with or without cause, a liquid discharge appears, which may or may not be preceded or accompanied by a hemorrhage. The liquid is at times clear, at others more or less tinged with blood. There are no other phenomena than this one symptom, the patient feeling perfectly well and without pain. The discharge appears each day and may be quite profuse. The three principal characters of the discharge are its frequency, its quantity, and usually its rather marked red tinge. It has the stale odor of amniotic fluid.

Palpation may give some useful data. The uterus is less developed than it should be; it is hard, tense, and strongly contracted over the fetus, and if there be a breech presentation—which is the most common in these cases—no ballottement of the cephalic pole can be obtained. In some rare instances bimanual examination affirms the diagnosis of extramembranous gestation if the fingers come into direct contact with a part of the fetus without interposition of the membranes. The little maneuver indicated by Bonnaire, causing the amniotic fluid to flow into the hand during vaginal examination will show the presence of sebaceous matter and other elements characteristic of the amniotic fluid, so that a diagnosis of amniotic hydrorrhea can be made. All these signs may lead one to suspect an extramembranous pregnancy but not more, and a differentiation must yet be made between the discharge of amniotic fluid and decidual hydrorrhea. Examination of the after-birth is, as has been said, the only sure means of making a positive diagnosis. Margination of the placenta has been noted in every case and, although constant, is not enough for making the diagnosis. When the membranes are examined they will be found to form a little pocket at the base of the cord and one is struck by the difference existing between the size of the fetus and the capacity of the amniotic sac and between the diameter of the fetal head and that of the opening in the membranous pocket. It is to be noted that this pocket cannot be mistaken for incomplete membranes because it is often almost closed, having a small regular opening with thickened edges around which it is impossible to separate the amnion from the chorion. There is a complete adhesion between the two membranes and microscopic examination proves that this adhesion is due to cicatricial tissues, thus demonstrating that the rent in the membranes dates back long before labor.

The prognosis is favorable for the mother. The almost constant discharge combined with antiseptic treatment will prevent an ascending infection from taking place in the opened cavity. But on account of the absence of the amniotic fluid and membranes forming the bag of waters, labor may be long and difficult. For the child, on the contrary, the prognosis is very serious; in the majority of cases the fetus is not viable because labor occurs long before term. If the child is born alive it soon dies because during its sojourn outside the membranes it will have been submitted to direct pressure from the uterus, while the absence of amniotic fluid subjects it to the usual malformations provoked by oligoamnios.

The conduct to follow is evident. The patient should be kept in bed, palpation and vaginal examination should be abstained from, and opiate enemata should be given. Should a living child be born, it should receive the usual care given to premature offspring.

DISPENSARY PRACTICE.

EXCEPTING the time of choosing his profession there is no more critical period in the career of a young doctor than that immediately following his internship. A long period of more or less strenuous work has culminated in the "houseship." As house physician or house surgeon he has had a chance to put his knowledge through its paces. The other interns, the nurses, the patients, have taken their orders from him. Only the attendings have enjoyed superiority, and often not even they, in the opinion of the young czar himself.

"Then comes the break, the check, the fall." His service is over. Another czar reigns in his stead. And now comes the real test of his quality as a medical man. During the months of ward work many an intern allows the idea to grow upon him that all the "interesting cases" are to be found in hospital beds. Many feel profoundly relieved that their student days in crowded dispensaries are over. Treating patients with anasarca, or peritonitis, or cavitation, is to them far more thrilling than dealing in albuminuria, or mild appendicitis, or apical infiltration. Because a patient's condition is more desperate it is likely to be considered more interesting, more worth treating.

Our interns today should (and fortunately not a few of them do) take note of the fact that the ambulatory case deserves as much, if not more interest and attention from the profession than does the patient with one foot in the grave. By their increasing willingness to consult a practitioner before their sickness has reached an advanced stage, the laity are showing how the "ounce of prevention" idea is influencing them. For the well-to-do this means going to the doctor before they are so sick that they must call the doctor to them. For the poor it means going to the dispensary before they are so sick that they must go to the wards. For the profession it means recognizing disease in its earliest phases, before the appearance of the less easily mistakable signs of the later stages. So far as the difficulty of the task is concerned, then,

the profession would do well to equip the dispensaries with some of the very best physicians, surgeons, and specialists. This is exactly what is happening in the more forward-looking dispensaries today, particularly in those connected with the medical schools.

But the majority of outpatient departments are still seldom if ever visited by the more prominent men of the institution. (Another reason for lack of enthusiasm on the part of the rising medical generation.) They are often left to the tender mercies of inexperienced men who have been fed up on the greater desirability of ward work, and who can't get it except as hangers-on at rounds.

Certainly a full dispensary and an empty office are the usual lot of the recent hospital graduate. On the empty office we have no comment to make. But the dispensary practice should be developed, studied, regarded as an opportunity for which to be grateful. It deserves greater interest from the younger men, greater recognition from the older. As an agency in prophylactic medicine, in teaching, and in research, the dispensary should rank fully as high as the ward.

Nature of the Grippe Virus.

The materies morbi must be a living contagium; it must be so subtle and of such low molecular weight as to be like a volatile gas; it is by reason of this gas-like property that it can spread rapidly from man to man and also penetrate the respiratory mucosa. In other words this animated vapor is capable of instantaneous contamination of the animal organism. It is because of this property that the expired air again gives exit to it and diffuses the disease. These are the views of Roussy (as expressed in a volume recently issued by Masson of Paris), who held them in 1914 before the appearance of the pestilence. That is, he conceived the existence of such a virus and in time the disease appeared and made good his speculation. The theory is not quite the same as that of the filtrable virus but is not antagonistic to it. Like many other convictions this came about through peculiar personal experience; for the writer, having cared for ordinary influenza patients for many years, believes that he had in his own person contracted the disease not less than one hundred times. This extreme susceptibility or total lack of immunity gave him exceptional opportunities to study the means of transmission. He associated the moment of contagion with a certain peculiar odor about the sick patient and naturally conceived the idea that at this moment of olfactory perception the infectious particles were in the nose and other air passages.

Mental Diseases Cured by Grippe.

The cure of psychoses by intercurrent febrile infectious disease is not a novelty and the same may be said of the temporary arrest of epileptic seizures under the same circumstances. Professor Regis and some of his students in France have placed cases of these types on record and Damaye, who is also a student of Regis, reports others in *Le Bulletin Médical* for December 13, 1919, xlvii, 50. One is as follows: A youth of 20 was interned for a hebephrenic condition which supervened without prodromes after a quarrel with a friend. The excitement set up by the fight did not subside. A sister had died in an insane asylum. The psychosis which developed was extremely complex and not readily summed up in a few sentences. At the close of the first year he was classed as a hebephrenic with orientation slightly defective, incapable of occupying himself or of becoming interested in anything. He was calm through his apathetic state, although originally he had shown violence. When in October, 1919, the grippe appeared in the asylum, he developed the gastroenteric form without high fever. The duration of the temperature is not stated, but it did not exceed 38° C. (100.4° F.). Very soon after this episode, it was noted that the mental state was on the mend. He became able to fix his attention and oriented accurately. The deliriant ideas originally present had quite disappeared. His memory now returned intact and he recalled the entire course of his alienation. In November he was pronounced cured. The author cites another case of the same type in which the curative agency was an attack of angina with temperature of 38.5° C. (101.3° F.). In these cases we cannot give credit to high temperatures, indeed the occurrence is not explicable.

Scorbutus at Lille in 1917.

During an interval of six weeks Baltus saw a total of 17 cases of scurvy in the city of Lille (*Journal des Sciences médicales de Lille*, November 30, 1919, xxxvii, 40). Of this number 7 occurred in children whose ages ran from 7 to 14 years. The remaining patients were all past the age of 50 and one was 87. Every adult had petechiæ, ecchymoses, and hard edema of the feet and legs, and alterations of the gums in varying degree. All had pains in the lower extremities which interfered with locomotion, along with marked weakness and anemia. Not a single child had hemorrhage or edema, but the gum alterations were in evidence, although only to the extent of puffiness. In the child the début was most insidious. Aside from the material just quoted Baltus saw in an orphan asylum four little girls who had seemed in perfect health develop sudden inability to walk or even stand. The cause was not associated with any spinal or joint trouble. At that time scurvy was little known and not until the author found some ecchymotic areas on the lower extremity did he think of this malady. He examined the gums, finding puffiness but no hemorrhage. The principal expression of the disease was, therefore, the paralysis, as it might be termed. In theory there should have been a prompt recovery under orange juice, green vegetables, and fresh air. But unfortunately nothing like this happened and recovery was slow and tedious. Was there some inverted connection between paralysis and ecchymoses? The adults had the latter without the former and the only one of the four orphans who retained some power over her lower limbs showed some ecchymoses. The other children seem to have shown neither paralysis nor ecchymoses.

News of the Week.

For the Protection of Medical Ideas and Inventions.—The Section of Historical Medicine of the New York Academy of Medicine will hold a meeting on Wednesday, February 4, at 8:30 P.M., at the Academy of Medicine, the object of which will be to discuss a subject of interest to all members of the medical profession. A committee appointed by the chairman, and composed of Doctors R. T. Morris and A. L. Soresi, will present practical suggestions regarding the creation of a special medical board to establish and protect the priority of ideas relating to medical subjects; this board would correspond to the patent office. Another important point presented for discussion will be the suggestion to have the board patent in its name all new surgical instruments, and pay a royalty to the inventors, as is done in the case of medical authors, who are paid a royalty for their publications. All physicians are cordially invited to be present, and the discussion will be open to all.

Food Drafts for Europe.—It is reported that the American Bankers' Association will issue drafts to Americans who desire to aid sufferers from lack of food in Europe. The drafts, which may be mailed to Europe and cashed for food at warehouses at Warsaw, Prague, Vienna, Danzig, and other points in the famine territory, will probably be of ten dollars denomination. About 24 pounds of flour, 10 pounds of beans, 5 pounds of lard, 8 pounds of bacon, and 6 cans of condensed milk will be obtainable in exchange for one of the proposed drafts. Should a profit accrue from these transactions it will be employed in feeding undernourished children.

Malt Sugar Syrup for Sugar.—According to the Bureau of Chemistry, United States Department of Agriculture, a sugar substitute is promised in malt sugar syrup, now being made on a commercial scale. It is made from the same grains as beer, and may be made from corn, potatoes, or any plant containing starch. The syrup looks very much like maple syrup and has a flavor somewhat like that of honey.

Names of Blind Requested.—The New York Association for the Blind, 111 East 59th Street, New York City, has made an appeal to the public for the names and addresses of men and women recently becoming blind. The teachers of the association minister to blind persons without regard to race, creed or color.

New Drug Import Regulations.—Under a ruling of the War Trade Board, State Department, effective January 10, narcotics, and salvarsan, neosalvarsan, and all substitutes therefor, may be imported from all countries except Soviet Russia, without individual import licenses.

Gum Opium Arrives.—Two steamships arrived at the port of New York recently from Turkey, their combined cargoes amounting to 75,000 pounds of gum opium, the market value of which is more than $556,800.

Red Cross Activities for 1920.—In a statement recently issued by Dr. Livingston Farrand, of the American Red Cross, it is announced that out of a fund of $30,000,000 available for its work for this year, the society has set aside $15,000,000 for European relief, $13,750,000 for use at home, and $1,250,000 for completing its program in Siberia.

Mary Putnam Jacobi Fellowship.—The Women's Medical Association of New York City offers the Mary Putnam Jacobi Fellowship of $800.00, available for post-graduate study. It is open to any woman physician for work in any of the medical sciences. Applications for the year 1920-1921 must be in the hands of the Committee of Award by April 1, 1920. Applications should be forwarded to the Secretary, Rose Cohen, M.D., 151 West 78th Street, New York City.

Fund for Mental Convalescent Home.—A campaign has been inaugurated to raise a fund of $250,000 for the establishment and maintenance of an institution to be known as the Home and Farm Institute for Mental Convalescents, for sufferers from mental ailments in primary stages. It is intended for the care of those who cannot afford treatment in private institutions. A site for the home has been selected in Sullivan County.

Vital Statistics in New York.—The general death rate for New York State, according to a report issued by Dr. Hermann M. Biggs, New York State Commissioner of Health, was increased slightly in November, 1919, over the preceding month, but was still very much below the average for the month of November during the five years before 1918, the decrease being over 17 per cent. The State's birth rate of 20.4 per thousand population for November was much below the average for that month in the five years 1913-1917. The State's infant mortality rate of 66 for November was 19 points below the average for that month.

Defective Children in England.—Of 533,400 children outside of London examined medically, according to the report of the chief medical officer of the Board of Education, 259,000, or 48.5 per cent., were found to be defective.

Shanghai Cholera Epidemic Ended.—According to press dispatches, the Japanese Government has lifted the ban declaring Shanghai to be an infected port in consequence of the cholera epidemic which originated in June, 1919. Shipping and mail service to and from Shanghai has been resumed.

Kentucky Health Board After "Healers."—Chiropractors, natureopaths and various other "healing paths" are having troublous times in Kentucky. The State Board of Health is making war on them, and the Grand Jury, on information furnished by the board, has indicted six of these would-be practitioners on the charge of practising without license.

Still Practising at Ninety-four.—Dr. William M. Parsons, of Manchester, N. H., is said to have celebrated his ninety-fourth birthday recently by visiting his many patients and carrying out his regular office schedule. He is believed to be the oldest practising physician in New England.

Red Cross Building Destroyed by Fire.—The Red Cross building at Camp Upton was destroyed by fire recently, at a loss of $40,000. The camp fire department had difficulty in saving the group of base hospital buildings, in the center of which the Red Cross building stood. There were 200 patients in the hospital at the time.

Antinarcotic Law Upheld.—Judge John C. Pollock in the United States District Court, Kansas City, Kan., recently held the Harrison antinarcotic act to be constitutional. Eight doctors who were convicted under the statute, and who are serving sentences in the Federal penitentiary at Leavenworth, attacked the law in a petition for a writ of habeas corpus.

Influenza on Ship.—Press notices from Buenos Aires announce that a French steamer from Havre and Vigo, bound for Rio Janeiro and Buenos Aires, arrived at the latter port January 7 with five passengers dead, seven dangerously ill, and a large number suffering from influenza. The ship was ordered into quarantine.

Dr. Horace W. Loeb, of St. Louis, dean of the St. Louis University Medical College, and long editor of the *Annals of Otology,* has been made chief of staff of the Jewish Hospital, succeeding Dr. Herman Tuholske, who recently resigned.

Dr. Harold I. Gosline, of Worcester, Mass., formerly major in the medical corps of the army, has been appointed by the Penal and Charitable Commission of Rhode Island as pathologist at the state institutions at Howard. Dr. Gosline is a graduate of Medical School of Harvard University, class of 1914.

Charitable Bequests.—By the will of the late Mary E. Rowland, formerly of Philadelphia, who died recently at Atlantic City, N. J., bequests of $1,000 each are made to the Home of Our Merciful Savior for Crippled Children, Philadelphia, the Children's Seashore Home, Atlantic City, and the Rush Hospital for Consumption and Allied Diseases, Philadelphia.

By the will of the late Fannie Wienmann, of Philadelphia, the sum of $1,000 is bequeathed to the Federation of Jewish Charities.

By the will of the late Sarah McGonigal, of Philadelphia, the sum of $300 is bequeathed to the Presbyterian Hospital.

By the will of the late Thomas Wollenberger, of Philadelphia, the sum of $1,000 is bequeathed to the Mount Sinai Hospital.

By the will of the late Sarah Dodworth, of Philadelphia, the sum of $3,000 is bequeathed to the Children's Hospital.

Protests Against Vaccination. — The rigid enforcement of the recent order issued by the United States Public Health Service regarding the vaccination against smallpox of all persons entering the United States from certain districts in Canada where smallpox has appeared bids fair to call forth legal proceedings. A number of citizens of Sarnia, Ontario, declare they have been vaccinated two and three times recently, and threaten to take a test case to the United Staes Supreme Court if attempt should be made to force them to undergo another vaccination.

To Combat Cardiac Diseases.—The Association for the Prevention and Relief of Heart Disease, which has headquarters at 325 East Fifty-seventh Street, New York City, has issued a pamphlet outlining its purposes and activities. The organization is now engaged in the establishment of dispensaries for workingmen with crippled hearts in the city hospitals, and also seeks the opening of more convalescent homes to patients of milder type, and the founding of institutions for the permanent care of permanent invalids from the same cause. Dr. Lewis A. Conner is President of the association, and Ray Morris the Treasurer. Dr. Alexander Lambert, Dr. Haven Emerson, Dr. John W. Brannan, and Dr. S. Josephine Baker are Governors. Many laymen are members of the organization.

Nationalization of British Physicians in Prospect. — The medical profession in Great Britain, according to recent cable dispatches, is disturbed over the possibility of the nationalization of the medical service, including hospitals and all institutions in any way connected with the maintenance of the health of the people. Under such a system physicians would become servants of the State like the army and navy officers and civil government employees.

Child Labor Increasing.—According to a statement issued January 3 by the Department of Labor, an appreciable increase has been noted in a number of States in the violations of State laws following the decision of the Supreme Court declaring the Federal child labor law unconstitutional. In one case, according to the statement, 47 out of 53 factories inspected were employing children under 12. In another State, where the minimum age for employment in canneries was 14 years, 721 children under that age, including 50 children not yet 10 years old, were found at work in the summer of 1918.

Obituary Notes.—Dr. MARY CHRISTIANCY, for twenty-two years assistant physician to the Pennsylvania State Hospital for the Insane at Norristown, died on November 18 at the age of 69 years. She was graduated from the Woman's Medical College of Pennsylvania in the class of 1883.

Dr. XAVIER OSWALD WERDER died at Pittsburgh, Pa., on November 21 at the age of 62 years. He was graduated from the New York University Medical College in the class of 1879. He was Professor of Gynecology in the University of Pittsburgh, a member of the Allegheny County Medical Society and of the Medical Society of the State of Pennsylvania, a Fellow of the American Medical Association and of the American College of Surgeons, a member of the American Association of Obstetricians and Gynecologists and of the Southern Surgical and Gynecological Association.

Dr. DAVID H. WARNER died at Prescott, Lebanon County, Pa., on November 24, at the age of 57 years. He was graduated from New York University Medical College in the class of 1886.

Dr. JOHN LOUIS METZGER, Jr., died of heart disease at Philadelphia on December 9 at the age of 29 years. He was graduated from Hahnemann Medical College and Hospital in the class of 1912.

Dr. CHRISTOPHER A. FRAME died of heart disease at Philadelphia on December 12 at the age of 74 years. He was graduated from Pennsylvania Medical University in the class of 1876.

Dr. CLARENCE W. SCHAEFFER died of heart disease at Philadelphia on December 19 at the age of 34 years. He was graduated from the Medico-Chirurgical College in the class of 1907. He was a member of the Philadelphia Pediatric Society and Diagnostician to the Board of Health.

Dr. DANIEL MURRAY CHESTON, formerly of Phila-

delphia, but recently living at Hardwood, Md., died on December 22 at the Chestnut Hill Hospital as a result of injuries received accidentally. He was graduated from the medical department of the University of Pennsylvania in the class of 1864.

Dr. EDWIN A. DOWN, of Hartford, Conn., died December 22, of heart disease, at the age of 63. After his graduation from the College of Physicians and Surgeons, New York, in 1887, he was physician to the Connecticut Hospital for the Insane at Middletown, for four years. He then served as physician to the Hartford Retreat for six years, following which he devoted his time, until his death, to the practice of neuropsychiatry. He was president of the State Board of Charities, and was a member of various medical societies.

Dr. THOMAS J. B. RHOADS died at Boyertown, Pa., on December 24 as a result of heart disease at the age of 82 years. He was graduated from Jefferson Medical College in the class of 1861. He served as surgeon in the United States Army during the Civil War. He was a member of the Berks County Medical Society and the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. ELLA RIDGWAY ZIEGLER died at Philadelphia on December 30 at the age of 74 years. She was graduated from the Woman's Medical College in the class of 1874.

Dr. EDGAR H. BYERS died at Philadelphia on January 7 at the age of 53 years. He was graduated from the Jefferson Medical College in the class of 1889.

Dr. HILARY M. CHRISTIAN died at the Presbyterian Hospital, Philadelphia, on January 7 at the age of 61 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1882. He was a member of the Philadelphia County Medical Society, the Philadelphia Gastro-Urinary Society, the American Association of Genito-Urinary Surgeons, the American Urological Association, the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association. He was Clinical Professor of Genito-Urinary Diseases in the Medico-Chirurgical College.

Dr. THOMAS W. CLARKE died at Philadelphia on January 8 at the age of 46 years. He was graduated from Hahnemann Hospital Medical College in the class of 1896.

Dr. CHARLES MCINTIRE died at Easton, Pa., on January 4 at the age of 73 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1873. He was a member of the Northampton County Medical Society, and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association and of the American Academy of Medicine. He was for many years Secretary of the American Academy of Medicine and also editor of its *Bulletin* and at one time its President.

Dr. JOHN W. BARNES, of Columbus, Ohio, died of diphtheria, December 29, at the age of 59. He was graduated from the Cincinnati College of Medicine and Surgery in 1889.

Dr. ARTHUR J. LANCE, of Portsmouth, N. H., died suddenly January 3, in his fiftieth year. He was graduated from the University of Vermont College of Medicine in 1893. He specialized in ophthalmology and otolaryngology.

Dr. JOHN LOOMIS, of Jeffersonville, Ind., died December 22 at the age of 99. He was born in Russell, Mass., but had lived in Indiana many years.

Obituary.

WILLIAM SAMUEL GOTTHEIL, M.D.,

NEW YORK.

Dr. WILLIAM S. GOTTHEIL, of this city, died suddenly of heart disease January 8, in his sixty-first year. He was born in Berlin, the son of the Rev. Gustav Gottheil, who for many years was rabbi of Temple Emanu-El, in New York.

Dr. Gottheil was graduated from the College of Physicians and Surgeons in 1881, subsequently specializing in dermatology and syphilology. He was at one time professor of dermatology in the New York School of Clinical Medicine, and in Fordham University Medical School. He was an active member of the New York County Medical Society and the Manhattan Dermatological Society, and was a Fellow of the New York Academy of Medicine. He was the author of a "Manual of General Histology," in 1894; "Illustrated Skin Diseases," 1897, and a work on "Syphilis," 1899, and was a contributor of numerous articles to special and general medical journals.

CHRISTIAN R. HOLMES, M.D.

CINCINNATI, OHIO.

Dr. CHRISTIAN R. HOLMES of Cincinnati, Ohio, died at the New York Post-Graduate Hospital, Jan. 10, after an illness of several months. Dr. Holmes was born at Veile, Denmark, in 1857, receiving his education in Denmark, Germany, and the United States. He was graduated from Miami Medical College, Cincinnati, in 1886, and practised continuously in that city until his retirement, a few months before his death, specializing in ophthalmology, and otolaryngology. From 1888 to 1809 he was ophthalmologist and otologist to the Cincinnati Hospital; from 1890 to 1904 he was professor of otology at Miami Medical College; since 1908 he was consulting ophthalmologist to Cincinnati Hospital, and since 1904, professor of otology at the University of Cincinnati.

Dr. Holmes was an active member of the American Academy of Ophthalmology and Otolaryngology, the American Otological Society, the American Laryngological Association, the American Laryngological, Rhinological, and Otological Society, and the American Medical Association.

For many years Dr. Holmes had been keenly interested in the work of developing the hospital facilities of Cincinnati. He was a leader in the movement which culminated in the erection in that city of one of the most complete general hospitals in the country. He was permanent chairman of the New Hospital Commission, and devoted the greater part of his time latterly to the hospital work. He served as an officer in the Medical Reserve Corps during the World War, the splendid organization of the department of head surgery at Camp Sherman being largely the outcome of his efforts.

Correspondence.

THE CAREER OF DR. ALLAN McLANE HAMILTON.

To the Editor of the Medical Record:

Sir:—When a person has lived through a long professional career, the story of his early and perhaps his most interesting and useful work may become forgotten. It seems to me that this is particularly true in the case of Dr. Hamilton, because his early work was along new lines and was characterized by courage and industry in entering untrodden paths.

Dr. Hamilton published a treatise on "Electrotherapeutics" as early as 1873, when he was only 25 years old and he dedicated this to Dr. William A. Hammond. It is a very good work and showed a sound knowledge of electricity and electrotherapeutics, as it was known at that time. It was later translated into Japanese. He published his treatise on Nervous Diseases five years later and this went into a second edition in 1881. During this period, Dr. Hamilton won the prize of the American Medical Association for an essay on "Diseases of the Lateral Columns of the Spinal Cord." And he made at this time the first observation of the fact that lesions of the tempero-sphernoidal lobe cause disturbances of the sense of smell and taste.

He had always an inventive and mechanical turn of mind and he published in his early books a description of a dynamometer which I think is still the best dynamometer ever invented apart from its not being portable. He invented and described also a gas cautery and a new form of double electrode. He was at this period for a time a health officer, and for a time a dramatic critic.

Dr. Hamilton's's early activities remind us that he was the last link to that group of men who gave distinction to American Neurology fifty years ago. The others were Drs. Meredith Clymer, William A. Hammond, Edward C. Seguin, and George M. Beard. Dr. Hammond was the more dominant and aggressive figure; Dr. Seguin was the most accomplished as a clinician; Dr. Beard was the man of the most originality and acuteness of observation. Dr. Hamilton, who was much the youngest of the group, had a wider range of talent and greater versatility. Already in the early '80's he had achieved a position and had a large practice as a neurologist.

While he was most successful in this line of work during the early part of his career, his interests later changed and he took up more specifically the work of the alienist and the medicolegal practitioner. He became fascinated with the work of the expert and enjoyed the spirit of the contests. He was of the temperament that believes wholly and zealously in the cause with which it is associated. This confidence, combined with intelligence, experience, and ingenuity, made him a very successful and helpful man in the many important and even historical cases with which he was associated.

During this time he edited a system of "Legal Medicine" and wrote his book on "Railway and Other Accidents," besides contributing many articles to medical journals and secular reviews.

Dr. Hamilton was very keen in his appreciation and estimate of human character. He was using, perhaps, his own standards. He could recognize slight but real deviations from the normal, and he did not leave out the clothes in estimating the human make-up.

His fondness for European life and the breaks it made in his regular professional work, interfered in later years with his professional practice. He had travelled extensively and had a large acquaintance socially and professionally in England, France, and Italy. There was something of the unrest about him that goes with a temperamental character and he had any visions which he did not realize. He loved the atmosphere of London and started to practice there for a time. He was fascinated with the beauties of Italy and he had a home and residence for a time in Capri.

Then there came upon him, about ten years before his death, a serious illness which necessitated a surgical operation from which he never entirely recovered and this forced him to a life of comparative quiet. He spent these years largely in writing and composed the life of his grandfather, Alexander Hamilton, and also his own biography. This latter work shows in an entertaining and very picturesque way the varieties of his medical, social, literary, and artistic experiences.

Dr. Hamilton was not only a good friend, but a particularly congenial and engaging host. He had amongst his other gifts a knowledge better than most men and women of how to prepare a dinner, having in it the appeal of good food and artistry in its choice and exhibition. He was supernormal with a cuisine, though this was only an incident of his artistic temperament. He was not a gourmet, but just had the knowledge and good taste. He was a good musician and an artist of considerable skill as a draughtsman. He was a collector of discriminating taste many years before that quality existed to any extent in this country. Though not ecclesiastic in his beliefs, he had a special taste for ecclesiastic things—a fact which showed his early expertness. He possessed an unfailing sense of humor, but his wit was inclined to be of the sardonic quality. He could draw and caricature both his enemies and his friends, but there was never any seriousness in his satire. He made at one time lantern-slides caricaturing the members of the Mediochirurgical Society and exhibited them on a screen with legends attached, some of which passed into history!

Dr. Hamilton had the kind of personality which attracted people to him. He was very fond of some people, and he did not like others, so that his life was adorned with many friendships and enlivened by certain enmities, but he had such lovable traits of character and manner, that even his enemies could not really dislike him very seriously. He was kindhearted, hospitable, and generous and helpful to those whom he liked and was inclined to be especially kind and helpful to the younger men.

Dr. Hamilton, nothwithstanding his experience with life, was in a way a diffident man, avoiding public meetings and discussions. This was not due to a sense of inferiority, rather perhaps to a sense of superiority which was not egotistic or offensive, but dependent on a consciousness of keener sensibilities. He rarely went to medical meetings or came in contact with his professional men in for-

mal discussions. He liked to meet his fellow-men socially, or in private organizations, and one of his last and best pieces of work was to organize and assist in founding the New York Psychiatrical Society, of which he was the first president.

Dr. Hamilton lived a life far from monotony. He reached nearly all the high peaks and sullen depths that experience furnished to mortals. He began his career by winning a prize of the American Medical Association and publishing a creditable book. Then he experienced the threat of a disconcerting law-suit.

He had a filled waiting-room for years and then for a period he was a clientless wanderer. He knew and practised his profession on both continents. He had bright hopes at one time of his talented son's career, and in it he rejoiced. He used to show me some of his son's clever and original work as an officer in the Philippines. But the end came tragically. He felt all the joys and tragedies that come in parental and in conjugal life. He enjoyed his vigorous health, but he also bore for years with genial courage the martyrdom of a depressing, and to him almost revolting invalidism. He went with courage to take his chance with a capital operation in surgery, which indeed saved his life but did not mend it.

In reviewing the career of Dr. Hamilton, there come to me not only feelings of deep regret and of a personal loss over his death, but I feel a particular sorrow as I think of the things which so crippled and thwarted him towards the end of his life. Few men were more generously endowed physically or mentally, than he. He did a great deal. He lived a rich and full life and had a successful career, but he had accidents and incidents which prevented him from achieving all the aims which his natural endowments should have secured for him. As I recall his person and character, his varied talents, his qualities of culture, his fastidious refinement, his rich experience, it seems to me we have no such personality or even a potentiality of it left with us.

CHARLES L. DANA.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Jan. 2, 1920.

War on Rats.—On New Year's Day the Rat and Mice Destruction Act came into force. By the provisions of this bill the owners of property are made responsible for the rats on their premises. The British military authorities have taken the matter up and the Director-General of Army Medical Service has instructed all general officers commanding-in-chief of commands and districts at home to cooperate with the local authorities as far as the military situation demands. The authorities at the ports, knowing the dangers of plague and its effect on their trade, have been very active. The health authorities of Liverpool have been especially energetic. As far as measures for killing rats are concerned, experience has shown that virus is of little use. The food which has given the best result is either mashed potatoes or cereals flavored with oil of aniseed. Carbonate of barium and red squills have proved the most effective poisons.

Industrial Medicine in Great Britain.—Industrial medicine in all its phases is making great progress in Great Britain but, at the same time, is still susceptible of greater advance. The most encouraging feature in this respect is that it is now recognized that unless the workers are in good health, prosperity will be at a standstill—in fact, that the health of the workers and prosperity go hand in hand. It is pointed out in an editorial in the *Lancet*, Dec. 27, 1919, that judging from a discussion regarding the position of the physician and surgeon in the industrial era, which took place at the recent meeting of the Clinical Congress of the American College of Surgeons held in New York, there is a fuller appreciation in America than in Great Britain of the part which the medical profession can, and indeed must, play in the national and international social problems of the day. As said before, if the workmen of a country are not healthy they will not be contented, will be unable to do good work and the country to which they belong will not be prosperous. Therefore, it is manifestly of vital importance to all concerned that workers should be healthy, and it is equally obvious that this very intimately concerns the medical profession. But, in drawing up plans and schemes calculated to improve the health of those who do manual labor and machine work, who in fact live by the work of their hands, the advice of medical men is seldom sought. This omission, which seems to be a serious, almost fatal omission is in part the fault of the medical men themselves, simply because they are not conversant with their subject. The medical student has a crowded curriculum but, up to the present time, preventive medicine has had little place in it. As the editorial in the *Lancet* says, assuredly the industrial importance of injury and illness should be brought home to the student. As certainly as preventive medicine is the medicine of the future, so is industrial medicine one of its most important departments, economically its most important. A medical school of any considerable size should have a chair of industrial medicine and surgery. While this is an ideal which may be some time in coming in this country, it is an ideal which should be striven for and the medical profession of Great Britain can learn much in this direction from that of America.

The Prince of Wales Hospital, Cardiff, which was established during the war for the after care of disabled and maimed soldiers and sailors, is to be continued for the purpose of doing similar work for civilians. There is no doubt that there is scope for institutions of this kind in peace time and particularly in an industrial region as Wales, where it is said there is one maimed person in every 800. It must be borne in mind that industrial surgery is as important as industrial medicine.

Chair of Psychiatry at Edinburgh University.—A chair of psychiatry has been established at Edinburgh University, and the first professor of that science to be appointed is Dr. George M. Robertson, physician in charge of the Edinburgh Royal Asylum.

Honors for a London Physician.—Sir Bertrand Dawson, a well-known London physician, has been made a baron and in future will be known as Lord Dawson. While this event is not quite unprecedented it is very rare. Indeed the only other British physician who has ever been raised to a peerage was Lister and his title was but the seal set upon an international fame. It is true that Sir Walter Foster, who was made Lord Ilkeston, belonged to the medical profession, but he gained his title wholly by political work, so that really Lord Dawson is the first British medical man to win a title by what may be termed the ordinary routine work of a consultant, although he has been prominent in all that pertains to preventive medicine. He is among the leading consulting physicians of London, is Dean of the Faculty of Medicine in the University of London and is physician to the London Hospital in the East End of the metropolis, the largest London hospital. He is physician-in-ordinary to the King and is also chairman of the Medical Consultative Committee instituted under the Ministery of Health, a position of great responsibility, for upon this committee devolves the important task of reconciling the interests of medicine to those of the public.

Education and the Birth Rate.—In a recent number of the *London Times*, it is noticed editorially that the question of the declining birth rate is exercising seriously the minds of thinkers in the United States. Attention is drawn to a paper read a year ago by Professor Ellen Hayes at Baltimore but published quite recently in *Science*, in which the author meets the arraignment of educated women made by Mr. Dublin some two years ago at the meeting of the American Association for the Advancement of Science. This writer stated that in his opinion the fall in the birth rate was largely due to the higher education of women. Professor Hayes rejects this view with scorn and points out that women have won economic freedom and have the right to choose whether they shall bear children and the number they shall have. It is suggested that in place of trying to increase the number of those born, we might try to increase the number of those that live. In every civilized country an immense number of infants die under one year of age, and a large proportion of these deaths are preventable. Moreover, it is argued that the new freedom of women, even if it be a cause of the diminishing birth rate, is but one of many causes. Difficulties of housing, the postponement of the marriage age, the desire to make better provision for children, all tend to limit the production of children. Consequently, it is at one and the same time untrue and ungenerous to assign blame for the decrease of the birth rate only to the education of women. Likewise it is futile. The movement for the social and economic emancipation of women which had gathered force before the war, gained so great momentum owing to the manner in which they shouldered not only their own burdens but those of the men during the war, that it is almost irresistible; and further, men, for the most part, now recognize the justice of their claims to equality. Efforts in the future will be more directed to the conservation of infant and child life than to the production of children. In this connection it is encouraging to know that the matter of child welfare in recent years has received the study and attention which are its due in Great Britain, owing to the teaching, practical and theoretical, of such men as Dr. Erie Pritchard, the science of rearing healthy children has made great strides. The Ministry of Health, too, appreciates the fact that the conservation of child life is one of the most important problems which comes within its province, and in Great Britain, at any rate, the future years will witness great developments in this direction.

Sir William Osler at Oxford.—Sir William Osler will be best known to posterity as a great teacher of medicine. The deceased Canadian physician was as well known in America as in Great Britain, but a brief account of his work at Oxford may be of interest to the readers of the MEDICAL RECORD. His tenure of the Regius Chair of Medicine at the great English University was fruitful and remarkable in many ways. It is pointed out in an elegant tribute to him in the *London Times* of December 30, that when he came to Oxford in 1905 as a stranger he found the Medical School at a very important period of its development, and he at once recognized its possibilities and devoted himself to the solution of its problems. By his enthusiasm and the charm of his personality he brought about more close and intimate relations between the University and graduates in London teaching schools and thus prevented the possibility of a breach which was in some danger of arising. Osler in his efforts to make of Oxford a great medical school, nevertheless carried on the traditions of his predecessors, and his greatest contribution to Oxford medical studies lay in the development of clinical teaching, while the improvement in clinical teaching owed not a little to his friendships with Oxford doctors. However, his teaching was not confined to clinical medicine, for his own wide intellectual interests led him to regard it as essential that a student should care about the history of his subject, and he gathered young students about him in his own house and used his own valuable library of early medical works to awaken their interest. The personality of Sir William Osler was the characteristic which perhaps made the deepest and most lasting impression. He possessed a perfect genius for friendship and the power of retaining a vivid recollection of all who were brought into contact with him. It may be emphasized that he was specially the friend of Colonial and American undergraduates.

Dysenteric Abscess of the Liver Cured by Emetine Without Operation.—About ten cases of this remarkable therapeutic success have now been recorded, which almost places emetine at the head of specific remedies. The latest case to go on record is that of Chauffard and Françon. Diagnosis was made by puncture and radiography and even after the first injection of emetine improvement was noted. About three weeks were required for a complete cure. Of interest was an aberrant Wassermann, not due to syphilis, but to the amebiasis and abscess. This became negative in about a fortnight: Five injections of emetine were required for a cure.—*La Presse Médicale.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 1, 1920, clxxxii, 1.

1. "Flat Foot" and Other Static Foot Troubles. Frederic Cotton.
2. Frequent Urination. Frederick D. Davis.
3. Report of Progress in Ophthalmology. Edmund W. Clap.

1. "Flat Foot" and Other Static Foot Troubles.—Frederic J. Cotton classifies foot troubles of static origin as follows: 1. "Flat foot: (*a*) habitual (reducible), which takes in most of the cases; (*b*) rigid, or spastic; (*c*) bony. 2. Short heel-cord with or without flat foot. 3. Contracted foot. 4. Anterior arch trouble: (*a*) "Morton's disease"; (*b*) "fallen" anterior arch. 5. Hallux valgus: (*a*) hallux rigidus. Of all these it is Class 1*a* that fills the orthopedic offices and keeps the shoemaker busy devising and advertising the perfect shoe and the ideal arch support. Each class, with its management, is discussed. The writer's summation of the subject is as follows: 1. Most foot troubles are physiological—"static" in origin. 2.. In a large share, bad shoes are responsible. 3. In many bad habits in use of the feet are responsible. 4. In cases of Class 1*a* decent shoes and properly supervised exercises, properly carried out, will bring about a *cure* in a very large percentage—probably a majority—of the cases, certainly in a majority of the younger cases —below 25 years of age. 5. These are the cases to which plates are too often applied. 6. Plates are still too much used. 7. Plates help, but never cure. 8. "Flat foot" cases, as we meet them, call for either physiological cure—palliation by straps, plates, etc., *then* systematic exercise, or else they do ill under the routine and call for more or less permanent support, or (rather rarely) for radical correction by manipulation or by open operation. 9. Anterior-arch troubles are readily relieved, as a rule—very often not curable. 10. Hallux valgus (and hallux rigidus) may be palliated effectively, but can be cured only by surgery.

New York Medical Journal.

January 3, 1920, cxi, 1.

1. The Tubed Pedicle in Plastic Surgery. H. D. Gillies.
2. The Palliative Treatment of Urethral Stricture. Maximilian Stern.
3. Diverticulum of the Esophagus. Hubert Arrowsmith.
4. Aseptic Catheterization of the Urinary Bladder. A. L. Soresi.
5. Wood Alcohol Poisoning. S. Dana Hubbard.
6. Clinical Experience with the Feeding of Solids to Sucklings. Harry Lowenburg.
7. Respiratory Gymnastics in Tuberculosis. Harold C. Lane.
8. Nasal Obstruction Due to Abnormal Action of Nasal Mucosa. M. S. Ittelson.
9. Gonococcemia and Metastatic Gonorrhea. (Concluded.) Hyman I. Goldstein.

2. The Palliative Treatment of Urethral Stricture.—Maximilian Stern expresses the opinion that the end results of palliative treatment of urethral stricture, in cases in which that is possible, are in many respects better than those in which external urethrotomy has been performed, and that every effort should be made to treat these cases by palliative means along definite lines with a well-planned technic. He reached this conclusion in consequence of three striking facts: First, that patients who have been previously operated upon (external urethrotomy) and after a period of neglect require further treatment, are catheterized with great difficulty and often must submit to another external urethrotomy; second, that in these cases, even if catheterization is possible, dilatation is extremely difficult and softening even with the aid of heat is impossible; and, third, that more frequent treatment is required to keep the urethra patent in cases treated palliatively. These patients are not able to remain without catheterization for nearly so long. The writer discusses the cases requiring operation; clinical types of stricture at the bulb; palliative and nonoperative treatment; inflammatory stricture with occlusion of urethra; the operating urethroscope; inflammatory stricture with partial retention; anemic stricture; the irrigating dilator; technic, and results obtained. His conclusions are: 1. That external urethrotomy is not the operation of choice for the cure of urethral stricture at the bulb. 2. That in complicated cases requiring immediate operative interference, cystotomy alone is frequently to be preferred, lowering mortality and yielding better end results in so far as the urethra is concerned. 3. That in uncomplicated cases of acute urinary retention, a ureter catheter inserted into the bladder with the operating urethroscope, followed by rest and other palliative measures, offers better possibilities than surgical procedures. 4. That hyperemia and dilatation as described are valuable adjuncts to the absorption of urethral infiltrates.

Journal of the American Medical Association.

January 3, 1920, lxxiv, 1.

1. Treatment of Causalgia: Results of Intraneural Injection of 60 Per Cent. Alcohol. Dean Lewis and Wesley Gatewood.
2. Observations on Chest Wounds: Review of Fifty-three Consecutive Cases. Hugh Chaplin.
3. False Pneumothorax. B. P. Stivelman.
4. Radical Abdominal Hysterectory for Cancer of the Cervix Uteri: A Report of End-Results, Showing an Unusually Large Percentage of Five-Year Cures. Farrar Cobb.
5. A Benzidin-Polychrome Stain for Blood. F. A. McJunkin.
6. Death Following Spinal Anesthesia, with Report of a Case. Jay Ireland.
7. The Medical Reserve Officer in the War. Louis J. Hirschman.
8. Heat-Resistant Organisms: A Study of Bacteria Encountered in Heat Sterilization of Surgical Ligatures and Sutures. Frederic Fenger, Eloise B. Cram, and Paul Rudnick.
9. Acute Methyl Alcohol Poisoning Associated with Acidosis: Report of Case. George A. Harrop, Jr., and E. M. Benedict.
10. Cultural Studies on a Case of Sprue: Preliminary Note. Wade W. Oliver.

8. Heat-Resistant Organisms: A Study of Bacteria Encountered in Heat Sterilization of Surgical Ligatures and Sutures.—Fenger, Cram, and Rudnick, in the course of the experimentation to determine the temperature necessary to insure sterility of the product, obtained more than a hundred cultures, both from the raw, unsterilized ligatures and from those heated at various temperatures. These cultures were examined, and from them fourteen typical specimens were selectd which included all the varieties observed. From these fourteen cultures five distinct types of bacteria were isolated: three spore-forming bacilli and two cocci. All were aerobic and facultative anaerobic and grew at both 20 and 37 C., though somewhat more quickly at the latter temperature. From their studies they found that of five distinct types of heat-resisting bacteria described, including both cocci and bacilli, which commonly occur in raw ligatures and sutures, none were found to be pathogenic. Plain and chromicized ligatures and sutures can be sterilized only by heat. Antiseptics and germicides are of no value in the absence of water. The thermal death point for the five types of bacteria lies between 150 and 160 C. under the conditions found in ligatures and in nonaqueous liquids. Absolute sterility is assured by gradually heating the ligatures in oil or some other suitable nonaqueous liquid up to 160 C. and maintaining this temperature for one hour. The great resistance to heat of the two types of cocci described is a very important fact.

British Medical Journal.

December 13, 1919, ii, 3076.

1. Medicine and the People: A Review of Some Latter-day Tracts. Sir T. Clifford Allbutt.
2. The Diagnosis and Treatment of Chronic Gastric Ulcer. Sir Berkeley Moynihan.
3. A Clinical Lecture on Hypochlorhydria and Air Swallowing. William Russell.
4. Indolent Sores on the Fingers. Robert W McKenna.
5. Severe Dermatitis during Treatment with Novarsenobillon. L. G. Leonard.
6. Pregnancy Complicated by Volvulus of the Sigmoid Flexure, Causing Intestinal Obstruction. Malcolm Donaldson.
7. Three Cases of Reconstruction of the Thumb. P. Jenner Verrall.

3. A Clinical Lecture on Hypochlorhydria and Air Swallowing.—William Russell, after discussing the symptomatology of hypochlorhydria, and reporting four cases, calls attention to "air swallowing," a condition which has important relations to other gastric disorders. Two such cases are detailed. In the first of these air-swallowing cases there was elicited a history of "pain," which was converted into "fullness and tight-

ness," coming on with the taking of food, increasing as food was swallowed, until eating was stopped owing to the feeling of "fullness"—no more could be swallowed. Prompt relief followed the bringing up of "a lot of wind." The history in this case is quite different from the history obtainable in a case of gastric ulcer, which is the only condition with which it might be confused, if the history of the symptoms were not carefully and critically examined. The phenomena presented by this patient are not very rare, and yet they are not widely recognized. The air is swallowed when the food is taken. The amount swallowed varies in individual instances, and consequently the degree of discomfort varies. In this patient the discomfort was great, because the amount swallowed was considerable. It sometimes gives rise to visible distension; it may lead to pronounced neurosis or neurasthenia; it may act reflexly on heart and vessels, leading to functional angina pectoris.

This peculiar air swallowing when food is taken is different from "air gulping" or "air sucking." Air swallowing is confined mainly to the time food is being taken, although, to a much less degree, it may be continued during the period of discomfort. The "air gulper" swallows air at any time, and it may or may not be induced by an initial stomach discomfort. Air swallowing occurs in both sexes, and probably in children pretty frequently. It may be associated with, but apparently may even be caused by, abnormal gastric secretion, abnormal in the sense of the secretion containing too much or too little hydrochloric acid—that is, either hyperchlorhydria or hypochlorhydria. In the writer's experience it is more common in the latter than in the former. The second case illustrates the combination of hypochlorhydria with air swallowing persisting after removal of the appendix. The points of special interest in this case are (1) the air swallowing, which stopped when the hypochlorhydria was successfully treated; (2) that it was not a case of "appendicular dyspepsia," which presumably was the diagnosis which led to the removal of the appendix; and (3) the fall of 20 mm. Hg. when the gastric condition was rectified.

Canadian Medical Association Journal.

December, 1919, ix, 12.

1. Mental Hygiene in Relation to Social Hygiene. A. H. Desloges.
2. Multiple Infarcts of the Spleen in Malignant Endocarditis, Rupture of the Spleen and Peritonitis. A. Vallée.
3. The Practical Aspects of Quarantine for Influenza. T. H. Whitelaw.
4. Treatment of Influenza. F. H. Wetmore.
5. Mental Tests in Practice. A. G. Mornhy.
6. War Surgery—Perforating Gunshot Wound of the Face with Extensive Destruction of the Superior Maxillæ. J. N. Roy.
7. Retiring President's Address. R. Ferguson.
8. Mental Excitement in a Psychopathic Hospital—Its Prevention and Care. Nursing Sister Elizabeth Mills.

3. The Practical Aspects of Quarantine for Influenza.—T. H. Whitelaw, reviewing the application of quarantine in the Province of Alberta, Canada, and in Chicago, during the 1918 epidemic, concludes that no public health law which has not the endorsement of the public generally can ever be reasonably well enforced. Human nature cannot be altered, but laws can be, and it seems desirable that regulations regarding quarantine should be revised in such a way as to secure the maximum co-operation of the community, including the medical profession, in their enforcement. The apparent success of the method followed in Chicago in connection with the influenza cases suggests that the same method might work out advantageously in many of the minor and less serious infections now placarded under the name of "modified" quarantine, and secure a much more efficient control of these infections by health departments. It would penalize by a placard only those who failed to report and submit to the instructions of health officials, and would thus be a strong incentive in securing the co-operation of the public generally with health departments in the prevention, as far as possible, of the minor infections which are unfortunately regarded so lightly by the majority of the community in spite of the undoubted fact that many untimely deaths result from them.

Revue médicale de la suisse Romande.

November, 1919, xxxix, 11.

Child Influenza at Geneva.—D'Espine attempts to trace the pandemic to the Eastern battle front in the spring of 1916, where it was hushed up by the German military censorship. In the following winter there appeared in northern France among the English troops a purulent bronchitis, accompanied by cyanosis, and followed frequently by death. Somewhat later the same affection appeared at Aldershot—"purulent bronchitis with cyanosis, and a mortality of 50 per cent." This preceded the pandemic by one year. In the pediatric clinic at Geneva early in 1918, and months before the pandemic, cases of asphyxiating bronchopneumonia were seen and the autopsy finds were those of the later pandemic. The bronchopneumonias were not primary, but followed simple colds. On February 3 cases of ordinary cropous pneumonia of fulminating type were recorded at the time as example of pneumococcemia. Two of these croupous cases were accompanied by two others with bronchopneumonia. In these cases influenza was excluded by the absence of Pfeiffer's bacillus. Yet the finds at autopsy agreed throughout with those seen later at the height of the pandemic. The lobar cases were associated with precocious empyema, and the bronchopneumonic cases were hemorrhagic. The last of this group of cases preceded the pandemic by only three weeks. It thus appears that the *genius epidemicus* was local, and that the pandemic, perhaps not essentially malignant, found the soil prepared for its malignant manifestations. It will be recalled that the summer mortality was especially high in Switzerland. The succession of cases ceased in March, 1919, after more than a year's continuous incidence. The Pfeifferian influenza of 1890 did not disappear for about five years.

La Presse Médicale.

November 7, 1919, xxvii, 66.

New Conception of Epilepsy.—Hartenberg evolves the following theory on a basis of clinical and experimental evidence. Many facts go to show that in a seizure there is a sudden arrest of functions of the brain without any reference to convulsions. These inhibitions, as seen in abortive and partial attacks, may be limited to a few functions. Especially in epileptic equivalents is this in evidence. These are seen in the earliest inception of the disease, and often form a background on which occur convulsive seizures. Thus the woman who has a single seizure during the menses may have daily some petty inhibition. In the actual crisis we see inhibitions at the start. Loss of consciousness is one. Loss of muscular tonus which causes the fall is another. The grand crisis is chiefly inhibition. The convulsion is not an inhibition, but a phenomenon of excitability which develops on a basis of inhibition. It stands in some definite association with coma, which the author classes as an inhibitory phenomenon. This association of convulsion and coma is not peculiar to epilepsy, but is universal. Coma is due to sudden anemia of the brain and the latter is necessary for the convulsive state. Experimentally shutting off the cerebral blood supply will elicit convulsions. But it may be claimed plausibly that while convulsions are not an inhibition they are made possible by suppression of a bridling force which the inhibition releases. The convulsions are due to the activity of certain basal motor nuclei, but are only made possible by a cortical motor inhibition. Thus the author takes issue with the theory that convulsions originate in the motor cells of the cortex. Sleep favors inhibition and explains nocturnal attacks. Bromides can abort convulsions, but have no influence on the petty manifestations (inhibitions), and bromides act upon the cortical motor cells. Thus far the author has given us nothing actually new, but now he calls attention to the action of strychnia in epileptics. In theory it should aggravate convulsive phenomena, but actually has the opposite action. Six cases are cited in which it appears that systematic doses of strychnia reduce notably the number of accesses. Even heroic doses of the alkaloid cannot be made to augment the latter. The author does not apparently advocate strychnia as a method of treatment.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK

Stated Meeting, Held December 22, 1919.

THE PRESIDENT, DR. CHARLES H. PECK, IN THE CHAIR.

Address of Retiring President.—Dr. CHARLES H. PECK made a brief address in which he expressed his thanks to the members for their active interest in the meetings of the past year and to the loyal support they had given to make proceedings of the County Society, the representative body of the medical profession of the most powerful city in the world, worthy to be considered the sound and sane judgment of that profession. Much of the important work of the Society was necessarily carried on in its executive sessions—the consideration of important legislation, the shaping of policies of far-reaching import to the profession and public at large, the discipline and control of those who would injure their good name or lower the standards of professional conduct. It was the most important that these executive sessions should truly represent the best sentiments of the whole society and not simply the views of a small party or clique who might happen to control the vote at a poorly attended meeting. A committee had been appointed to consider possible changes in their methods of conducting the executive work of the Society which might help to eliminate some of the faults and weaknesses of the present system. This committee should receive the earnest support and assistance of the members in every possible way, so that any change in the constitution or by-laws might represent the best judgment of the Society as a whole and show real constructive improvement in their methods of procedure. The scientific sessions should not be crowded out or permitted to become of minor importance. The County Society could and did furnish an audience worthy of any scientific presentation and one to stimulate readers of papers to their best efforts, whenever an attractive program was presented. The allotment of time between the executive and scientific sessions should be planned in some way to avoid undue curtailment of the latter, or its actual abandonment at any meeting, as happened at one meeting during the past year. Of the many important matters before the Society during the past year, Compulsory Health Insurance, Narcotic Drug Control, the Registration Bill, future plans for control of violations of the Medical Practice Act were worthy of special mention. He feared the members had not yet understood the significance of the announcement made at the last meeting, that, on account of increased cost and lack of funds, the Society had been forced to abandon its prosecution of illegal practitioners in this city, so long carried on by their able counsel, Mr. Whiteside, and his predecessors. This work had for many years been in the nature of a voluntary contribution by the County Society to the welfare of the public and the medical profession of the city. It must now be turned over to the District Attorney's office. These were only a few of the important matters which would come before the Society during the coming year. Dr. Peck thanked the committees which had devoted so much of their time and energy to the work of the Society during the past year, and especially their chairmen on whose shoulders so much of the burden had fallen, and the counsel of the Society, Mr. Whiteside. In conclusion, Dr. Peck congratulated the Society in having at their command, for help and guidance in solving the many important problems to come before them, the strong hand and sane judgment of their incoming president, Dr. Charles H. Chetwood.

Endocrinology and Gynecological Practice.—Dr. FREDERIC C. HOLDEN read this paper, in which he quoted from a number of investigators in the field of endocrinology to show the confusion prevailing at the present time in reference to this subject. He said he would not attempt to speak of endocrinology as applied to general medicine, but would limit himself to a few rational suggestions for its application in gynecology. Amenorrhea, primary in type, in young girls, when originating in a manner not possible of demonstration by the usual methods of examination, had been treated for many years by tonics, emmenagogues, perhaps by operative interference, or dismissed as the result of a developmental abnormality impossible to rectify in any way. A certain proportion of these cases were of course hopeless from the start, so far as the possibility of instituting menstruation was concerned. Many of these cases might be classified under the caption Froelich's syndrome or adipose-genital dystrophy. In these cases the amenorrhea had been considered to be a result of the obesity; it was but a part of the clinical picture of adiposity and sexual hypoplasia due largely to hypopituitarism. Amenorrhea when suspected of being a part of ductless gland perversion might be benefited by entire pituitary substance combined with corpus luteum or entire ovarian substance and thyroid. In cases of adiposogenital dystrophy, the pituitary needed marked stimulation. Ovarian substance and corpus luteum were required, but the ovary as a stimulator of menstruation had been to his mind overemphasized. Its coadjutors, the thyroid, adrenal, and pituitary were of vast importance. Dysmenorrhea was much less often amenable to ductless gland therapy. It might, however, be induced by a mild degree of genital hypoplasia in which the uterine and genital growth had been retarded somewhere between the infantile and pubescent stages. He had seen this type of case apparently benefited by thyroid and suprarenal substances. Menstrual headaches might be caused by hypopituitarism. Sterility was, of course, produced by many factors beyond the control of the endocrinologist. In treating a given case of sterility it must be borne in mind that over 40 per cent. of the cases of primary sterility, and still a larger percentage of the secondary type, were hopeless from the start, due to anatomical developmental abnormalities, neoplasms, or the ravages of inflammatory disease. There was no doubt that many operations formerly performed for the relief of sterility were done without giving due consideration to the entire body metabolism. This danger applied more to the gynecologist than to the general practitioner in that his vision was limited to the pelvis. Undoubtedly many cases of sterility responded to treatment by ovarian substance, and this combined with thyroid, suprarenal, or pituitary. The ovarian substance and corpus luteum should surely be given and the blood pressure and general metabolism used as an indicator as to whether thyroid or pituitary was indicated as a coadjutor. Active, robust patients exhibiting a high blood pressure seemed best influenced by thyroid association, while the asthenic type of individuals might benefit by association with pituitary substance. Nausea and vomiting of pregnancy responded in most cases to dietetic and psychical regulation. He had, however, recently seen several cases in which, after the usual methods failed, relief seemed to be obtained by the administration of corpus luteum. This might be administered by mouth, but the results seemed better if the preparation were put up in ampules and given hypodermically. He had seen no benefit from the administration of endocrines in threatened abortion, but in the hands of others it was reported to have gained results. In the type of cases many times classified as idiopathic fibrosis uteri, in which the pathologist reported after operation a normal uterus, were secondary to hypothyroid function and would respond to thyroid and posterior pituitary substance. By some endocrinologists the mammary gland and placental extracts were used upon the theory that they were the principal generators of an inhibitory substance upon the function of menstruation. Menopause symptoms, both artificial and natural, had for some time been subjected to ductless gland therapy with excellent results. The psychical rôle was a prominent factor in the production of menopause symptoms, and adverse suggestion should be avoided as much as possible. In cases in which the removal of both ovaries seemed necessary as a result of inflammatotry disease, he felt sure that emphasis upon the fact of removal tended to render less stable the patient's nervous mechanism. He postponed the mention of removal of the ovaries as long as possible and in the interim administered bromides with entire ovarian substance and corpus luteum and he felt sure that the annoying menopause symptoms were thus greatly mitigated, and in many cases they were practically overcome. It was in the menopause cases, both natural and surgical, that in his hands ductless gland sub-

stances had given the best results. Postoperatively they were well accustomed to the use of ductless gland substances as adrenalin and pituitary substance. Thus, almost without being aware of the fact, they had all added endocrines to their therapeutic armamentarium. The question was whether they could advance in this field or whether they were likely to become faddists. Kaurosis vulvæ and senile pruritus were conditions in which it had been noted for some time that ovarian substance and corpus luteum were of benefit. The dosage was of necessity indefinite because the amount of hormone varied in the same gland in different animals and at different times of the year and after methods of preparation. A general statement that he felt was applicable to endocrine therapy was that the doses had been too large. Two and one-half grains of corpus luteum a day would, as a rule, accomplish as much as 5 grains three times a day. One-half a grain of pituitary, three times a day, was as a rule sufficient. The desirability of small doses of thyroid need but be mentioned. Large doses of gland substances produced toxicity in many instances. While endocrinology must occupy a definite position in gynecology this position was a very minor rôle. He feared overenthusiasm and the application of endocrine therapy in cases in which the clinical picture was produced by local pathologycal conditions.

Endocrine Treatment in the Sterility of Women.—Dr. ARNOLD STURMDORF presented this communication, in which he said that to arrive at any true estimation of endocrine treatment in the cure of sterility it was essential to govern our considerations by established therapeutic postulates which, reduced to their simplest form, demanded the logical "Why, When, and How" of the method. One must know why endocrines were indicated in order to determine *when* they were indicated, and to formulate the *how* of their administration. From the therapeutic viewpoint the term sterility was purely relative. Ovulation, fertilization, and nidation, constituted the cardinal phases in the chronological cycle of conception, and any perversion in their normal occurrence determined sterility. We could not create a function, we could only attempt to activate one existing in a latent state, stimulate one that was deficient, or possibly mobilize one that was tentatively inhibited. The subtile biotactic factors that dominated ovular fertilization and nidation, were all susceptible to inhibiting influences, temporary or permanent, local or systemic, most of which involved problems far beyond our diagnostic horizon and therapeutic scope. The study of endocrinopathic sterility must begin and end with the development and function of the ovary as a link which was reciprocally dominated by every other link in the endocrine chain. The domination of the endocrines on the functional activity of the ovaries manifested itself from fetal life throughout the reproductive period to the stage of senescence. On the other hand, just as the determination of sex was decided in the ovum before fertilization, so the future fertility or sterility of the individual was frequently an ovular preordination governed by teratological laws and not those of endocrinology. We know that endocrinological disturbances could and did involve the reproductive organs, but we did *not* know how or why such involvement occurred. After calling attention to certain of the relations of the various glands to the female genitalia the speaker stated that every phase in the clinical problem of endocrinology revolved around the question of diagnosis. Such a diagnosis obviously implied in a given case, the *exclusion of every other pathogenic factor* in the causation of sterility and the elicitation of evident pathognomonic endocrine stigmata. Here we encountered our limitations for, in the present state of our knowledge, it was always difficult and frequently impossible to fulfill these demands. The nearer the symptom-complex conformed to a fully developed or readily demonstrable endocrinological type, the farther the sterility receded from therapeutic consideration. No one would attempt to treat the sterility of acromegaly, Graves' disease, myxodema, or Addson's disease. It was the woman with the ill-defined, obscure, and dubiously suggestive stigmata of endocrine disturbance, whose sterility offered the most fertile field for endocrine exploitation. The elicitation of semiologic criteria in these cases demanded the minutest analytical scrutiny of anamnestic, objective, and subjective details. To quote from Timme: "Never be satisfied with the apparently simple answer that might superficially appear, but always insist of tracing back to first beginnings even the most minute complaints referable to endocrine disturbance." The patient was then to be treated—irrespective of her actual gynecological complaints—on the basis of the original internal gland at fault. The application of direct functional tests, such as complement fixations and deviations, specific ferment reactions, adrenal mydriasis test, the hypophysis test, metabolic studies and sugar tolerance tests along the lines of Abderhalden's theories on the biochemical reactions among the protective or defensive body ferments, while as yet in their probationary stage, gave promise of future light in this perplexing semiologic labyrinth. The diagnostic and therapeutic problems became even more complicated in cases which revealed evidences of an endocrinopathic disturbance plus insidious gynecological infection. Often a vicious circle was established, in which the sterility with its ovarian origin presented the cause and not the result of a general endocrine disorder. If the same minute analytical scrutiny as applied to sterile women were applied to fertile women, it would reveal some evidence of endocrine disturbance in every instance, for paradoxical as it might appear, we found fecundity in pronounced endocrinipathics as we found sterility on normal women. To treat every case of sterility with endocrines, as recently advocated, was about as rational as to curette or incise every cervix for the same purpose, and would probably yield about the same results. It must always be borne in mind that we could not treat the sterility as such, we could only counteract some apparent underlying factor. Endocrinopathic sterility was neither a hypo, hyper, nor dysfunction of the ovary; the ovules were there, but ovulation was in abeyance; whether this was due to the absence of an activating or the presence of an inhibiting hormone we did not know, we could not tell, and could not consequently formulate any specific therapeutic indications. The speaker pointed out a number of the fallacies in connection with the theories upon which corpus luteum treatment for sterility were based, among them the fact that the active principles of corpus luteum were cyclic, that each phase must necessarily develop a corresponding gradation in biochemic potency; the degree of such potency could not possibly be the same throughout its monthly cycle, for if it were there could be neither beginning nor end to menstruation. This obvious postulate was entirely ignored in the preparation and administration of the available corpus luteum products and explained, in part at least, the contradictory results of their therapeutic application. Therapeutically both adrenalin and pituitrin exercised purely temporary effects on the genitalia; they did not replace the functional activity of the gland from which they were derived. When they knew "Why, When, and How," each of the internal secretions stimulated, or inhibited, when they had learned to recognize synergists and antagonists; when they could formulate their normal and pathological biochemical equations; when the pharmacological potentialities of animal extracts as applied to human functions were established, then, and not until then, would the "Why, When and How," of endocrine treatment in sterility emerge from pure empiricism into a rational practice based upon fixed fundamental principles.

Dr. WILLIAM W. HERRICK said if we were good or bad, wise or foolish, tall or short, fat or thin, successful or unsuccessful according to the balance of the varied functions of our endocrines, there was in the thought a comforting release from accountability. That the fault might be in our glands and not in ourselves that many of us were underlings might give a measure of satisfaction. However, just as we were unable to dispense widely with courts because the larger proportion of the inmates of our jails were sick men in one sense or another, so those of us interested in internal medicine might not willingly abandon to the endocrinologist the entire range of medicine. To the internist the glands of internal secretion seemed at present the chief field of medical speculation with the majority interest on the long side of the market. A note of conservation would seem in order and an investigation of underlying values wise. We were ready to admit the facts con-

cerning hyperthyroidism. Long series of clinical observations, supplemented by the findings of the laboratory, capped by calorimetry and the careful work of Dr. Kendall in the isolation of thyroin seemed to have brought our knowledge to a very satisfactory state, so that therapy was based upon apparent facts and was correspondingly successful. In the obverse condition, that of thyroid intoxication or overactivity, we were less secure. To be sure, the clinical picture was generally clear. The calorimeter enabled us to estimate with some accuracy the degree of the disturbance. Rest, certain drugs, irradiation, and surgery supplied means of treatment that were exceedingly helpful. However, when we attempted to fathom the relations of thyroid intoxication to the sympathetic nervous system, the cardiovascular system, and the other endocrines we encountered at once a complex too vast to compass with our present knowledge. In considering the pituitary gland we were taking a still further step into the unknown. To be sure, the anatomical divisions of this organ and their function were roughly known and the grosser pathological changes were recognizable clinically. An active principle, pituitrin, was of limited but real therapeutic value. The substitution therapy of diseases of the hypophysis was far from satisfactory, although a certain measure of success has been achieved in the various phases of the so-called Froehlich's syndrome. We knew even less of the adrenals than of the hypophysis. Again a valuable hormone has been isolated. We were aware of the clinical manifestations of grave changes in structure or function of this gland. The complex relationship to the vegetative nervous system, the cardiovascular system and the other endocrines was again a baffling complex, while the substitution therapy was again disappointing. Consideration of the gonads has been amply taken up by other speakers. Regarding the thymus one might accept any opinion he might choose. There was a sufficient variety to suit all sorts of opinion. The contradictory reports of experimental workers and of clinicians give ample proof of our lack of definite knowledge of this gland. For the present the internist might perhaps content himself with recognition of the more marked changes in structure which gave rise to mechanical symptoms and the status thymolymphaticus. A few days ago a group of senior students presented a young man suffering from asthenia, low blood pressure and a subnormal temperature, and who showed a few flecks of subcutaneous pigment. Having acquired what one might call the endocrine bias, these students had adopted a preconceived idea that such a case was necessarily one of hypoadrenalism. Rather an elaborate study of the blood sugar values and the response to adrenalin injection had been made which seemed to bear out the premises. The only flaw in the argument was that an ordinary physical examination revealed an early tuberculosis of the right upper lobe. No one could deny that the patient might have deficient adrenals, but he dared predict that rest, fresh air, and ample food would accomplish much more in this case than treatment with adrenal extract. This case might serve to emphasize what would seem of fundamental importance, namely, that back of the endocrines and responsible for their disturbance other conditions might lie. These might be infections, metabolic disorders, psychic states which might be entirely overlooked if one's vision was limited. Was it not well to emphasize certain facts with which pathologists were familiar, that the thymus gland diminished in size, or even largely disappeared as a result of prolonged, wasting disease; that posterior basilar meningitis produced disturbance of the pituitary gland, which might be expressed as a diabetes insipidus, that, as Mills had shown, the tastes were profoundly affected in pneumococcic infections. The effect of infection, focal and otherwise, on the thyroid gland has been emphasized by various observers. The acute degeneration of the adrenals found in those dying from diphtheria was well known. Those of us who had lately seen hundreds of necropsies in soldiers dying from acute disease were much impressed with the acute degeneration of the adrenals in these cases. The diminution of chromaffin substance, the cloudy swelling, the fatty changes, the not infrequent hemorrhages were notable. The disturbances of the menopause might not always be due to ovarian hypofunction; a possible early renal insufficiency or cardiac disturbance, or the pronounced anaemia which often accompanied the menorrhagias of this period, were examples of considerations not to be left out of account. Dr. Herrick emphasized the association of the endocrines with the entire complex of the body frame and the futility of considering these glands as structures apart from the whole. The specialist in endocrinology was to be encouraged. We needed his pioneer enthusiasm. It was for him to draw the clinical picture, not of the grosser changes which all of us could recognize, but of the *formes frustes*, the less pronounced variations from the normal. These pictures ought not to be sketched by fancy or imagination, or spring from bare empiricism, but would be prized, as they were based not only on clinical observation and impression, but on a correlation of this with laboratory study and necropsy findings.

Dr. WALTER TIMME said the discussion of this subject this evening had recalled that some six or seven years ago a paper was read on the "Sins of Commission and Omission in Gynecology" and Dr. Cragin in discussing it said there were only sins of commission, there were no sins of omission. This evening's proceedings made that point worth remembering. In gynecology only a portion of endocrinology was applicable and in their field the gynecologists would perhaps agree among themselves. As a matter of fact, they had shown no vital disagreement. Dr. Bandler stated that he had success in endocrine therapy and Dr. Sturmdorf that the problem of endocrinological sterility revolved around diagnosis and that diagnosis implied the exclusion of every other pathogenic factor before the endocrinological was tenable, and both were right. Perhaps it needed a neurologist to straighten out the affairs of the family. Dr. Holden discussed endocrine therapy in gynecological practice, but his discussion of the subject was much broader than appeared from the title of the paper. One had to consider the whole field of endocrine function before he could limit himself to any particular section. Endocrine therapy should be directed not to such a point as sterility, or headache, or pigmentation; one must go behind such symptoms and study the patient he was treating. If one could by chance hit upon the proper treatment in a given case then the symptoms depending on that disturbance disappeared. That was merely empirical. The proper way to approach the problem was not from one minor point, but from the broader standpoint of the subject as a whole. Dr. Holden stated that we knew very little of the ovarian hormones and that the adrenalin hormone was the only one that had been isolated. That was not quite correct. Dr. Kendall had isolated the thyroid hormone and Dr. Robertson had isolated tethelin from the anterior lobe of the pituitary. We could not as yet present the whole subject of endocrinology from the etiology of a disturbance through to the treatment in a well-ordered and logical manner, but there were very few diseases in which this could be done, and in spite of the gaps in our knowledge we treated many cases successfully and are filling in the gaps year by year. Dr. Holden had said that amenorrhea in the Froehlich type could be helped by a combination of pituitarin and luetin. In boys with Froelich's syndrome very good results could be had with anterior pituitary injections. This emphasized one statement that Dr. Sturmdorf made, namely, that we could only stimulate a function but that we could not produce a gland where no normal gland was present. In many cases of Froehlich's disease boys have been helped by anterior lobe of the pituitary, given by feeding and hypodermically. Dr. Timme objected to the designation of endocrine disturbances by terms suggesting an entity such as Froehlich's disease, status lymphaticus, Addison's disease, etc., because with or without our help they passed on to other conditions. These co-called syndromes were only cross sections in dynamic progressive conditions and if looked at in this way a much greater progress in their understanding would be possible than if they were regarded as definite diseases, such as pneumonia or typhoid fever. Dr. Holden mentioned menstrual headaches as produced by hyperpituitarism. The headaches that accompanied pituitary disturbance were not due, as a rule, to glandular activity but to a mechanistic series of events. The pituitary gland became hyperplastic, but its increase

in size in the sella turcica, in a space too small to accommodate it gave rise to headache. After years these headaches might cease as the result of the enlarged gland eroding the sella turcica so that it could function without infringing on the capsule. This relief might be brought about earlier by giving pituitary substance so that the demand on the gland might be lessened and in these cases the feeding of posterior pituitary lobe had been eminently successful. Dr. Holden, in speaking of specific methods of treatment, stated that one and one-half or two grains of corpus luteum were as efficient as five grains three times a day; and he was right on that point; but when he said that one-half a grain of pituitary was sufficient in gynecological disturbances we must disagree for the reason that occasionally one must give much greater doses, and keep them up much longer—perhaps for as long as one must administer thyroid in myxodema—and that was forever. Where the pituitary was enclosed in a small sella turcica the feeding of pituitary must be kept up indefinitely in the smallest possible doses the patient felt were helping him, and the patient himself became very adept in regulating his dose. Dr. Sturmdorf, he thought, had the right idea in realizing the limitations of endocrinology in a special field like gynecology, and in warning against the indiscriminate use of endocrine therapy in gynecology. Dr. Bandler had stated that it was not necessary to understand just how a patient had come to a certain condition. Dr. Timme could not agree on that point. If one said a patient needed thyroid, pituitary, or a combination of glandular extracts, the question was by what process did the patient arrive at his abnormal state; otherwise such treatment would be more or less empirical. He felt that an understanding of the therapy would certainly be helped by knowing the process by which these patients reached their present condition. Dr. Sturmdorf had mentioned the fact that sterility need not be an endocrine defect or anomaly and that it was important that everything else that might cause it be excluded before attempting to apply glandular therapy, even though such therapy might be a powerful adjunct to other treatment. Dr. Herrick had said that from the standpoint of the internist there was but one glandular disturbance, hypothyroidism, about which they possessed definite knowledge. Unfortunately, even of that they were not so sure. Dr. Timme stated that they had yet to understand which were hypothyroid cases and which adrenal, and calorimetric tests had not helped them in that respect. The case of hypoadrenalism that had tuberculosis he did not think fitted into this discussion. because the fact that the man had an apical tuberculosis did not exclude the condition of hypoadrenalism. As a matter of fact, Dr. Pottenger had observed that long before tuberculous lesions could be demonstrated in tuberculosis there was a hypoadrenalism. Whether endocrine therapy was to be applied specifically to sterility, headache, pigmentation, or to lower blood pressure, it should only be applied as it fit into the picture of the patient as a whole. The important point was that one should understand his patient long before he attempted to treat him for one of these particular complaints. One might ask how Addison's disease was treated or how to treat Graves' disease. If one knew just how to treat these diseases it could be told in three lines. As it was, one treated each patient and not his disease, though incidentally the disease might get better. Hence the multiplicity of methods adopted to conform to the individual need.

Dr. STURMDORF, in closing, said the object of his paper was to elicit, if possible, the "rationale" of endocrine treatment in the sterility of women; this object was not realized by the present discussion. He did not question that every woman reported as cured of her sterility by endocrines was possessed of a baby. He did not question facts. but he disputed their interpretation. The most significant feature in all the enthusiastic records of successes was the omission of failures and their explanation; surely no method of treatment known today could boast 100 per cent. cures, not even mercury or salvarsan in syphilis. The demonstration of endocrinopathic stigmata in a given case did not necessarily prove the endocrinopathic cause of the sterility, and a subsequent fecundity in such a case did not prove the cure by endocrines. The annals of medicine were glutted with marvellous cures that did *not* cure, from tuberculosis to cancer and from locomotor ataxia to epilepsy. All readily demonstrable types of endocrine disturbances demanded a lifelong substitution treatment, and at the present time the diagnosis of functional temporary types was at best problematical and the results of their treatment questionable. The doses were gradually being reduced to infinitesimal proportion and might soon disappear entirely.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, October 1, 1919.

THE PRESIDENT, DR. WILLIAM J. TAYLOR, IN THE CHAIR.

Brachial Birth Palsy, A Pseudo Paralysis of Shoulder-Joint Origin.—Dr. T. TURNER THOMAS in presenting this paper stated that obstetrical or brachial birth palsy represented only one phase of a much larger shoulder joint problem. Almost, if not all shoulder joint injuries were associated with a brachial paralysis, palsy, or weakness of varying degree and duration. Very rarely would an actual nerve rupture be associated with the paralysis. The best evidence of the absence of such a nerve rupture was said to be the almost uniform and gradual disappearance of the paralysis. This was easily proven in connection with the adult cases, and seemed to be true of the obstetrical, in which the paralysis was usually of longer duration and more difficult to follow up. With the crippling of the limb persisting to adult life it would probably be found in all cases that a posterior dislocation of the shoulder was associated, often with some moderate permanent disturbance in the elbow joint. In obstetrical paralysis, soon after birth, there was a profound and almost, if not complete, paralysis of the whole limb, and not a paralysis limited to the small Duchenne-Erb group of muscles. This extensive paralysis, the author said, was best explained by the inclusion of the branches of the brachial plexus in an axillary inflammation consequent upon a birth injury of the shoulder joint. The extravasation into the axilla, of blood and synovial fluid, caused an immediate inflammation, and later, cicatricial tissue, all of which was probably absorbed in time, thus accounting for the disappearance of the paralysis. Such a pathology, Dr. Thomas said, had been well established by operative and post-mortem findings in the obstetrical and adult cases. The Duchenne-Erb localization of the paralysis by electrical reaction to the deltoid, biceps, brachialis anticus (Duchenne and Erb), infraspinatus (Duchenne) and supinators of the forearm (Erb), while widely accepted, was not corroborated. In his first four cases Duchenne had found posterior dislocation of the shoulder which he had said occurred at birth and was chiefly responsible for the paralysis. He had thought, however, that some of the paralysis was due to injury of the brachial plexus. In four later cases he did not find dislocation of the shoulder and attributed the paralysis entirely to injury of the brachial plexus. Since then, Dr. Thomas said, practically nothing had been said of a shoulder joint origin, the dislocations passing unrecognized, and all cases being attributed to injury of the brachial plexus. Since 1911, when the shoulder-joint injury was offered as the primary cause, this theory had made rapid progress. He thought it very probable that sufficient traction upon the head at birth to rupture the brachial plexus had never been applied in a successful delivery.

Dr. FRANCIS X. DERCUM felt there was the inclination to agree with Dr. Thomas regarding the nerve involvement which might be present as secondary to the trauma of the joint.

Dr. CHARLES W. BURR asked whether in Dr. Thomas' opinion anything should be done with the children at birth—whether anything could be done; or whether it was better to wait until the child was several months old before operating.

Dr. A. P. C. ASHHURST said that inquiry into the subsequent history of patients seen at the Orthopedic Hospital with birth injuries of the shoulder showed that they did not return because the parents believed that nothing could be done. In nearly all the cases there was persisting disability. With acceptance of Dr.

Thomas' theory there would be a change in the therapeutics and little further need of the neurologist in the cases. Obstetricians, he felt, ought to take more notice of the injury and prevent its recurrence. In several families in which such injury was present he had found that in one family three children had been severely injured at birth and the fourth killed at delivery. In another instance brothers and sisters had died at birth; in another, the sixth child only survived delivery. It was to be remembered also that these injuries did not all occur in difficult labors.

Dr. ALFRED GORDON regarded Dr. Thomas' advice and work perfectly satisfactory from the practical standpoint, and thought operation should be done as early as possible. In the matter of pathogenesis, however, he felt that he must differ with him. In the child presented by Dr. Thomas operation had been done early and there had been use of the arm for three and a half years; the type of atrophy present was such as was seen in typical muscular atrophy due to disease of the spinal cord and nerves, and he was inclined to believe that there was a real injury of the nerve trunks from the very beginning. In some cases there was found even a lesion of the cells of the spinal cord. Warrington was quoted as reporting 11 cases of complete recovery without operative procedure in a series of 32 cases; Bruns, 6 out of 11. Although instances were observed of adults in whom in infancy there had been brachial paralysis with recovery without operation, from a practical standpoint Dr. Gordon said he would follow the advice of Dr. Thomas in the matter of treatment.

Dr. THOMAS, in closing, said that all his work on the subject under discussion had been intended primarily to attract attention to the great need of recognizing the shoulder condition at birth and of correcting any displacement at that time. Evidence, he said, was being rapidly collected that the dislocation was present at birth. The only time when the joint displacement could be corrected was at birth. In the most severe cases the condition could be greatly improved at any stage, but it was never possible to restore the joint to the normal after many weeks. The greatest obstacle to the recognition of the dislocation was the failure to look for it, because of the general faith in the theory of a plexus rupture. The basic lesion, in his opinion, was the dislocation, anterior in adults, and posterior at birth. The cases without dislocation were merely those in which the same causal force was not severe enough to produce a dislocation, and stopped at a sprain. Dr. Thomas said that his observations upon the various phases of traumatic brachial palsies were rock-rooted in the work of the late Dr. G. G. Davis, professor of applied anatomy in the University of Pennsylvania, and his endeavor to carry some of the results of Dr. Davis' work on the cadaver over into surgical practice.

Conjugal Syphilis of the Nervous System.—Dr. ALFRED GORDON presented a review of disorders occurring in syphilitic affections of the nervous system, and gave a detailed account of 32 persons followed up for a number of years with various nervous disorders of syphilitic character. Not only wives and husbands, but other relatives—sisters, brothers, who cohabited with syphilitic parents, developed later in life neurosyphilis. In the latter case especially the question of hereditary syphilis was totally eliminated from the present series. The investigations proved of particular interest from the standpoint of prophylaxis.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NORTH CAROLINA BOARD OF MEDICAL EXAMINERS.

Raleigh, 1919.

ANATOMY.

1. Describe the osteology of the head of the humerus. Name the muscles attached to it and describe one of them.

2. What structures would you cut in doing an amputation at the upper third of the femur?

3. Describe the portal circulation; what is the collateral circulation when the portal vein is blocked?

4. (*a*) Name the chambers of the heart. (*b*) The valves of heart and give their surface markings. (*c*) What is the nerve supply of the heart?

5. Give the branches of the common carotid artery.

6. Name the foramina at the base of the skull and the structures transmitted through each.

7. Discuss the anatomy of the uterus and vagina. What is the pouch of Douglas?

8. Give an anatomical description of the bronchial tubes.

9. Name and locate the ventricles of the brain. Where may the cerebrospinal fluid be normally found? How does it pass from the lateral ventricles to the cord?

10. Explain the following reflexes: (*a*) Pain in the region of the right shoulder in diseases of the liver and gall bladder; (*b*) rigidity of the abdominal wall in the acute inflammation of the appendix; (*c*) pain in the testicle during the passage of a stone from the kidney.

PHARMACOLOGY, MATERIA MEDICA, AND THERAPEUTICS.

1. What are fluid extracts? (*a*) How many grains of the drug would be required to make 1,000 c.c. of the fluid extract of aconite?

2. In what official preparation of digitalis do we find the diuretic principle?

3. How much strychnine in 10 c.c. of the tincture of nux vomica?

4. Name the official preparations of opium, with dose of each.

5. Give reason why the use of the tincture of iodine was discouraged as an antiseptic in front line first-aid work.

6. Name the antidote for poisoning by (*a*) strychnine, (*b*) opium, (*c*) phenol, (*d*) oxalic acid, (*e*) cocaine, and (*f*) arsenic.

7. What are the therapeutic uses of alcohol?

8. Give the treatment and prognosis of progressive pernicious anemia.

9. Define briefly but clearly (*a*) serum therapy, (*b*) antitoxin therapy, (*c*) prophylaxis.

10. Write a prescription for the following: (*a*) Influenza, (*b*) acute gastritis, (*c*) migraine, (*d*) sciatica, (*e*) cystitis.

11. Give briefly the treatment for sprue.

12. How can ophthalmia neonatorum be prevented and how treated?

CHEMISTRY AND HYGIENE.

1. What is inorganic chemistry? Organic chemistry? What element is a necessary component of all organic compounds?

2. In the purification of drinking water, describe distillation, filtration, precipitation. Which of these is absolutely safe and which is applicable to municipal supplies?

3. What is meant by a chemical antidote, with an example? What is meant by a physiological antidote, with an example?

4. What is the acid constituent of gastric juice? urine? and bile?

5. Give an approved method for determining the presence of glucose in urine. What disease condition does the presence of glucose indicate?

6. What are peptones and how are they produced? How do the albumins differ from peptones? Give a test for peptones.

7. Describe a chemical test for blood.

8. Describe the appearance of urea and uric acid, and give a chemical test for each.

9. What are the necessary hygienic conditions of a model sleeping-room floor area, height of walls, window area, and cubic air space to each occupant?

10. What diseases are preventable by timely administration of sera and vaccines?

PHYSIOLOGY, PATHOLOGY, AND BACTERIOLOGY.

1. (*a*) Explain briefly what is meant by nitrogen equilibrium. (*b*) Is it possible for one who is in nitrogen equilibrium to be gaining or losing in weight? Give reason for answer.

2. What danger may result from transfusion of blood from the veins of one animal to the veins of another, or from one individual to another? Explain cause.

3. Give briefly the pathology of round-cell sarcoma.
4. Describe the pathological changes that take place in acute endocarditis.
5. Give the pathology of gastric ulcer.
6. Name three parasitic fungi which are causes of diseases and the disease caused by each.
7. What are protozoa? Name a pathogenic protozoon. Outline laboratory method of examining for same.
8. Define amboceptor, anaphylaxis, bacterium, saprophyte, micron.

PRACTICE OF MEDICINE.

1. What diseases affect the pleura? Give physical signs; how would you differentiate?
2. Name and describe three varieties of angina.
3. What is the etiological factor in the production of scurvy?
4. Describe two varieties of leucemia.
5. What is the significance of an enlarged spleen? In what diseases do you find it enlarged?
6. What is the significance of occult blood in the stools?
7. Give symptoms of pyloric spasm; etiology; treatment.
8. What area of the brain is most often affected by cerebral hemorrhage?
9. Define delusion, hallucination.
10. Define briefly the etiology of eczema.

ANSWERS.

ANATOMY.

1. The *head of the humerus* is nearly hemispherical, and articulates with the glenoid cavity of the scapula; it is directed upwards and inwards. At the circumference of the head is a slight constriction, called the (anatomical) neck; this gives attachment to the capsular ligament, and is perforated by a number of vascular foramina. The greater tuberosity is situated on the outer side of the head; on it are three facets, giving attachment to the supraspinatus, infraspinatus, and teres minor muscles. The outer side of this tuberosity is rough, and is continuous below with the shaft of the humerus. The lesser tuberosity is in front of the head and is directed inwards and forwards. It presents a facet to which the subscapularis is attached. Between the two tuberosities lies the bicipital groove, in which are the long tendon of the biceps and a branch of the anterior circumflex artery.

The SUPRASPINATUS takes its *origin* from the supraspinous fossa of the scapula, and the aponeurosis which covers the muscle. It is *inserted* into the upper facet on the great tuberosity of the humerus, and is closely connected with the capsular ligament. The muscle is directed outwards and downwards, and the *nerve supply* is the suprascapular nerve (from the brachial plexus.)

2. *Structures severed in amputation of femur at upper third*—Skin, fascia, tensor vaginæ femoris, femoral artery and vein, profunda femoris (artery and vein), long saphenous vein and nerve, gluteal vessels, sciatic nerve, and the following muscles: Adductor longus, adductor brevis, adductor magnus, gracilis, semitendinosus, semimembranosus, biceps, gluteus maximus, sartorius, rectus femoris, vastus externus, vastus internus, crureus, and the femur.

3. By the *portal circulation* is meant the capillary circulation of venous blood in the liver, between the portal and hepatic veins.

Portal circulation: "The hepatic artery and the portal vein convey blood to the liver. The artery carries arterial blood, and the vein food-laden venous blood from the walls of the alimentary canal, and from the spleen and pancreas. Both vessels enter the liver at the transverse fissure, and they ramify in its interior, breaking up into small terminal branches which run between the lobules and send fine capillary branches into their substance; from these latter branches the blood passes into the capillary tributaries of the intralobular veins, thence to the sublobular veins, and from the sublobular veins to the hepatic veins, which terminate on the posterior surface of the liver in the inferior vena cava."—(Bain's *Medical Practice.*)

When the portal vein is blocked, collateral circulation may be carried on: (1) Between the superior hemorrhoidal vein and branches of the middle and inferior hemorrhoidal veins; (2) between branches of the gastric and esophageal veins; (3) between the superficial veins of the abdominal wall and the portal vein.

4. *The chambers of the heart* are: The left auricle, left ventricle, right auricle, and right ventricle.

The valves: The *aortic valves* are behind the third intercostal space, close to the left side of the sternum. *Pulmonary valves*, in front of the aortic, behind the junction of the third rib, on the left side, with the sternum. *Tricuspid valves*, behind the middle of the sternum, about the level of the fourth costal cartilage. *Mitral valves* behind the third intercostal space, about one inch to the left of the sternum.

The nerve supply of the heart: This is derived from the superficial and deep cardiac plexuses, with fibers from the vagus, spinal accessory and sympathetic nerves.

5. *Branches of the common carotid artery* are its two terminal branches, the external carotid and internal carotid. Occasionally it gives origin to the superior thyroid, inferior thyroid, ascending pharyngeal or vertebral artery.

6. FORAMINA AT THE BASE OF THE SKULL.—ANTERIOR FOSSA presents one single foramen and four in pairs:—*Foramen cæcum* transmits a small vein to the superior longitudinal sinus; *Ethmoidal fissure* transmits nasal branch of ophthalmic nerve; *Olfactory foramina*, for filaments of olfactory bulb; *Anterior ethmoidal* transmits anterior ethmoidal artery and nasal nerve; *Posterior ethmoidal* transmits posterior ethmoidal artery and vein.

MIDDLE FOSSA presents nine pairs:—*Optic foramen*, transmits the optic nerve and ophthalmic artery; *Foramen lacerum anterius*, or sphenoidal fissure, transmits third, fourth, three branches of the (third) ophthalmic division of the fifth, and sixth nerves, orbital branch of the middle meningeal, recurrent branch from the lacrymal artery, filaments of the sympathetic, and ophthalmic vein; *Foramen rotundum* transmits second division of fifth or superior maxillary; *Foramen Vesalii* transmits a small vein; *Foramen ovale* transmits third division of fifth or inferior maxillary nerve, small petrosal nerve, and small meningeal artery; *Foramen spinosum* transmits middle or great meningeal artery; *Foramen lacerum medium* transmits the internal carotid artery, carotid plexus, a branch of ascending pharyngeal artery, and the Vidian or large petrosal nerve: *Foramen* for lesser petrosal nerve; *Hiatus Fallopii* transmits petrosal branch of middle meningeal artery and petrosal branch of the Vidian nerve.

POSTERIOR FOSSA presents six pairs and one single one:—*Meatus auditorius internus* transmits auditory artery, facial and auditory nerves; *Aquæductus vestibuli* transmits small artery and vein and lodges a process of dura mater; *Foramen lacerum posterius*, or jugular foramen transmits inferior petrosal sinus and lateral sinus, forming the internal jugular vein, glossopharyngeal, pneumogastric, and spinal accessory nerves, and meningeal branches of ascending pharyngeal and occipital arteries; *Mastoid foramen* transmits small vein to the lateral sinus and small artery from occipital to the dura mater; *Anterior condyloid foramen* transmits meningeal branch from ascending pharyngeal artery and hypoglossal nerve; *Posterior condyloid foramen* transmits posterior condyloid vein; *Foramen magnum* transmits vertebral arteries, medulla oblongata and its membranes, and the spinal accessory nerves.—(From Young's *Handbook of Anatomy.*)

7. In the nulliparous adult the uterus is about three inches long, about two inches wide at the upper part, and about one inch thick. The uterus lies between the rectum behind and the bladder in front; it is below the abdominal cavity, and above the vagina. Its position is one of slight anteflexion, with its long axis at right angles to the long axis of the vagina. The anterior surface of its body rests on the bladder, and the cervix points backward toward the coccyx. The uterus is not fixed, but moves freely within certain limits. It is held in place by ligaments. (1) *Broad ligaments*, which extend outward on each side from the side of the uterus to the side of pelvis. (2) *Rectouterine ligaments*, which extend backward from the intraperitoneal portion of the cervix uteri to the peritoneal investment of the rectum. (3) *Round ligaments*, which extend from

the uterus just below the Fallopian tubes, through the inguinal canal to the labia majora. (4) The *ovarian ligaments*, which extend from the superior part of the uterus, behind the Fallopian tubes, to the inner end of the ovary. (5) The *uterosacral ligaments*, which extend from the highest part of the cervix uteri to the sides of the sacrum opposite the lower border of the sacroiliac synchondrosis.

The *vagina* extends from the vulva to the uterus, lying behind the bladder and in front of the rectum; the anterior and posterior surfaces are in apposition; the anterior wall is about 3½ in. long, and the posterior wall about 4½ in. Above, it embraces the cervix of the uterus.

The *pouch of Douglas* is a recess formed by the peritoneum between the rectum and the upper part of the posterior wall of the vagina; it corresponds to the rectovesical pouch in the male.

8. *The bronchial tubes:*—"The bronchi divide and subdivide, in the substance of the lungs, into a number of smaller and smaller branches (bronchial tubes), which penetrate into every part of the organ, until at length they end in the smaller subdivisions of the lungs called *lobules*. All the larger branches have walls formed of fibrous tissue, containing portions of cartilaginous rings, by which they are held open, and unstriped muscular fibers, as well as longitudinal bundles of elastic tissue. They are lined by mucous membrane the surface of which, like that of the trachea, is covered with ciliated epithelium, but the several layers become less and less distinct until the lining consists of a single layer of short columnar cells covered with cilia. The mucous membrane is abundantly provided with mucous glands. As the subdivisions become smaller and smaller, and their walls thinner, the cartilaginous rings become scarcer and more irregular, until, in the smaller bronchial tubes, they are represented only by minute and scattered cartilaginous flakes. When the bronchial tubes, by successive branchings, are reduced to about 1/40 of an inch in diameter they lose their cartilaginous element altogether, and their walls are formed only of a fibrous elastic membrane with circular muscular fibers; they are still lined, however, by a thin mucous membrane with ciliated epithelium, the length of the cells bearing the cilia having become so far diminished that the cells are now cubical. In the smaller bronchial tubes the muscular fibers are relatively more abundant than in the larger ones, and form a distinct circular coat. . . . On entering a lobule, the small bronchial tube divides and subdivides; its walls at the same time become thinner and thinner, until at length they are formed only of a thin membrane of areolar, muscular, and elastic tissue, lined by a layer of pavement epithelium not provided with cilia. At the same time they are altered in shape; each of the minute terminal branches widens out funnelwise, and its walls are pouched out irregularly into small saccular dilatations, called air-sacs. Such a funnel-shaped terminal branch of the bronchial tube, with its group of pouches, or air-sacs, is called an infundibulum, and the irregular oblong space in its center, with which the air-sacs communicate, an intercellular passage."—(Halliburton.)

9. There are five ventricles of the brain. The *two lateral ventricles* are situated one in each cerebral hemisphere; the *third ventricle* is situated in the middle line, between the two optic thalami; the *fourth ventricle* is the expanded portion of the central canal of the spinal cord; it is a diamond-shaped cavity situated between the cerebellum behind, and the posterior surface of the pons and medulla in front. The *fifth ventricle* is between the two layers of the septum lucidum. Cerebrospinal fluid may be normally found in the ventricles of the brain, in the central canal of the spinal cord, and in the subarachnoid space.

The cerebrospinal fluid passes from the lateral ventricles through the foramen of Monro into the third ventricle; then through the aqueduct of Sylvius (or iter a tertio ad quartum ventriculum) into the fourth ventricle, through the latter, and into the central canal of the spinal cord.

10. *Pain in the region of the right shoulder in diseases of the liver and gall bladder* is transmitted from the latter by way of the right phrenic nerve to the fourth cervical nerve, thence to the supraacromial nerve.

Rigidity of the abdominal wall in acute inflammation of the appendix is due to the fact that the same nerves which supply the peritoneum supply also the abdominal muscles and the skin which overlies them.

Pain in the testicle during the passage of a stone from the kidney is due to the fact that there is a communication between the renal plexus and the spermatic plexus.

PHARMACOLOGY, MATERIA MEDICA, AND THERAPEUTICS.

1. *Fluid extracts* are concentrated solutions of vegetable drugs, of such strengths that one cubic centimeter of the fluid extract represents one gram of the drug; or one minim of the fluid extract represents one grain of the drug.

One thousand grams (=15,432½ grains) of aconite are required to make 1000 c.c. of the fluid extract of aconite.

2. The diuretic principle of digitalis is found in the Infusion of Digitalis.

3. In 100 c.c. of tincture of nux vomica, there is 0.1 gram of strychnine; therefore in 10 c.c. of tincture of nux vomica, there is 0.01 gram of strychnine.

4. OPIUM. *Official preparations, with doses:* Powdered opium, gr. j; extract of opium, gr. ss; powder of ipecac and opium, gr. vijss; deodorized tincture of opium, ♏viij; granulated opium, gr. j; morphine, gr. ⅛, morphine sulphate, and hydrochloride, each gr. ⅛; codeine, gr. ½; codeine sulphate, gr. ½; apomorphine hydrochloride, gr. 1/10.

5. *Tincture of iodine in front line first-aid work:* "In general the results as regards the prevention of sepsis have been disappointing, mainly it would appear because the injured man is not apt in most cases to put the iodine where it can reach the focus of infection. The presence of much blood and prolonged oozing are, of course, inimical to the exercise of germicidal action. Usually little more is accomplished than a fair cleansing of the adjacent skin."—(Dakin and Dunham's *Handbook of Antiseptics*).

6. *Antidote for strychnine*, potassium permanganate; for *opium*, potassium permanganate; for *phenol*, syrup of lime; for *oxalic acid*, calcium chloride or lactate; for *cocaine*, tannin; for *arsenic*, ferric hydrate with magnesia.

7. *Therapeutic uses of alcohol:*—"Alcohol is employed as an evaporating lotion for sprains, bruises, and local inflammations, and its rubefacient and astringent effects are also made use of in various conditions. Given internally, it may relieve gastric pain and is sometimes of service in checking nausea and vomiting. It is useful in diarrheal affections and in intestinal as well as gastric colic. Alcohol is of immense advantage in many cases of febrile disease, when during critical periods it sustains the vital powers by supplementing the insufficient quantity of nutriment which the system is capable of appropriating and at the same time stimulating the digestion, and thus enabling the patient to dispose of an increased amount of food. It is also highly useful in arousing and supporting the flagging powers in sudden depression of the system, as in shock, syncope, severe hemorrhage, and poisoning by various drugs. In carbolic acid poisoning and snakebite it likewise has a direct antidotal effect. In certain chronic conditions it is of undoubted benefit, but the danger of the patient's contracting the alcoholic habit must always be taken into consideration."—(Wilcox's *Materia Medica.*)

8. *Treatment of pernicious anemia:* "Fresh air, rest and a diet as liberal as the digestive powers of the patient will permit are requisite. Warm salt baths and massage are valuable adjuvants to internal treatment. The teeth should receive careful attention. If there be gingivitis or pyorrhea alveolaris, antiseptic mouthwashes should be used at frequent intervals. Arsenic is the most valuable drug. It may be given in the form of Fowler's solution, the dose being gradually increased from 2 or 3 to 15 or 20 minims three times a day. Iron is rarely of service. Bone-marrow is sometimes efficacious. Inhalations of oxygen have been recommended. Appropriate anthelmintic remedies should be given, of course, in the cases in which intestinal parasites are present. Digestive disturbances are often benefited by diluted hydrochloric acid and a bitter."—(Stevens.)

The *prognosis* is very unfavorable, most cases ending fatally.

9. "*Serum-therapy proper* is the prophylactic and curative treatment of certain infectious diseases by the subcutaneous or intravenous administration of a blood-serum containing an antibody (antitoxic, bactericidal, etc.) which is specific to the particular disease. As generally used, however, the term includes also the treatment of some of these affections by vaccines and by the toxic products (toxins) of attenuated cultures of their respective microbes; but these toxins, though sometimes grown on blood-serum, may be produced on other media, and are never administered in a blood-serum, as the antibodies invariably are."—(Potter's *Materia Medica.*)

Antitoxin therapy is the use of antitoxins for the prevention and cure of certain specific diseases (such as diphtheria and tetanus).

Prophylaxis is the prevention of a disease by any means.

10. *For influenza:*

℞ Acetphenetidini
Phenylis salicylatis āā.....gr.lx
Misce et divide in chartulas .....No. xij
Signa: Take one powder every three hours.

For acute gastritis:

℞ Bismuthe subnitratis 3iij
Acidi hydrocyanici diluti .....♏ xxxij
Aquæ q. s. ad.....℥iv. Misce
Signa: One dessertspoonful every three hours.

For migraine:

℞ Caffeinæ citratæ .....gr. xij
Acetphenetidini .....gr.ix
Sodii bromidi .....3j. Misce
Fiant chartulæ .....No. xij
Signa: Take one powder every two or three hours.

For sciatica:

℞ Morphinæ sulphatis .....gr. ij
Atropinæ sulphatis .....gr. 1/15
Tincturæ aconiti .....♏ x
Fluidextracti cannabis indicæ.....♏ xxv
Elixiris aurantii .....℥j. Misce
Signa: Take one teaspoonful every three or four hours until relieved.

For cystitis:

℞ Tinturæ aconiti 3iij
Spiritus ætheris nitrosi.....℥j
Liquoris potassi citratis q. s. ad.....℥vj. Misce
Signa: Take one dessertspoonful every four hours while there is any fever.

11. *Treatment of sprue:* "It is essential that the patient possess the will power to carry out the course of treatment; the clothing should be of wool to prevent chilling and the patient should remain in bed until his condition has decidedly improved.

"*The milk treatment:* A preliminary dose of castor oil is given and when this acts the patient should begin taking milk as the sole food. At first about 4 pints of skimmed milk are given daily. The milk should be given in two-hour feedings, well warmed and taken through a glass tube or with a teaspoon—it should not be drunk. As the stools become less frothy the amount of milk is increased so that the patient takes from 6 to 7 pints daily. Milk should be the sole food for six weeks from the time the stools become solid and the mouth symptoms disappear. Eggs are usually well borne after the milk course. Stale bread or toast is cautiously added and then some fish or chicken.

"At times the patient seems benefited by giving a meat treatment day once or twice a week during the course of the milk treatment.

"*Meat treatment:* If the patient is very ill it may be advisable, after the preliminary dose of castor oil, to give meat juice obtained by expressing the juice from slightly broiled meat, about 2 teaspoonfuls every half hour. If possible however one starts in with the meat cure, which is about 4 ounces of a lightly broiled chopped up beefsteak, every four hours. Raw meat is usually given in this treatment but there is danger of *T. saginata* infection.

"At least 4 pints of warm water should be taken daily but not at the same time the patient eats the meat. Rest in bed and the avoidance of chilling are important measures.

"The only drug that has been advocated to any extent is santonin, in doses of 5 grains, night and morning. It is very doubtful if any drug treatment is of the least value."—(Stitt's *Tropical Diseases.*)

12. Ophthalmia Neonatorum. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth. *Treatment:* Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

CHEMISTRY AND HYGIENE.

1. *Inorganic chemistry* is that branch of chemistry which deals with inorganic substances (that is substances which do not contain carbon).

Organic chemistry is the chemistry of carbon and its compounds.

Carbon is a necessary component of all organic compounds.

2. *Distillation* consists in boiling the water and condensing the steam again to a liquid.

Filtration consists in removing the suspended impurities by passing the water through a porous material such as sand, charcoal, or unglazed porcelain.

Precipitation consists in removing impurities by mechanically carrying them down; they "settle" when the water is left at rest. Alum or a ferric salt is generally used.

Distillation is absolutely safe; and *filtration* is applicable to municipal supplies.

3. Antidotes are classified as: (1) *Chemical antidotes*, which act by uniting chemically with the poison and thus converting it into a harmless or insoluble compound. *Example:* Albumin, in mercurial poisoning; sodium sulphate, in carbolic poisoning.

(2) *Physiological antidotes*, which act by combating one (or more) of the physiological actions of the poison. *Example*: Opium will counteract the dilated pupil caused by belladonna.

4. The *acid constituent* of *gastric juice* is hydrochloric acid; of *urine*, is acid sodium phosphate; of *bile*, is glycocholic acid and taurocholic acid.

5. *Fehling's test for sugar in the urine:* Place in a test-tube a few c.c. of the liquid prepared as stated below, and boil; no reddish tinge should be observable, even after five minutes' repose. Add the liquid under examination gradually, and boil after each addition. In the presence of sugar a yellow or red precipitate is formed. In the presence of *traces* of glucose, only a small amount of precipitate is produced, which adheres to the glass, and is best seen when the blue liquid is poured out.

[The reagent must be kept in two solutions, which are to be mixed immediately before use. Solution I consists of 34.653 gms. of crystallized $CuSO_4$, dissolved in water to 500 c.c.; and solution II of 130 gms. of Rochelle salt dissolved to 500 c.c. in NaHO solution of sp. gr. 1.12. When required for use equal volumes of the two solutions are mixed, and the mixture diluted with four volumes of water.]

Significance of sugar in the urine: Diabetes mellitus; brain lesions involving the floor of the fourth ventricle; cerebral tumors and hemorrhages; some nervous diseases, sciatica, tetanus; certain hepatic disorders; pneumonia, typhoid, or some febrile disease, particularly during convalescence; after ingestion of chloral, morphine, and some other poisons.

6. *Peptones* are derived proteins, of smaller molecules than the proteoses; they are produced during peptic and tryptic digestion. They consist of polypeptides, and are usually considered to be the end product of the action of pepsin upon protein material; but they may be split up in polypeptides and amino-acids.

Peptones are not coagulated by heat, are precipitated but not coagulated by alcohol, are not precipitated by nitric acid or ammonium sulphate, and are diffusible.

Albumins are coagulated by heat, are precipitated and then coagulated by alcohol, are precipitated by nitric acid and by ammonium sulphate, and are not diffusible.

Test for Peptones: Peptones give the biuret reaction, and are precipitated by phosphomolybdic acid. And see above.

The best chemical test for blood, is the formation of hemin crystals. These crystals are obtained by boiling a fragment of dried blood with a drop of glacial acetic acid on a slide; the characteristic crystals may be seen with the microscope.

8. *Urea* is a transparent, crystalline solid; it is soluble in water and in alcohol, neutral in reaction; under the influence of heat it evolves ammonia and ammonium carbonate; biuret is at first produced, this (dissolved in water) gives a red-violet color with potassium hydroxide and cupric sulphate (biuret reaction). Urea is decomposed by the alkaline hypobromites, the products being a bromide, water, nitrogen, and carbon dioxide.

Uric acid is a crystalline solid, occurring in colorless plates or prisms; it is sparingly soluble in water; it is tasteless and odorless; its aqueous solution is acid to litmus; it dissolves in solutions of KOH and NaOH, with formation of urates; it is decomposed by heat, and by sodium hypobromite.

Murexide Test for Uric Acid: If a little dilute nitric acid is added, and evaporated to dryness, a yellowish-red residue is left; if a little ammonia is now added, a violet color is produced (in the presence of uric acid).

9. The sleeping-room should be as large as possible, with the maximum of sunshine and fresh air; it should face the south, or east, or southeast, and should contain no hangings, and have as few "dust-catching" contrivances as possible; it should not lead into a bath-room. The floor area should be at least 70 to 80 square feet; the walls should be 9 or 10 feet high; the window area should be not less than one-tenth of the floor space, and one-fifth would be better; the cubic air space should be from 1,000 to 2,000 cubic feet for each person.

10. *Diseases which may be prevented by the timely administration of sera and vaccines*: Diphtheria, tetanus, typhoid, plague, cholera, smallpox, rabies.

PHYSIOLOGY, PATHOLOGY, AND BACTERIOLOGY.

1. *Nitrogen equilibrium* is the condition existing when the amount of nitrogen excreted exactly equals the amount ingested.

A person may be in nitrogen equilibrium and yet may gain or lose weight, because the carbon equilibrium does not necessarily accompany the nitrogen equilibrium.

2. "*Transfusion* is the transmission of blood from an artery of one person to the vein or artery of another. It requires careful technique, involves the willingness of a second person to contribute blood, and is not free from danger. The dangers are: (1) Clotting; (2) the transmission of disease, such as syphilis; (3) the collapse of the donor of the blood, and (4) hemolysis. Before transfusion the blood of the donor should be tested with that of the patient for fear of hemolysis. This is especially likely to occur in infants or in the presence of a malignant tumor (Crile). By recent improved methods the clotting and technical difficulties have been much reduced, so that transfusion, which was at one time abandoned, has again come into general use. The artery of the donor is usually connected with a vein of the recipient by some apparatus, and the blood allowed to flow gently for fifteen or twenty minutes, or until the donor begins to show the effects of loss of blood. In some cases transfusion into an artery brings a more prompt response than into a vein. For in transfusion into a vein the transfused blood may merely increase the volume of the already excessive venous blood, and in any case must pass to the right heart and through the pulmonary circulation before the left heart can act upon it; while by transfusion into an artery the new blood, owing to the increased peripheral resistance, stimulates the heart and invigorates the coronary circulation."—(Bastedo's *Materia Medica.*)

Dangers of transfusing blood from lower animals to man: "The serum of certain animals possesses the property of dissolving the red corpuscles of another species of animals. The serum of a dog destroys the red corpuscles of a man; the hemoglobin is dissolved out. The serum, besides its action on the red corpuscles, is also active against the white corpuscles of the same animal, stopping their ameboid movements. The globulicidal action of the serum is related to its poisonous action on microbes. The normal serum of certain animals kills microbes, as the serum of the dog kills the typhoid bacilli. The power to kill red corpuscles and microbes is due to the presence in the serum of a substance, an alexin. In transfusion this plays an important part."—(Ott's *Physiology.*)

3. *Round-celled sarcoma:*—"There are two classes. (1) The *small round-celled sarcomata* consist of cells of about the size and appearance of mononuclear leucocytes, and may have much or little intercellular substance, which may be irregularly disposed or arranged in large meshes resembling alveoli. In many cases, so small is the quantity of intercellular substance that it is difficult of detection without special modes of preparation. These tumors often contain many blood-vessels and may be very soft and succulent. Their growth is sometimes rapid and they are often very malignant. They most frequently occur in the connective tissue of the muscles and fasciæ, in bone, and in lymph nodes. They also occur in the internal organs, not infrequently in the brain and retina, associated with cells of the glia type. Whether all the small round cells are glia cells or whether there is a mixture of cells is not yet fully determined. Such tumors are generally designated *gliosarcoma.* (2) In the *large round-celled sarcomata,* the cells vary in size, but are usually very much larger than in the last variety. Their nuclei are usually large and contain prominent nucleoli. They, too, are often very vascular, and contain a variable quantity of basement substance. They are occasionally alveolar in character. They are, as a rule, less soft and malignant than the small-celled varieties."—(Delafield and Prudden's *Pathology.*)

4. ACUTE ENDOCARDITIS. *Morbid anatomy:* In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium; superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegetations. These vegetations are most marked at a slight distance from the free borders of the valves—*i. e.* those parts which come into apposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survives, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact.

As regards the side of the heart most affected—*congenital* endocarditis attacks the right side of the heart (but note that many congenital cardiac lesions are due not to endocarditis, but to developmental faults); simple endocarditis attacks the left only; the *malignant* attacks *both sides,* though the *left* is much more implicated than the right side.

The vegetations are upon that side of the valve opposed to the blood-stream—viz., at the aortic valve the vegetations project into the ventricle, at the mitral valve into the auricle.

As in pericarditis, the myocardium almost always

shares in the inflammatory affection.—(Wheeler and Jack's *Practice of Medicine.*)

5. GASTRIC ULCER—*Pathology:* "Peptic ulcers may be single, but are more often multiple. They are commonly situated in the lesser curvature and the posterior wall of the stomach, near the pylorus; occasionally they are found at the fundus or at the cardiac end. They vary in diameter from a few millimeters to three or five centimeters. Their shape is characteristic in that they have sloping edges giving them a funnel-form, with the apex toward the muscular coat. The edges may be irregular and rough, but are often, especially in older ulcers, quite smooth and rounded. Two dangers are always imminent, hemorrhage and perforation. Constant oozing of blood may be due to erosion of the surface, and larger hemorrhages may result from ulceration of one of the larger arterial branches of the stomach. Perforation is less common than hemorrhage. When the ulcer is situated posteriorly perforation is prevented by adhesions attaching the stomach to the head of the pancreas or other structures. When the ulcer is in the anterior wall perforation is more liable to take place. The rupture may occur into the peritoneal cavity or into any of the surrounding structures and fistulous communications may be established with the pleural or pericardial cavities, or even with the exterior through the abdominal walls. Abscesses of the liver, spleen, or pancreas may result from perforation into these organs. In the healing of the ulcers scars are formed in the wall of the stomach. These have usually a rather characteristic stellate shape. In case of large ulcers extensive scars and considerable construction of portions of the walls of the stomach result. Hour-glass contraction of the organ, or pyloric stenosis, may follow, and secondary changes, such as gastric dilatation, may ensue. Carcinomatous transformation is a not infrequent result of long-standing ulceration." (Stengel's *Pathology.*)

6. PARASITIC FUNGI: (1) *Tricophyton,* which causes ringworm; (2) *Achorion schonleini,* which causes favus; (3) *Discomyces bovis,* which causes actinomycosis.

7. *Protozoa* are unicellular animal organisms.

The *plasmodium malariæ* is a protozoon.

In examining for malaria: "Prepare some perfectly clean and very thin cover slips, and remove all traces of grease. Cleanse the skin of the finger-tip or ear with soap and water, and then with alcohol and ether. Make a *small prick* in the skin. Wipe away the first drop of blood, leaving a perfectly dry surface, so that subsequent drops will not run. Squeeze out a tiny drop about the size of a large pin's head. Touch the apex of this drop with the center of a cover glass, and immediately drop it, face downward, on a perfectly clean slide. Make several such preparations, and reject all those in which rouleaux are present. It is absolutely essential that the red corpuscles should lie flat. Examine with a 1/12 immersion lens and rather feeble illumination. Look in the red corpuscles for the presence of small black specks, often rod-like and showing slow movements of translation. These are surrounded by clear areas. One may also see in the center of some of the red cells clear ameboid areas which show no pigment. Rosette forms may also be visible. These forms of the parasite are always present in cases of malaria which have not had quinine. Other varieties are only met with in some chronic cases. Of these there are two chief forms: (1) The crescentic, (2) the flagellated. These are easily recognized. The crescentic bodies are highly refractile, rather longer than a red blood corpuscle, and about 2μ in diameter. Particles of pigment may be recognized in the parasite and also in some of the ordinary leucocytes."—(Hutchinson and Rainy.)

8. *Amboceptor* is an antibody having a double combining affinity, one linking on to the cell to be destroyed and the other linking on to the alexin or complement.

Anaphylaxis is a condition of supersensitization induced by the injection of a serum. It is the opposite of prophylaxis, and in place of rendering the person injected immune, the serum has made him particularly susceptible.

Bactcrium is a unicellular vegetable organism, devoid of chlorophyl, and dividing by fission.

Saprophyte is a bacterium which thrives best on dead organic matter.

Micron is the one-thousandth part of a millimeter; it is the unit of measurement in microscopical work.

PRACTICE OF MEDICINE.

1. *Diseases which affect the pleura* are: Pleurisy, empyema, hydrothorax, and pneumothorax.

Physical signs of pleurisy: Inspection during the early stages shows deficient movement of the affected side. After the effusion has formed there will be observed bulging of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse. *Palpation* demonstrates feeble, or absence of, vocal fremitus over the effusion, with exaggeration of the same above the fluid. The affected side is immobile, and very rarely fluctuation may be obtained. *Percussion* during the early stage yields a slightly impaired note. Later, dullness or even flatness, with increased resistance may be obtained directly over the fluid, while above the effusion and percussion-note is tympanitic. The line of demarcation is higher behind than in front. Effusion of the left pleural cavity obliterates Traube's semilunar space. The fluid changes its level with different positions of the body and the area of dullness is correspondingly movable.

Auscultation reveals during the early stage a feeble vesicular murmur over the affected side. A friction sound, slight and creaking, becoming louder as the exudation of lymph increases, limited usually to the angle of the scapula of the affected side, rarely over the entire side, accompanies the respiratory movements. During the stage of effusion, the vesicular murmur is feeble or absent on the affected side. Above the effusion, puerile breathing is heard, and just at the upper margin of the fluid a friction sound may be heard. Vocal resonance is diminished or absent over the fluid and markedly increased above the effusion, egophony being obtained at its upper margin. With the absorption of the fluid, the vesicular murmur and the moist friction sound gradually return.

Physical signs of hydrothorax are those of pleural effusion.

Physical signs of *empyema* are those of fluid in the pleural cavity, the affected side does not move on respiration, the percussion note is dull, there is absence of breath sounds, and vocal resonance and fremitus are diminished.

Physical signs of pneumothorax: Inspection shows enlargement of the affected side, with absent or diminished respiratory movements. The intercostal spaces are widened. The apex beat is displaced. *Palpation* reveals diminished tactile fremitus. *Percussion* yields marked changes in the resonance. Immediately after the rupture, the percussion note is hyperresonant, or even tympanitic or amphoric in quality. If the amount of air in the pleural cavity becomes extreme, there is dullness on percussion, associated with a feeling of great resistance or density. When effusion of blood occurs, dullness is obtained over the lower part of the chest, hyperresonant, or tympanitic percussion-note over the upper portions of the chest, these sounds changing as the patient changes position. *Auscultation:* The normal vesicular murmur may be diminished or absent. The typical amphoric respiratory sound is heard when the fistula is open. The vocal resonance may be diminished or absent, or, rarely, it may be exaggerated, with a distinct metallic echo.—(From Hughes's *Practice of Medicine.*)

The differentiation can be made mainly by the physical signs; but in addition in *empyema* there will be found fever, chills, leucocytosis and presence of pus on aspiration; in *hydrothorax,* serous fluid will be found on aspiration.

2. THREE VARIETIES OF ANGINA: (1) *Angina pectoris,* characterized by sharp, agonizing pain, extending from the heart to the neck and down the left arm; shortness of breath, an anxious expression, and fear of impending death are prominent symptoms.

(2) *Ludwig's angina* is an inflammation of the floor of the mouth and the structures of the side of the neck, accompanied by pain, swelling, dysphagia, and constitutional symptoms; it is probably a streptococcus infection.

Vincent's angina is a sore throat caused by the fusiform bacillus and also by the *Spirochæta darticola;* it resembles diphtheria, from which it is differentiated by taking a smear and making a culture. .

3. *Etiology of scurvy:* Deficiency of fresh vegetables in the diet, lack of vitamines, unhygienic surroundings and mental depression have all been urged as etiological factors.

4. *Leukemia* is a condition in which there is a great and persistent increase in the number of white blood corpuscles. There are two varieties of the disease: (1) *Splenomedullary* in which the chief changes are found in the spleen and bone marrow; and (2) *lymphatic*, in which the chief changes occur in the lymphatic glands. In *splenomedullary leukemia*, there is an enormous leucocytosis, and myelocytes are present. In *lymphatic leukemia*, the lymphocytes form the main part of the leucocytosis, and there are no myelocytes.

5. ENLARGEMENT OF THE SPLEEN. *Excessive chronic enlargement* is most frequently due to leukemia, splenic anemia or chronic malaria; lesser degrees may be met with in cirrhosis of the liver, rickets, pernicious anemia, passive congestion, or actual portal obstruction. *Acute enlargement* is most often encountered in septicemia, malarial fever, typhoid and typhus, erysipelas, acute miliary tuberculosis, tuberculous peritonitis, cerebrospinal meningitis, smallpox, diphtheria, scarlet fever, relapsing fever, infarct, plague and certain other tropical diseases.—(Greene's *Medical Diagnosis.*)

6. *Occult blood in the stools* may be found in cases of malignant tumors of any part of the gastrointestinal tract, gastric ulcer, pancreatitis, catarrhal jaundice, and intestinal parasites.

7. PYLORIC SPASM. *Etiology:* It is usually due to some severe irritation of the mucosa of the pylorus, such as that produced by the acid in superacidity or supersecretion; or it may be due to an ulcer, erosions, fissures or cancer at the pylorus, while there are other forms entirely of nervous origin. *Symptoms:* At the height of digestion the pylorus suddenly becomes spasmodically contracted with intense pain in its region, together with eructations and often vomiting. At first the spasm appears periodically, but as the disorder progresses it may become continuous and produce a spastic contraction of the pylorus, with tendency to dilatation and retention of food. The food is vomited under these conditions, and possesses all the characteristics of that observed in a dilated stomach. Relief is afforded by the vomiting for a period of time varying from one to three or four days, when the same disturbance is again produced. The symptoms found in dilatation are then observed—emaciation, intense thirst, and constipation. *Treatment:* This consists primarily in properly looking after the underlying neurasthenia. For this purpose change of scene, massage, electricity, or a rest cure, may be found advisable. The diet should be carefully regulated, all irritating foods being avoided, and the meals should be small, easily digested, and given at regular intervals. The administration of olive oil has been found of great service. When retention is present, gastric lavage with plain water or nitrate of silver solution must be given. For the pain codeine combined with belladonna is serviceable; hot applications to the abdomen and a thorough lavage usually afford most relief from the pain. Dilatation of the pylorus, pyloroplasty, and gastroenterostomy have all been recommended.—(From Osler and McCrae.)

8. *Cerebral hemorrhage* most commonly affects the internal capsule, corpus striatum and optic thalamus.

9. A *delusion* is a belief in something which has no real existence, but is purely imaginary, and out of which the person cannot be reasoned. An *illusion* is a false or perverted impression, received through one of the senses. An *hallucination* is the same as an illusion, but without any material basis.

If an individual believes himself to be made of glass, and is afraid of being touched lest he be broken, he is suffering from a *delusion.* If the whistling of the wind is mistaken for a voice telling a person to do a certain thing, that would be an *illusion.* If a person fancied he heard a voice when there was nothing at all to be heard, that would be an *hallucination.*

10. *Etiology of eczema.* Eczema is believed to be due to digestive disturbances, local irritants (mechanical, chemical, or thermic), absorption of toxins, constipation, gout, rheumatism, nervous disturbances, diabetes, nephritis, and other diseases. Many of these diseases are only *predisposing* causes.

Miscellany.

Early Spanish Medical Journalism.—In *El Siglo Médico* for April 10, Cortezo Collantes discusses this subject and incidentally covers the periodicals which were current before the first appearance of *El Siglo Médico* in 1853. In 1734 there appeared a monthly entitled *Barometrico-Medical Ephemerides,* as the organ of the recently organized Academy of Medicine and Surgery. During the 120 years which elapsed up to the first appearance of *El Siglo* probably a hundred medical periodicals were initiated. For the thirty years which followed the first appearance of *El Siglo* an additional sixty-three periodicals must be added. Any attempt to digest this periodical material must fall short of the real facts. Various centers of education and progress were represented. Barcelona, Seville, Cadiz, Malaga, in addition to Madrid, were the pioneers in this field. The other university towns are not cited in this connection, so that the great number of new periodicals originated in a few towns. In addition to those already mentioned, periodicals were started at Valencias, Badajoz, and other less known places, but these were unimportant and shortlived. As a matter of fact, Madrid and (to a less extent) Barcelona gave birth to nearly all of the periodicals, which started under the same auspices. Just as all of the previous attempts to found a permanent Spanish journal culminated in *El Siglo Médico,* so the status of this periodical made all possibility of rivalry uncertain. *El Siglo Médico* appears to represent a consolidation of *El Boletin de Medicina, Cirugia y Farmacia,* and the *Gaceta Médica.*

Monument to French Military Surgeons.—At a recent session of the Rio de Janeiro Academy of Medicine a subscription was opened for funds for the erection of a proposed monument in Paris to the French medical men who lost their lives while on duty in the great war. Commenting on this fact the editor of *El Siglo Medico* deplores that no such action has been forthcoming in honor of Spanish medical men who have given their lives to their country in the Spanish colonies, past and present. At the present moment Spanish physicians are distinguishing themselves by lives of heroism in exotic fields. One only of them has received a decoration.

American Style All-Night Drug Store in the Gulf of Corinth.—Three American girls, Miss Julia Norton, of South Orange, N. J.; Miss Mary Vanneman, of Springfield, Mass., and Miss Constance Horsford, of Boston, all members of the American Red Cross Commission of Greece, conducted for a time the only all-night drug store in Europe. They were sent to the Island of Aigon, in the Gulf of Corinth, to take care of 1,300 Greek refugees from Bulgarian concentration camps and who were put off the steamer at Aigon to recuperate before being sent to their homes. As a twenty-four hour service seemed necessary in order to care for these sick and miserable Greeks, the girls decided to start a drug store and dispensary and to run it American style, open day and night. For a time they worked at top speed, feeding and cleaning up the refugees, among whom skin diseases were very prevalent.

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THE EMPATHIC INDEX AND PERSONALITY.*

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NEW YORK.

IDENTIFICATION as found in dreams and neurotic symptoms, especially in fancies, is well known. According to Freud,[1] "through identification the patients are able to represent not only their own experiences but the experiences of a great many persons; they can suffer, as it were, for a whole mass of people and fill all the parts of a drama by means of their personality alone." One can best observe identification in the socalled *folies à deux*. Here one finds on deep investigation that it is not just an imitation. It is, as Freud puts it, "a sympathy based upon the same etiological plane." It expresses itself in an "as though" and refers to the same qualities which have remained in the unconscious. Let me cite an example:

Mrs. Love, a widow of forty-five years, showed a paranoid type of reaction; she was delusional and hallucinatory, most of her ideas were centered around spiritualism. Spirits communicated with her, she heard peculiar voices and significant knockings on the wall; she could even see the spirits and communicate with them. The whole system was erotically tinged; she had many somatic delusions referable to the genitals and maintained that they were produced by a spirit who was in love with her. She described this spirit as a very distinguished nobleman of the Middle Ages; she was not sure of his name but it was something like "Gandini." Her older sister, Mrs. C., was also insane. She was a chronic alcoholic showing a paranoid trend. She imagined that a certain clergyman was in love with her, that he annoyed her by making references to her in his sermons and by looking at her in a "loving" manner. She was also in love with him, but the spirits warned her to keep away from him. Investigation showed that she became insane about six years before Mrs. Love showed any symptoms. Mrs. Love was at first fully aware that her sister, Mrs. C., was insane; she consulted physicians and tried in every way to cure her sister, C. Later, however, she maintained that there was really nothing mentally wrong with her, that she drank too much occasionally, and explained her sister's delusions by saying that everything was perfectly comprehensible, that certain spirits communicated with both her and her sister C., and that she was trying very hard to overpower those evil spirits. Moreover, it was soon discovered that Mrs. Love became interested in spiritualism because her older sister, Mrs. C., talked of hearing "spirits," that in her repeated efforts to appease the annoyed divine, the object of Mrs. C.'s affections, she herself became enamored of him, but as she was rebuffed she gradually rationalized everything and formed the system mentioned. It is very significant that the name "Gandini," her medieval spirit lover, phonetically resembled the name of the clergyman annoyed by her sister. Without giving the other features of the case I will state that we dealt here with a case of *folie à deux*, or in terms of Freud, an identification between two sisters who were both burdened by heredity.†

*Read before the Vidonian Club, Oct. 31, 1919.

†The same unconscious identification can also be seen in hysteria and the psychoneuroses.

As we get away from the extremes we come to the more refined forms of identification as seen in fancies and normal identifications. Thus, I know a man who almost daily identified himself with someone who appealed to him. He was not aware of it until he was analyzed and he then discovered that hardly a day passed during which he did not "feel like someone" to whom he looked up in the past or present. He would assume certain mannerisms of this particular person, he would visit places, read books, and use expressions that were characteristic of the person with whom he unconsciously identified himself at that time. A similar mechanism of this kind is seen in the normal between teachers and pupils. Students very often imitate their favorite teachers and show it in many ways; here, too, it is not conscious imitation, it is usually quite unconscious. Perhaps the deepest form is the identification unconsciously shown by children. One can easily see how a child constantly strives to talk, to move, and in every way to identify himself with his parents; children openly state that they wish to be like father or mother, and this is naturally always encouraged by the parents. As the child grows older and emerges from his home microcosm he shows at first a very marked sensitiveness to persons and objects encountered in the outer world. He views everything with suspicion and fear and gradually has to become accustomed to the new world. The reason for his behavior is the fact that he seeks for the same process of identification everywhere, and as the outside world does not fall in with his familiar *milieu* the child becomes frightened and makes an attempt to run away from it. It is well known that almost all children are afraid of strangers, or being accustomed to white people they cry at the sight of a colored person. Children from rural communities usually fear the city, and foreigners, although no longer children, behave in a similar way. Instead of mixing with the natives they unconsciously gravitate to a neighborhood that resembles their former environments. Observe, for example, the different foreign colonies in a city like New York; it is from these colonies that sooner or later they emerge and are lost in the melting pot. It is thus clear that the easier one can identify himself with persons and situations the less he fears and suspects them and the better is his relationship to other people. A cosmopolitan is one who can find himself at home everywhere. The Jews, for example, who were for centuries driven from country to country can readily acclimate themselves anywhere.

The same phenomena are observed among animals. Mr. Stefánsson, in his fascinating work, "My Life with the Eskimo," describes how he dis-

covered an easy way of hunting the seal. The usual methods followed by the Eskimos were found impractical because the seal, who is very suspicious and observant, rarely ever leaving his hole in the ice, rapidly glides into it as soon as he observes any change or anything strange in his neighborhood; it is quite impossible to elude his vision even from long shooting distances. So watchful is the seal that every few seconds he wakes up from his deep slumber, turning his head all around the horizon to guard against any hostile approaching. Stefánsson soon noticed just how often, at what intervals, the seal went through these girations and then set out to beat him in a most ingenious manner. He started by imitating the seal's mode of locomotion; with a stop-watch and a gun he kept on sliding on his belly on the ice as long as the seal was slumbering, lying low when the seal made his observations, and now and then imitating the seal by raising his head and going through the same movements as the seal. In this way he made the seal believe that he was a seal and so could come within easy gunshot. Mr. Stefánsson maintained and proved that a white man could live well in the far north without dragging along a big food supply. But, as you see, it could only be done through an effort at identification or through descending to the level of the environments. "When in the Arctic region be a seal" seems to express a deep psychological fact of great utilitarian significance.

But what could this great thinker have meant by "When in Rome be a Roman," which I have just paraphrased? He undoubtedly wished to imply that in order to be happy one should always endeavor to be an integral part of the environment in which he happens to be. To be more explicit one should make every effort to feel or read himself into the *milieu* in which he lives, so that he will be thoroughly identified with it; and the more perfect the identification the better for the individual. For no animal will suspect or harm you if you can look, act, and smell like the animal. No one will suspect your loyalty if in America you will act, talk, and look like a true American. Through the word *barbaros* the ancient Greeks designated not only a foreigner but also one whose mode of reaction so differed from theirs that they felt justified in looking upon him with suspicion. That undoubtedly accounts for the modern meaning of the word "barbarian."

But judging from Mr. Stefánsson's behavior to the seal one could ask whether it would not be just as easy to say, "When you are in Rome make believe you are a Roman," and many observations from everyday life would seem to answer this affirmatively. Psychoanalytic investigation, however, shows conclusively that although this could be followed with the seal and with some bipeds who are endowed with seal attributes, it is actually impossible in reality. In other words, true identification is altogether an unconscious process; once it may have been conscious but it then became, as it were, a second habit. No normal person can identify himself for any length of time with a person or situation that is foreign to his own feelings; the true actor lives through his part, as it were.[3] Abnormal persons often make believe that they are feeling or reading themselves into a situation, but any trained observer easily sees through them. We all know how simple it is to detect the simulator or malingerer in psychiatric practice. As a matter of fact, one can state that every individual always follows definite forms of identification which are unconscious and into which he constantly strives to read himself. The transference mechanism upon which the Freudian school has thrown so much light depends altogether on identification, one might say it is only a finer form of it. As is known, in coming in contact with people one consciously and unconsciously tries to make a good impression. If done consciously it is usually a failure because the persons for whom it is intended readily feel that it is forced and artificial. A good transference is a matter of feeling, there is no need for a conscious effort, it is spontaneous, so to speak; one meets, one sees, and there is friendship. This mechanism is, of course, most important in our dealing with patients; unless the patient feels like a child in a familiar environment very little can be done for him. In fact the success or failure in the management of a mental patient depends altogether on the first meeting. This in no wise differs from our everyday relations with non-neurotics. As in the case of Charles Lamb's two men who never met before and who began to fight as soon as they glanced at each other, we would either manifest open friendship or hostility on first meeting—a mechanism which one readily sees among children and animals. As Shaler[4] puts it: "The matter is of such moment that it may be said again in brief that the way in which the neighbor meets us when we greet him is of exceeding importance. Every such meeting is a psychological crisis by which all the subsequent relations of the person are likely to be shaped." These words were written by a keen observer who undoubtedly never heard of Freud. In brief, when one deals intimately with all types of people as one is wont to do in psychoanalytic work, one soon realizes that unless the relations between himself and the patient are good, unless there is a friendship and mutual respect which begins at the first interview, one will have to overcome almost insurmountable difficulties later. That accounts for the many difficulties encountered in the mental treatment of Jews by non-Jews and in the treatment of Jews who no longer wish to be identified with Jews, by Jewish physicians. In the first case the non-Jewish physician has to be divested of his latent prejudices and in the second case the patient has to be helped to face reality by frankly admitting his origin.

From what has been said one can readily see how important it would be for both patient and physician if one were able to dominate the psychological difficulties of first encounters with neurotics and control the situation, as it were. For almost ten years I have asked most of my patients during our first interview the following question: "What personage from history or legend do you admire most, or whom would you consider your ideal?" I have collected answers to this question not only from patients but also from friends, acquaintances, from some college students, and from school children. In putting this question I assumed that the person we admire most, who is our ideal, expresses in his life our conscious and unconscious strivings. That

is to say, we admire this personage so much because we would wish to be like him and are always endeavoring to emulate his mode of reaction to the world. It will perhaps be surprising to hear that over 90 per cent. of my male answers confined themselves to only five historical persons. Of 586 male adults, 396 answered "Napoleon," 101 answered "Lincoln," 38 answered "Cæsar," 26 answered "Washington," 16 answered "Frederick the Great" and the rest, 9, had various other ideals. Perhaps the most significant part is that over 70 per cent. had Napoleon as their ideal and that of the 586 men only two answered "Jesus.' And considering that 80 of 586 gave Cæsar, Washington, and Frederick the Great as the persons whom they admired most, and that Lincoln who stood next to Napoleon among American born men although not a soldier was not a weakling in any sense, one can readily see what the average intelligent person's ideals are. He evidently admires most a man of action who can put in operation those impulses which he himself would wish to live through but dares not or cannot do so. This also demonstrates that we are not as ideal in our unconscious strivings as some make us believe, that the good book is correct in asserting "For the imagination of the human heart is evil from the beginning." Only two Christians out of over 60 per cent. of Christians took Jesus as their ideal. One was a physician who had given up the practice of medicine and lived on a ranch, and the other was a literary gentleman who lived on his income. These answers also explain why things primitive fascinate us, why plays dealing with crime are popular, and why most of the news items in our daily press are not exactly about the cardinal virtues in men.*

The term "empathic index" was coined by Prof. E. B. Titchener and deals with the idea of reading oneself into an inanimate or animate object. Dr. E. S. Southard[1] wrote an interesting paper on the subject but treats it from an entirely different angle. As I said above, the object of my question was to ascertain the ideal one is unconsciously endeavoring to emulate; it has nothing to do with reading oneself into an inanimate object. However, I feel that the expression "empathic index" aptly covers, as a generic term, the ideas involved in my question. I might say the answer to my question denotes the person's empathic index, and that the empathic index definitely shows the trend of the person's adjustment to the world. Examination then shows that one can speak of a racial empathic index as seen among Jews, of a national empathic index as seen in Americans, Frenchmen, or other nations and of a biologic empathic index. The last is common to all; it is essentially human in its manifestations. Among my test persons who answered Napoleon, there were men descended from many races and nationalities. Napoleon and Cæsar express the aggressive component common to all male animals, that is why they strongly appeal to us. It is the domination of this same component which explains why at the apex of the war when feeling against Germany was at its height (in the spring of 1918) eleven Yale seniors, when requested by their class statistician to tell who, in their opinion, now deserved to be called "the man of the hour" gave the name of the German Kaiser. The official who took this vote denied that these men were in any way pro-German.* Like all mechanisms based on feelings the empathic index is readily expressed by the lower classes and by children who have not yet reached maturity. A good illustration of it is found in nicknames. I am in the habit of asking my patients whether they ever had nicknames; I find that the nickname given by classmates or friends usually shows the person's empathic index. Thus most of my effeminate homosexuals long before they were conscious of it were nicknamed by their classmates: Mollie, Sarah, Jane, Nellie, etc.; others of the masochistic type were nicknamed: Kid, Shorty, Frog, Speed (meaning slow by contrast), John L. and similar names. That one can lend credence to the empathic index is illustrated in this example: As soon as the draft law was passed, a number of my former patients, some of whom I had not seen for years, came to me and admitted their fear lest they should be drafted into the army. I was interested in their empathic index and on looking up their histories I found that one gave as his ideal "Benjamin Franklin," one "Pestalozzi," and one "Florence Nightingale." I then looked up the histories of those former patients who volunteered their services and found that all showed a normal biologic empathic index.

The empathic index is usually influenced by age. Of the 101 test persons whose answer was "Lincoln" most were over the age of 38 years, and over 90 per cent. of them were married men. I might mention that "Lincoln" was also given as second choice by a great many whose first answer was Napoleon. I disregarded it because the first answer is always the correct one, the second is a product of reflection. Napoleon and Cæsar represent the absolute primitive while Lincoln represents a sublimation of it. The empathic index of children (kindergarten age) is very interesting. I asked a teacher to explain to the children the meaning of a hero and give them examples. A few days later every boy was asked who was the greatest hero and the answer was invariably "father."

School boys of Grammar School age showed an indefinite empathic index. They were asked to write a composition about the greatest personage they had read or heard of and give their reasons. Very few took their own fathers, most of them mentioned some general from the history book or a character from fiction, quite a number took their teacher as their ideal; that was particularly true of boys of foreign parentage.

It is difficult to obtain definite answers from insane patients. Manic patients invariably took some famous or notorious person. Paranoiacs are usually guided by their delusions. Thus a religious paranoiac took God as his ideal, another answered that the prophet Isaiah was his ideal. Some who could be induced to answer the question often thought a long time and said, "I am my own ideal

*My attention has been called to the fact that the wording of my question, "What personage," etc., precludes the answer "Jesus," as Christians consider Christ a deity and not a personage. There is little validity to this argument when one thinks of the second part of my question. "Whom do you consider your ideal?" which certainly does not exclude Christ, and the fact remains that two test persons thought of Jesus in answering my question.

—or, I have no ideal." Præcoxes usually refused to give any answer.[1]

I regret to say that I have not been able to tabulate and report the answers given by women. The remarkable thing about their answers is that very few women gave females as their ideals, they invariably mentioned male names. Lincoln and Washington seemed to stand highest. This clearly shows that the ideal of a woman is a man and recalls Nietsche's pithy remark: "A man says I will, a woman says he will." The woman's empathic index always shows the type of man that appeals to her.

The empathic index does not necessarily tell us anything that one may call altogether new; but it furnishes a new and quick method of observing the person's mode of adjustment; and one can truly say: "Tell me your empathic index and I will tell you who you are."

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1 WEST SEVENTIETH STREET.

MODERN TREATMENT OF OBESITY.*

BY EDWARD C. TITUS, M.D.,
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ABOUT eigtht years ago, while in France, I visited Professor Bergonie at Bordeaux in order to acquaint myself with his work in electrotherapeutics, of which I had learned through his contributions to the literature of this subject.

Among other procedures I became especially interested in his method of treating cases of obesity. For this purpose he made use of a modified Faradic apparatus which produces fibrillary and gross muscular contractions, both local and general. His results appeared so excellent that after my return I had an apparatus constructed on similar lines, but modified in some particulars.

During the past seven years I have employed the Bergonie method in such cases of obesity as could be kept under the necessary supervision, and my results have been so satisfactory that I have thought it worth while to bring it to your attention.

Prof. Bergonie read a paper before the Academy of Science in 1909, upon the employment of electricity in order to induce a general exercise or stimulation of the muscles of the body toward a therapeutic end. In this article he embodied the observations and results of his method over a period of nine or ten years.

*Read at the annual meeting of the American Electrotherapeutic Association, September, 1919.

The principle upon which the treatment is based can be summed up as follows: The proper use of any organ increases its vitality and also influences the development and function of the entire organism. The application of this principle is utilized in the development of the muscular system. Electrically provoked exercise consists of muscles being contracted in physiological rhythm, both in rate of muscle fibrillation (about 30 per second) and frequency of heart action.

To induce such exercise without fatigue is a desideratum which has long been sought, for combating those conditions in which combustion is insufficient, as presented in cases of obesity, some forms of diabetes, and all forms of suppressed uric acid elimination.

Of the various currents employed, the one finally selected and which is now giving the greatest satisfaction is derived from what may be called a coarse-wire Faradic, the aim being profound muscular contraction without pain or fatigue, physical or mental.

The current is rhythmically interrupted and reversed by a well-known mechanical principle, and timed to correspond with the heart action. The interrupter or vibrator is made to operate at 30 per second—the rate of normal muscle fibrillation. This together with the gross muscular contractions corresponding with the pulse frequency, and regulated during treatment to changing heart beat, seems to be an ideal means of inducing absorption of fat deposits and infiltrations, and of promoting the necessary elimination of products of tissue waste, plus better development of muscular structure. For it will be found that as the treatment progresses the decrease in size and change in contour will appear to be greater than the actual loss in weight would indicate, because the reduction in weight due to the absorption of adipose tissue is nearly equalized by the development of normal muscular structure. This, however, is but a part of the improvement or desired result.

Deep respiratory excursions are involuntarily induced and a greater activity of both skin and kidney function is likewise observed. Patients who seldom perspire will develop a most active diaphoresis and diuresis, and it is not uncommon to have them void from 12 to 16 ounces of urine, which is both physically and chemically normal, at the end of an hour's treatment. This increased elimination usually persists long after the treatments have been discontinued, even upwards of a month.

It must not, however, be inferred from these remarks that this method alone constitutes the whole treatment of obesity. This condition is of such complex and diverse origin that the treatment must be individualized in accordance with the causative factors, and the use of the Bergonie method must at times be supplemented by such other measures as may be indicated.

In accordance with Gutman I distinguish two general types of obesity—endogenous and exogenous.

Endogenous cases are characterized by a low oxidation quotient—low rate of metabolism, diminished oxygen consumption, and a low respiratory quotient, and their causes may be summed up as follows: (1) Disease of the pituitary. (2) Disturbances of the

thymus, thyroid, liver, or pancreas. (3) Disturbances of the sexual apparatus. (4) Menopause, pregnancy, and lactation.

The exogenous type, which is chiefly due to excesses of diet and lack of exercise, frequently merges into the endogenous, so that the treatment of the two may be discussed together.

Before beginning the treatment of any case of obesity it is necessary first of all to inquire into the history, which will frequently furnish valuable clues as to the cause, and follow this by a careful general examination with the view of determining the presence of other diseases with which the obesity may be associated. As is well known, obese subjects often present evidence of functional or organic diseases of the heart, arteriosclerosis, diabetes (some authorities claim that from 40 to 80 per cent. of all obese subjects show sugar in their urine and other evidences of this disease), enlargement and fatty infiltration of the liver as well as of the kidneys, and invariably marked intestinal autointoxication.

The presence of such associated conditions must be carefully considered in the treatment.

It will be seen, therefore, that I do not depend entirely upon the Bergonie method, but employ it as a most useful adjunct in all cases irrespective of the cause. Its universal use is based upon my observation that it excites all glandular activity as evidenced by increased secretion of urine and perspiration, improved digestion, and bowel function.

While its beneficial effects upon nutrition are shown by a gain in strength and general well-being, so that patients who have previously been languid and easily fatigued, are only too willing to follow directions as to walking, gymnastics, and other exercises, there is also a distinct improvement in circulation, heart action, and respiration.

In view of the fact that insufficiency of the endocrine system plays so important a part in the etiology of obesity, I have occasionally resorted to administration of various glandular extracts, single or combined, for a short period only, as indicated in the individual case. Thus I have often employed with benefit thyroid, pituitary, ovarian, pancreatic, mammary, and testicular extracts as well as the combined hormones.

On account of the general presence of intestinal autointoxication I have also frequently prescribed liberal doses of bicarbonate of soda and powdered rhubarb and one to three drams of finely granular agar-agar after meals.

As regards diet, the general principle has been gradually to reduce the quantity of food and eventually to eliminate all meats and most of the sugars and fats. But each case should be a law unto itself in the matter of dietary regulation.

As the Bergonie treatment is no doubt known to you all, I shall refrain from giving more than a description of its mode of application, especially mentioning the points which I have found of particular importance.

This treatment should never cause fatigue. Most patients can tolerate an initial application of one-half hour, and this can be increased ten minutes each day until up to one hour in duration. Prof. Bergonie has advocated that this full time can be borne by some patients twice daily, but I have found that one application per day is usually "a genteel sufficiency."

Since simultaneous stimulation of the entire musculature is to be obtained, the electrodes should be of ample size to cover the greatest area of the body surface.

These electrodes are of two kinds. The stationary are attached to the semi-reclining chair, much like the ordinary steamer variety, but larger and more stoutly built. Extending the full length of the back of the chair are two large metal electrodes, divided in the center, two on the seat for the buttocks and thighs and two on the adjustable extension for the legs. Attached to each of these electrodes is a cable connecting with the corresponding rheostat of the machine.

The movable electrodes are six in number—two for the arms, two for the abdomen, and two for the anterior surface of the thighs. They should be as large as possible and shaped to comfortably fit the contour of the parts.

The chair is covered with a moderately thick bibulous towel wet with warm water, and the movable electrodes are slipped in suitable sized covers (like a pillow slip) also wet. It is very necessary that the covering material of all electrodes should be of the same thickness, as the tension of the current from the machine to the patient being only 24 volts, the slightest difference in this detail will make the current irregular and quite unsatisfactory in its effects. The total area of surface covered by all the electrodes may amount to 10,000 cubic centimeters.

The arm electrodes can be held in place by a Crepe-Velpeau bandage because of its elastic quality; while those on the abdomen and thighs are best secured by canvas bags filled with gravel or coarse sand. The total combined weight of these bags may vary from 50 to 100 pounds. They exercise considerable pressure which becomes an advantage in keeping the electrodes in good contact, and giving the muscles more work to do when they contract. This great weight is readily moved by the contracting muscles without the least fatigue or painful sensation. Were it not for the electric stimulation of the muscles, the above-mentioned great weight would be both difficult and painful to support.

The subject removes all clothing but shoes and stockings. The body is covered with a suitable-sized sheet, the opening coming to the back and pinned together at the nape of the neck only. This is separated as the patient sits down in the chair, the naked back, etc., coming in contact with the moistened towel, while the sheet affords ample covering for the anterior surfaces.

The movable electrodes are adjusted next to the skin and the sandbags put on outside the body covering.

The machine should be tested in all its mechanism before each treatment to insure against unevenness of current and possible unnecessary shock. When this detail has been observed, it is my custom to begin the treatment by adjusting the current consecutively with the rheostats controlling the arm electrodes, the back, abdomen, buttocks and thighs, and lastly the legs.

The contractions should be only feeble at first, and

after ten minutes or so gradually increased to a comfortable tolerance and eventually to vigorous muscular contractions.

The usual course of treatment should extend over a period of from six to ten weeks. The applications should be daily for the first three or four weeks, then on alternate days for a similar duration. If further necessary, at longer intervals as the case may require.

It will be noted that improvement is evident from the beginning of treatment. There will be a decrease in the gross dimensions out of proportion to the loss of bodily weight. This can be accounted for by the development of muscular structures and the absorption of the bulky adipose tissue.

In some patients where rapid reduction and detoxication are urgently demanded I employ for the first three days, in addition to the Bergonie treatment, a diet of weak tea and lemon water, small quantities of dry toast and fresh crisp lettuce ad libitum, together with liberal doses of saline laxative water morning and night.

It is reasonable to expect—and this has been my experience—that in those cases where the patients conform to the requirements in regularity of treatment, diet, and indicated exercises, a reduction averaging from half to one pound or more per day will be secured.

It is pleasant to add that usually the improvement, as manifested by a sense of well-being, greater activity, and more attractive proportions, will continue long after the treatment is terminated.

127 West Eleventh Street.

ACTION OF ELECTRICAL CURRENTS ON DUCTLESS GLANDS AND OTHER TISSUES.*

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Until recently, but little attention has been paid to the possibility of stimulating the action of the glands of internal secretion by means of electrical currents. High frequency currents, applied in a general way, promote nutrition of the body as a whole. They check toxins; they aid in inducing chemical changes in the tissues, as is evidenced by the very great increase in solid constituents of the urine, by the increase in the excretion of CO_2, and by the increased activity of the sweat glands. The hair loses its brittleness and dryness, becoming soft and oily, regaining its natural luster; the skin loses its dryness and tendency to desquamate; the nutrition of the nails is improved, as shown by their rapid growth, greater firmness and improvement in color.

By the *local* application of diathermy we find we can influence the circulation of arterial blood in any glandular organ, thus increasing its activity and promoting its functional action. No organ is so deeply seated that it cannot be reached by the vivifying warmth of high frequency currents. This introduction of warmth into the tissues or organs produces a vitalizing effect; the activity and metabolism of the cell are increased, and its resistance to pathological processes is raised.

By means of large electrodes applied to the abdomen and back, or of the multiple electrode method (general diathermy) and large volumes of diathermic currents, we can raise the temperature of the blood. The longer the period during which diathermic currents thus applied are allowed to act, the more marked will be the effects, both immediate and remote. As the result of the heating of the entire blood stream, and of large masses of tissue, the capillaries of the skin and of the mucous membranes of the nose, throat, and bronchi become widely dilated, and much of the blood thus drawn to the surface for cooling is withdrawn from the splanchnic circle. Anemia of the splanchnic area ensues, and visceral congestion is removed. The liver, the intestines, and other organs are made to disgorge stagnant venous blood; the skin exudes sweat and sebum freely; there is marked increase in watery vapor from the skin and mucous membranes; the respiratory excursions are increased in rapidity and depth, improving the oxidation of the blood. All the organs within the abdominal cavity are placed in a state of better nutrition, and their activity increased, or, if impaired, restored. Their capacity to defend themselves against the invasion of toxins and bacterial colonies is augmented.

Coincidentally with the improved activity of the glands of internal secretion, the nutrition of the entire body improves. We commonly find an improvement in the ovarian activity and in the menstrual flow in the female; in the male, it is possible, both by the direct local method and by the more general method to increase testicular secretion and improve sexual vigor.

Each organ, each cell, every tissue of the body, though it may seem to be independent in action, exerts some influence on other tissues of the body. The ductless glands, or endocrine organs, produce hormones which are in some cases synergistic, in others antagonistic.

About the year 1849, Professor Berthold, of Göttingen, transplanted the testicles of young cocks into the tissues of pullets, and found that hens so treated developed the masculine voice, comb, sexual preference, and love of combat. About twenty years later, Brown-Séquard came to the conclusion that a gland, whether possessed of ducts or not, elaborated certain substances which were essential to the growth and maintenance of the body, and to the preservation of health and function. By experiments on himself he showed that the result of the injection of testicular juice was an astonishing revivification of the physical and mental powers.

The acid chyme, as it passes into the duodenum, stimulates the epithelial cells of the mucosa to the production of substances which call forth responses from the pancreas, liver, and intestines, and the secretion of pancreatic juice, bile, and intestinal juices results.

Digestive poisons impair metabolism, and may cause atrophy of the thyroid and genital organs. They also impair the nutrition of the skin, hair, and nails, which become dry and lifeless. They affect the eye, causing early and rapidly progressive presbyopia. These conditions may be easily remedied by the general and local application of high frequency currents, by the static modalities, and the application of the sinusoidal current to the abdomen and back. The action of intestinal poisons

*Read at the annual meeting of the American Electrotherapeutic Association, September, 1919.

upon the general nutrition of the body is undeniable. All cells, particularly blood cells, suffer from their influence. Thus we frequently see all the signs of early senility in those individuals who suffer from intestinal autotoxemia.

The peculiarly harmful effects of intestinal poisons on blood cells and on glandular structures such as the liver and pancreas, naturally act detrimentally on other endocrines structures, such as the thyroid, thymus, hypophysis, testes, ovaries, etc.

J. H. Pardee (*Arch. Inter. Med.*, Feb., 1919) speaks of certain patients who develop, periodically, an intense craving for sweets, a sort of dipsomania for sugar. The candy sprees are almost always followed by a typical pituitary headache. We know that the pituitary (with the adrenals) controls the mobilization of sugar in the body. Owing to the excessive drain on it, the pituitary gland becomes enlarged, and then the suprarenals are called upon to assist in mobilizing the sugar, resulting in their great fatigue, and the formation of a vicious circle.

Want of sufficient muscular exercise also taxes certain of the endocrine structures excessively, and is a causative factor in diabetes mellitus, obesity, and gout, inasmuch as the muscles of the body, particularly the large voluntary muscles, are the sugar storehouses of the physical economy.

Clinically and in the laboratory, surgery has played an important part in helping us to acquire a better comprehension of the disorders of the thyroid, thymus, and pituitary. In the case of the thyroid gland, surgical misjudgments have also made it clear that the symptomatology of hyperthyroidism and hypothyroidism may merge to a surprising degree. Thus, patients suffering from nervousness, tachycardia, and exophthalmos have been subjected to arterial ligation and partial thyroidectomy despite the presence of a dry puffy skin, subnormal temperature, and other signs of glandular insufficiency. A long continued glandular overactivity is frequently followed by glandular exhaustion.

The *x*-ray has frequently been of diagnostic importance in helping us to outline the configuration of the pituitary fossa and that of the thymus, and has also been extensively employed in goiter for the purpose of reducing the size of the gland. However, the mere shrinking of the goitrous mass has been found to be insufficient, symptoms usually continuing because the underlying condition has not been removed.

Olivier reports two extremely serious cases of exophthalmic goiter treated successfully by means of the galvanic current. (*Paris Médical*, Oct. 5, 1918.)

The first case was that of a woman of 26, who had suffered from the condition for three years, and in whom hematothyroidin had failed. Owing to the extreme weakness of the patient, section of the cervical sympathetic had been refused by the surgeon. Her weight was reduced to 81 pounds. The treatment was as follows: a broad electrode, attached to the negative pole, was placed over the neck, and a similar electrode, attached to the positive pole, was placed over the back. The current strength was gradually increased to sixty volts and eighty milliamperes. Duration of each treatment, 30 minutes. Five months ofter the beginning of the treatment, the patient's weight was 130 pounds, and her pulse rate had fallen from between 140 and 150 down to 80. Thirty-seven treatments were given, daily at first, later, at longer intervals.

The second patient was a woman of 48 years, with extreme tremor, a pulse rate of 180, a large soft goiter, diarrhea, vomiting, and marked emaciation. She was unable to walk. Forty-two treatments were given. After the eighth treatment, she could walk a considerable distance. When seen three years later, she was still in good health.

These cases recall to mind the method employed thirty-five years ago, namely, galvanization of the cervical sympathetic, which was successful in many cases. It seems certain that when a galvanic current is applied in the manner described by Olivier, not only is the goiter directly affected by the action of the current, but, still more important, the sympathetic and pneumogastric nerves share in the stimulation, and so does also, through them, the visceral nervous system. The thymus also comes under the action of the current.

In 1895, von Mikulicz called attention to the occurrence of enlarged thymus in severe cases of exophthalmic goiter. In 1908, Hart gave it as his opinion that abnormal activity of the thymus might produce the clinical picture of Graves' disease. The thyroid, thymus, and stomach seem to be in a measure interdependent.

About eight years ago, a young school teacher suffering from goiter came under the author's care. The skin of her face was yellow, almost as in jaundice, and dry. Her tongue was coated, she was constipated, weak, and nervous, and had not menstruated in six months. Exophthalmos was present, and her heartbeat was about 130. General diathermy was employed twice weekly to the point of profuse perspiration, followed each time by the application of the glass vacuum electrode attached to the Oudin of a transformer. In this way a hot, strong current was applied for about one to two minutes' time. At each treatment there was a distinctly visible contraction of the goiter.

After eight such treatments the menstruation appeared, the pulse rate subsided, the skin lost its yellow tinge, and the patient apparently recovered. She has had no subsequent attack.

The diathermic current may be still more successful in these cases when applied to the neck and back. In cases of hypersecretion, a heavy current should be used for the purpose of inhibition, but where there are evidences of hyposecretion a mild diathermic current continued for an hour, tends to stimulate secretion.

When treating cases of glycosuria with diathermic currents, it must be borne in mind that hyperthyroidism may inhibit the action of the pancreas.

Dr. Titus has described to you the detoxicating influence of a suitable diet, and of muscular exercise, both voluntary and, in proper cases, provoked by means of a coarse faradic current applied to the principal muscles of the body.

In suitable cases, a considerable success may be obtained by employing the resonator effluve from a large static machine. An inducto resonator is used and the bipolar method is employed. A metal plate attached to the Tesla is placed over the abdomen, and the effluve from the Oudin applied gradually over every part of the back; the plate is then applied to the back, and the effluve electrode is gradually moved all over the body and limbs in front. Rhythmic muscular contractions of large muscle masses are produced; active tissue change results; the specific gravity of the urine becomes

higher, and there is a marked increase in the output of urea.

This treatment materially increases the muscle juices. There is an improved muscular tone, a general sense of well-being, and a reduction of fat. In several cases this reduction has amounted to as much as 50 lbs. in sixty treatments.

In cases of obesity where the peripheral circulation is impaired, heart action feeble, considerable flatus in the intestines, and a low output of urea, the use of the static wave current over the abdomen has produced the following results: the heart action has become stronger, the digestion has improved greatly, the extremities, previously very cold, have become permanently warm, and the low urea output has been raised to normal. In one case, there was a reduction of 100 lbs. in weight.

The wave current, when applied with a large electrode over the abdomon, reduces the venous engorgement in the liver and other organs of the abdomen. This current of high potential and low amperage diffuses itself along the saline fluids of the body, and when the spark jumps across the gap at the sliding rods emerges at the point where it entered. Then follows an anodal opening contraction. When the current again enters, an anodal closing contraction is produced underneath the metal plate on the abdomen. In this way distinct contractions of both voluntary and involuntary muscular fibers are produced. In addition a general molecular bombardment of millions upon millions of cells throughout the body occurs from the surging character of the current. This results in increased combustion processes, and accounts for the relief afforded, and for the loss in weight.

In a considerable number of cases of mental disorder the patients have voluntarily stated that, as a result of the wave current applied to the spine and abdomen the head felt better, ideas came more freely, sleep was better, and there was a general sense of well-being. Among female patients of this class, many suffer from amorrhea: in these, menstruation returned. The hair, frequently brittle, dry, and falling out, improves in growth and texture; digestion improves, and there appears to be a stimulation of all organic functions.

The combined galvanofaradic-sinusoidal current serves a useful purpose in diabetes, gout, nervous and mental disorders, and in the various conditions associated with obesity. This current, applied with a pair of large electrodes, 10 by 14 inches, to abdomen and back, exercises the muscles of the erector spinal mass, the serrati magni, the abdominal muscles, and, to some extent, the muscles of the thighs and shoulders. As a result, the tension and strength of these muscles becomes greater, the posture of the body becomes more erect, with a consequent improvement in the depth and regularity of diaphragmatic action, which in turn stimulates the return of venous blood from the portal circulation as well as from the general systematic veins.

The improvement in the tonicity, volume, and strength of the abdominal muscles increases the intraabdominal pressure, tends to support the abdominal viscera, and brings about a more normal distribution of the venous and arterial blood in the splanchnic area, and the danger of displacement of the abdominal organs as a result of the disappearance of the supporting fat without improvement in muscular tone (a not inconsiderable danger where a rapid reduction of weight in a very obese person is attempted by diet alone) is avoided.

148 West Seventieth Street.

THE DIAGNOSIS OF ABDOMINAL TUMORS.*

By ALEXIUS McGLANNAN, M.D.,
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NOWHERE in medicine is the advance of surgical technique over the progress of diagnosis more evident than in the case of abdominal tumors. The relative simplicity of an aseptic exploration of the abdomen, and the fact that most of the tumors require operation has intensified our interest in the surgical proceedure rather than in the diagnostic investigation.

With our best efforts diagnosis will remain doubtful in many instances and we are forced to operate on a tentative or a compromise decision. Furthermore, we have learned the lesson, that in some cases, especially in those of malignant tumor, to postpone the operation until a definite diagnosis can be made is to rob the patient of his opportunity for cure. However, by a careful study of these swellings we can often recognize their exact nature and be better prepared for their treatment.

In addition to ordinary physical examination, the diagnosis of an abdominal tumor may require the assistance of all the methods of investigation at our command, namely, clinical laboratory tests, *x*-ray examination, either with the contrast meal or after oxygen inflation of the peritoneal cavity, the special skill and knowledge of the gynecologist and of the urologist. When these means are employed in a proper manner the number of cases coming to operation without a diagnosis becomes relatively small.

In studying an abdominal swelling we must first decide that a tumor actually exists, then whether it is situated in the abdominal wall or within the peritoneal cavity. Should it prove one within the cavity, its origin and relations are problems to solve.

Sham and phantom tumors are frequent in the abdomen. These sham or false tumors may be contracted muscles, a portion of a normal organ, or a fecal mass. The commonest, probably, is the palpable aorta of thin and nervous patients, mistaken for an aneurysm by the inexperienced. With a true abdominal aneurysm various factors may make it impossible to distinguish between a heaving impulse and distensile pulsation, but in the absence of the latter sign we are not justfied in making the diagnosis of aneurysm.

Contraction of the upper part of the rectus muscle may resemble a tumor. This is more likely to be true in cases of pyloric ulcer, or irritation, when palpation of this region throws the right rectus into protective spasm, while the left muscle remains relaxed. In such a case the recumbent patient should be directed to sit up without using his arms. The even contraction of both recti will prove the muscular origin of the tumor.

*Read before the Ohio Valley Medical Association at its twentieth annual meeting at Evansville, Ind., on November 11 and 12, 1919.

In certain forms of ptosis the pylorus become palpable in the upper right quadrant, as either a finger-like cord or a nodule. Frequent and rapid changes in the consistence of the mass way be felt as the pylorus contracts and relaxes under the palpating fingers.

With emaciated patients the head of the pancreas may be felt in front of the vertebral column.

Fecal accumulations usually occur as tumors in the course of the colon. They are commonest in the cecal and sigmoid regions. When pressure of the finger on the tumor leaves a dent in the putty-like mass, the sign is pathognomonic. Some of the fecal masses become very hard from dehydration, especially those occurring in the colon in Hirschsprung's disease and behind obstipating tumors. Enemas before examination and the *x*-ray examination of the intestine will be found necessary in the study of such cases.

The tumor of intussusception is recognized by its cylindrical shape and by its situation close to the spinal column. The associated symptoms of acute intestinal obstruction are usually so urgent that this variety of false tumor is not likely to be confused with anything else.

Inflammatory masses are easily mistaken for tumors. The stump of a resected omentum may form a painful tumor, should it become infected or necrosed. Circumscribed areas of suppuration, especially those occurring in the region of the appendix, may form firm, immovable masses easily mistaken for malignant tumors. These masses evidently represent an unusual reaction on the part of the tissues to the invading organism, comparable to that occurring in the case of woody phlegmon of the neck.

The nodular and encysted forms of tuberculous peritonitis give rise to false tumors in the abdomen, most often in young patients. The diagnosis of tuberculosis rests on evening fever, the local slight but persistent tenderness, and the fixation of the tumor, which may be either cystic or solid. Attacks of partial or complete intestinal obstruction are frequent in the course of tuberculous peritonitis.

Phantom tumors are produced by a localized contraction of the abdominal muscles or by gaseous distention of some portion of the gastrointestinal tract. Such tumors are found in hysterical patients or malingerers. The swelling may be made to disappear by deep and rapid respiratory movements and always vanishes under complete anesthesia.

Tumors of the abdominal wall may be separated as follows: (1) Those in which contracture of the abdominal muscles produces no change in the relation of the tumor. These are tumors of the skin or subcutaneous tissue. (2) Those in which the contracture immobilizes the tumor. These are tumors of the muscles or fasciæ. (3) Those in which the tumor disappears when the muscles contract; these are under the muscles, almost always within the cavity—Nélaton's tumors.*

*Nélaton's tumors are fibromata or sarcomata situated between the peritoneum and the muscles of the abdominal wall. They disappear when the muscles contract, but may be distinguished from intraabdominal growths by the direction of their movement with respiration. Nélaton's tumors move with the abdominal wall, from before backward. Intraabdominal tumors move with the diaphragm, from above downward.

In examining swellings of the abdominal wall, epigastric and other forms of hernia must be kept in mind.

Having decided that the swelling is an intraabdominal one, the first fact to determine is the point of attachment of the tumor. When the mass is a fixed one this is usually easily decided. With a freely movable tumor, in the absence of a palpable pedicle there is likely to be some difficulty. This may be surmounted by using the circle of Pagenstecker. The mass is moved through its entire range, marking its position at intervals on the abdominal wall. When these marks are connected we shall have outlined the segment of a circle, the center of which will be at the point of fixation of the tumor. The concavity will be in the direction of the origin of the tumor.

This maneuver will, of course, be misleading in the case of parasitic tumors, which have made new attachments at a distance from their true point of origin, and in tumors growing from organs which are congenitally misplaced. Should the tumor have a wide range of motion in several directions, the curve will not indicate its attachment, but such a range points to a tumor of the small intestine, the mesentery or the omentum.

The diagnosis of tumors so large as to occupy almost the entire abdominal cavity is often difficult. The notched leucemic spleen and the nodular fibromyoma of the uterus form hard tumors of great size. Tumors of the kidney and of its fatty capsule are soft. The enormous peritoneal fibrolipomas may be confused with ascites or ovarian cyst. Ovarian cyst and hydronephrosis both form large smooth swellings. The upper border of the ovarian cyst is best defined, while the lower border is most distinct in the case of hydronephrosis. Gynecological and urological examination will distinguish between the confusing swellings.

A pregnant uterus should always be remembered as a possible explanation of the presence of a large tumor in the abdomen, and we must not overlook a distended bladder as another cause of a large cystic swelling.

With the point of fixation of the tumor determined, we next classify and distinguish between the various swellings originating in that particular locality. For the purpose of classification it is well to divide the abdomen into four quadrants and to take a segment from the inner angle of each quadrant to form a central umbilical zone.

In the upper right quadrant, therefore, the liver and gall-bladder, the pylorus and part of the body of the stomach, the pancreas, hepatic colon, the kidney and adrenal may be the source of a tumor.

Enlargements of the liver may be smooth or nodular. The smooth enlargements are those of obstructive cholangitis, of hypertrophic cirrhosis, and of abscess. The nodular swellings are those of lues, of cancer, and of the congenital cystic liver.

A round and soft tumor suggests an angioma or cyst, while multiple soft nodules suggest benign adenoma.

Both lues and cancer early in their course may form a smooth swelling of the liver. The Wassermann test should be made in all cases of enlarged liver and when it is positive, active antiluetic treatment should be instituted. Syphilis of the liver is

influenced very rapidly by active treatment. The congenital cystic liver is associated with congenital cystic kidneys.

The relation of liver swellings to the occurrence of ascites and of jaundice is of value in their differentiation. Obstructive cirrhosis, hypertrophic cirrhosis, adenoma, and cancer produce jaundice. Cancer is the only one of these which produces ascites. The association of tumor, ascites, and jaundice, therefore, makes a diagnosis of cancer of the liver. Abscess of the liver is usually recognized by the fever and other signs of infection. There may be jaundice, but no ascites develops. The previous history of one of the illnesses likely to be followed by liver abscess is of greatest importance.

The enlargement of the spleen in biliary cirrhosis and in Banti's disease will aid in recognizing these types of enlargement of the liver.

Echinococcus infection is rare in this country and cysts of this origin can be suspected only when the patient is one who has migrated from Bulgaria or some similar region.

Enlargements of the gallbladder may be so great as to make a tumor in the neighborhood of the umbilicus, or in the ileocecal region. Unless there are adhesions, such a gallbladder makes a movable tumor whose fixed point may be demonstrated by using Pagenstecker's circle. Such a swelling is a hydrops of the gallbladder and is produced by obstruction of the cystic duct. A similar tumor, less freely movable but tender, with constitutional symptoms of infection, will be an empyema of the gallbladder. Gallbladder swellings with jaundice indicate obstruction of the bile ducts. Painless enlargements with jaundice indicate new growth, while attacks of colic are associated with stones. A distended gallbladder with jaundice indicates pressure on the common duct, usually cancer of the pancreas. (Courvoisier's law). Carcinoma of the gallbladder produces a nodular tumor with jaundice, but without colic. Ascites is common in the course of cancer, rare in calculus obstruction. Cancer metastasizes to the supraclavicular glands.

Tumors of the pylorus are either indurated ulcers or cancers. The mobility of the tumor depends on the character of adhesions. Their gastric origin can usually be proven by the *x*-ray examination, as well as by study of the stomach contents after a test meal. Obstruction of the pylorus occurs in both varieties. Sudden onset of symptoms is usual in cancer, while a long history of dyspepsia is common in the case of ulcer.

A hard tumor deep in the epigastrium near the vertebral column is likely to be a swelling of the head of the pancreas. Whether this be due to chronic inflammation, to lues, or to cancer must be decided by the associated symptoms. The pancreatic nature of the disease is shown by disturbance of the intestinal digestion, best studied by estimating the diastatic activity of the feces (T. R. Brown. *Johns Hopkins Hospital Bulletin*, July, 1914, xxv, 200.) Hemorrhagic or milky ascites is suggestive of cancer of the pancreas. Metastases to Douglas' cul-de-sac may be misleading in women. True or false cysts of the pancreas form smooth round swellings in the middle line or to the left of it, between the tip of the sternum and the umbilicus. The tumor is seldom movable to any great degree. The protrusion most often is between the stomach and colon.

Tumors of the hepatic flexure are almost always carcinoma, and are recognized by alterations in the motility of the intestine and the loss of flexibility of its wall as shown by the *x*-ray examination. Tuberculosis and lues will resemble cancer in many ways.

Tumors of the kidney growing from behind the peritoneum cause bulging of the loin rather than in the abdomen. On bimanual palpation they are felt most distinctly from behind at the costo-vertebral angle of the last rib. The colon is pushed forward as the tumor enlarges. The final recognition of the nature of the tumor is made by the complete study of the urinary tract by modern urological methods.

On the left side the splenic enlargements and those of the kidney and colon must be considered.

With a spleen in its normal location, the enlargements of the organ can be made out as tumors coming from beneath the ribs, and moving with respiration. When the notches can be felt the splenic origin of the mass is quite certain. The protrusion is into the abdomen, not into the loin; and the colon is first pushed downward and then lies behind the swelling. The changes in the blood picture will identify certain types of enlarged spleen. The association of enlarged spleen with anemia and later with hepatic cirrhosis is characteristic of Banti's disease. The constitutional symptoms and the local signs of suppuration with a large spleen indicate a splenic abscess. Malignant tumors produce a general splenic enlargement with ascites and cachexia. A wandering spleen may be confused with some other pedunculated tumor, unless a notch can be felt.

Tumors of the transverse and splenic colon have the same characteristics as those described in the case of the hepatic flexure.

The tumors of the lower right quadrant are carcinoma of the cecum and appendix, tuberculosis, actinomycosis, or syphilis of the cecum, and encapsulated areas of chronic suppuration in the region of the appendix and cecum. A parasitic myoma of the uterus may become attached, and occasionally an ovarian cyst may be found in this region. Adenomyoma of the round ligament may form a tumor in either iliac fossa. The tumors and inflammations of the cecum are identified by the *x*-ray examination; the growths of the uterus and its appendages by a pelvic examination and by the menstrual history.

On the left side, tumors of the lower quadrant are those of the sigmoid, colon, and the pelvic organs. Giant sigmoid makes a sausage-like tumor which may fill up most of the lower abdomen. Carcinoma of the sigmoid is seldom palpable. Diverticulitis may result in an inflammatory false tumor attached to the sigmoid. A history of interference with the motor function of the bowel and the *x*-ray study enable us to recognize these conditions.

In the central umbilical zone we find the tumors of the small intestine, mesentery, omentum, of the umbilicus and its attached fetal remnants.

Tumors of the small intestine are usually hard and uneven, and associated with symptoms of intestinal obstruction of varying degrees. Sarcoma, submucous lipoma, pedunculated adenoma, and sim-

ilar growths which encroach on the lumen of the intestine are likely to be the cause of intussusception occurring in an adult.

Tumors of the mesentery are extremely movable and generally globular in outline. They are usually cysts, and most often occur in young girls. Aneurysm of the superior mesenteric artery forms a movable rounded tumor, which has expansile pulsation.

Omental tumors are either lipoma, sarcoma, or metastatic carcinoma. They are not as movable as the mesenteric tumors. The inflammatory sham tumor of the omentum has been mentioned. The sarcoma forms a hard, cake-like, irregular mass.

Meckel's diverticulum may form a cystic tumor of large size attached to the small intestine and with it freely movable in the peritoneal cavity; or it may also be attached to the abdominal wall, in which event the tumor will be fixed just behind the umbilicus.

Cysts of the urachus are found in the middle line, between the umbilicus and the position of the bladder. As both the diverticulum and the patent urachus are remnants of the fetal umbilical structure, some abnormality of the external umbilical scar is usually present with these tumors.

Retroperitoneal tumors in their growth displace the abdominal viscera. Some portion of the colon is usually stretched over the mass, if it be of any considerable size; and because of this fact, there is likely to be resonance in front of the tumor. Pressure symptoms, depending on the structures involved, are associated with the growth of the tumor. The tumor is situated deep in the abdomen, may be smooth or nodular, is seldom tender, but usually causes pain. Most often the tumor is a sarcoma.

115 West Franklin Street.

RADIUM TREATMENT OF UTERINE HEMORRHAGE.*

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AND
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A DISCUSSION of the pathology of uterine hemorrhage is deemed unnecessary at this time. Every physician in this audience has had many of these cases to deal with, and in every case has wished for a specific to control this, at times, dangerous condition.

Radium therapy has been almost entirely devoted to malignant conditions, but it is now being used more and more in the treatment of nonmalignant diseases. In order to understand the essential points of radium therapy it is necessary to have a knowledge of the physics of radioactivity.

The energy given off by radium consists of a radiation, and the liberation of a gas, called the emanation, which is said to be radioactive.

The definition of radioactivity, as given by the Standard Dictionary, is "the dynamic property found in certain bodies of high atomic weight, of spontaneously emitting peculiar and characteristic rays invisible to the eye and capable of penetrating objects opaque to ordinary light."

The radiation is made up of three distinct rays, alpha, beta, and gamma rays. In the treatment of disease with radium this classification is important, as the results of treatment depend largely on the class of rays used. About 90 per cent. of the total radiation is made up of alpha rays. They have but slight penetrating power, and are positively charged.

These rays are seldom used in therapeutics, and never in the subject under discussion. They have slight penetrating power and are the irritating rays which are likely to produce burns. However, these rays are very easily eliminated, a thin sheet of metal or even a few thicknesses of paper being sufficient to stop them. These rays are given off with a velocity of 2,000 miles a second. One mg. of radium gives off 13,600,000 alpha particles a second. Notwithstanding this fact, radium is said to lose only one-half its strength in 1,700 years.

Beta rays are made up of particles negatively charged and travel with a velocity equal to light. These particles are only about 1-1000 the size of that of the hydrogen atom. Beta rays form about 9 per cent. of the total radiation, but are not at all homogeneous, varying greatly in their power of penetration. Some are little more penetrating than the alpha rays and are known as the soft beta rays; others, called hard beta rays, are exceedingly small and have great speed and power of penetration. Between these extremes are what are called the medium beta rays, which range from the soft to the hard beta rays.

The gamma rays form only 1 per cent. of the total radiation, but have great power of penetration. The gamma rays from 30 mgs. of radium can be observed by an electroscope after passing through a foot of iron. They have a velocity equal to that of light, and are a pulsation of the ether, in this respect being similar to Roentgen rays, but they differ from the latter in their greater power of penetration. M. Sagnac discovered that the gamma ray on encountering matter produces a secondary ray, similar to the beta ray. These rays have been called rayons de Sagnac by the French.

According to Rutherford 2 mm. of lead is sufficient to absorb nearly all the beta rays. On account of the difference in the penetrating power possessed by the different rays it is necessary to use screens of suitable material to eliminate the rays we do not desire to use in any given case. It is only very rarely that it is found desirable to use the alpha rays, as they are not sufficiently penetrating and readily produce burns. When they are used it must be for a very short time only. Metal screens have the double object of lessening the total amount of radiation and at the same time modifying the quality by filtration.

In the treatment of uterine hemorrhage the gamma rays only are used. The alpha rays and also the beta rays are eliminated by a metal filter or screen, which may be of brass, silver, gold, platinum, or other metals.

The cases of uterine hemorrhage coming to the Radium Laboratory for treatment may be broadly divided into two classes.

1. Cases in which there cannot be found a gross pathological condition. They come with a diagnosis of hypertrophy or hyperplasia of the endometrium, metritis, or endometritis. They have hemorrhage at puberty, at the menopause, or possibly throughout the child-bearing period.

*Read before the 20th annual meeting of the Ohio Valley Medical Association at Evansville, Ind., Nov. 11 and 12, 1919.

The treatment of these cases is frequently a source of great annoyance to the surgeon. After the use of all kinds of intrauterine applications and the administration of glandular medication perhaps, a curettage is advised. This sometimes overcomes the evil, but frequently the patient returns with the same old story. In not a few cases the surgeon finally in desperation resorts to a hysterectomy. But it is only after repeated failures that a conservative surgeon will advise such a mutilating operation. Among the most brilliant results obtained from the use of radium is in this group of cases. Indeed, very few cases of hemorrhage from the grossly normal uterus fail of permanent cure with radium.

2. Cases presenting a distinct gross pathological condition such as fibroid and carcinoma. In this class the bleeding cannot be considered by itself but must be taken up with the entire question of treating the pathological condition.

Occasionally a case of fibroid so exsanguinated as to make operative treatment inadvisable has been referred to us for radium treatment, with the intention of resorting to operation after the bleeding was checked and the patient became stronger. Two such cases have been so treated, and by the time the patient had regained sufficient strength to undergo an operation there was such a retrogression of the tumor that they both refused operation and at this time have no evidence of the tumor.

Technique.—The patient is given the routine hospital preparation for a vaginal operation. Gas is given and the cervix is dilated. The radium is in an hermetically sealed glass tube, and this is placed in a silver tube .5 mm. in thickness; this in turn is put in a rubber tube 5 mm. thick. The radium prepared in this way is introduced into the uterus and allowed to remain for from 12 to 24 hours. At the end of this period the radium is removed, the patient is permitted to return home with instructions to keep off her feet for a few days and to report her condition at the end of six weeks. As a rule we do not repeat the treatment under three months, but in our experience only a very few cases have required a second treatment.

Patients during the child-bearing period are given a smaller dose, as it is desirable to preserve the menstrual function. Patients at or beyond the menopause are given an application of from 600 to 900 radium hours, and this will usually be sufficient to produce a permanent menopause. In the greater number of our cases there has been at least one menstrual period after the administration of radium. It is well known that the effect of radium is manifested slowly. Some of the patients are treated shortly before the time for their period and consequently there is another menstrual flow before amenorrhea is produced.

Two cases only will be reported and very briefly.

Case I.—A girl of 17 suffered a severe metrorrhagia for three years, that is ever since she began menstruating. She had been given ovarian and thyroid extract and also uterine applications of various remedies. She was curetted and somewhat benefited for a few months. After about one year she began bleeding profusely again, and was curetted a second time. This not checking the hemorrhage, a hysterectomy was advised. The mother not being willing to have the operation, brought her for radium treatment.

The cervix was dilated and 50 mgs. of radium applied and allowed to remain 24 hours, which gave a total of 1,200 radium hours. She had her period in about three weeks but there was a cessation of the metrorrhagia. Since that time there has been complete suppression of the menstrual function with accompanying nervousness and hot flashes. I have been told within the last few months that she has been having a slight return of her menstruation and is in good health. I am not sure of this as the report came to me indirectly.

It is certainly not desirable to produce a permanent menopause in a girl of this age, but the end results are better than in an hysterectomy. We have learned that it is far better to give these cases a fewer number of radium hours, even at the risk of having to make another application. Now we usually give these young girls about 400 to 600 hours, which results in a temporary cessation of menstruation for a few months, after which there will be the normal menstruation. From the experience with radium in this group of cases in the last year we feel sure that the technique will be so improved and standardized that we shall be able to control the hemorrhage without producing a permanent menopause, which is so undesirable.

Case II.—Mrs. M., age 48. She gives a history of having a profuse menorrhagia for more than ten years. Frequently she became so exsanguinated that she was confined to her bed for several days at a time. For the last six months she had been totally incapacitated. She was curetted and her periods became regular and stayed so for about six months, when she had another severe hemorrhage. An hysterectomy seemed to be inevitable and as a last resort she was sent for radium treatment.

She was given 50 mgs. for 12 hours. The hemorrhage was checked for 8 months. It then returned and, while not profuse, was persistent. Another application was given and as the hemorrhage was not severe we gave her the same dosage as she had the first time, 50 mgs. for 12 hours. In about six weeks she had a slight show of blood but since then there has been a permanent menopause.

Radium will not be an ideal treatment until we are able so to regulate the dosage that we can check the hemorrhage and not stop menstruation permanently.

It is beyond the scope of this paper to discuss the second group, those cases presenting a gross pathological condition, as hemorrhage is then only a symptom. It would be necessary to take up the treatment of the gross lesion, for which I have not the time.

In regard to the carcinomas of the uterus we have found radium very effective in stopping not only the hemorrhage, but the foul discharge as well. Three years ago it was my privilege to report to this Association three cases of carcinoma of the uterus treated with radium. I want to take this opportunity to make another very brief report of these cases.

Case III.—Mrs. C., age 43. Referred to me by Dr. Ed. Clark; no cancer or tuberculosis in the family. In March, 1915, she had pain and soreness through the abdomen and back; had irregular menstruation and for some time the flow had been almost continuous. Her bowels had been constipated for years. She had had a great deal of pain all summer. On Sept. 7, 1916, she was curetted and cauterized, an hysterectomy being deemed inadvisable. She left the hospital on the 13th day. She continued to have pain and the hemorrhage and the offensive odor reappeared in a very short time.

I saw her on Oct. 13 at which time she weighed 93½ lb.; had marked cachexia, and was very weak and frail.

On Oct. 15, 1916, I gave her an application of 50 mgs. for 12 hours. The next day she felt weak, was

slightly nauseated, and had general malaise. On account of this condition I thought best to wait 48 hours from the time of the first treatment. On Oct. 18 I gave her the same treatment.

On the evening of the 18th, about one hour before I made the second application, she took morphine gr. ¼ for the relief of pain. Although she had been compelled to resort to morphine for the pain, she has never since had to take another dose.

I gave her altogether about 3,000 radium hours. The hemorrhage was promptly checked, as was also the offensive discharge. On Nov. 16 she weighed 96½ lb. and on Nov. 30 she weighed 105½, a gain of 9½ lb. in two weeks. About the 1st of January, 1917, she returned to her work as a millinery saleslady in one of our big department stores and has never lost a day on account of sickness in almost three years. There is no evidence of the disease on vaginal examination and she is clinically cured.

CASE IV.—Remained in good health for about 9 months when she succumbed to a general carcinomatosis.

CASE V.—Greatly improved and was able to get about although she had been confined to her bed for some time when she was treated. She lived about 7 months.

These three cases reported in 1916 were inoperable and hopeless. One is living, now three years, and in good health, and the other two received great benefit.

In the treatment of excessive hemorrhage from small fibroids radium is the ideal treatment. It will not only stop the hemorrhage but will produce a retrogression of the tumor. Clark, Kelly, and others have made reports on the treatment of uterine fibroids with radium with which you are all probably familiar.

Radium has not displaced surgery in the treatment of fibroids but in selected cases it has proven of great value.

In the treatment of uterine carcinoma it is invaluable. In all forms of uterine hemorrhage radium has proved to be a valuable agent, and as the technique becomes standardized it will be more effective.

709 HUME-MANSUR BUILDING.

THE INHALATION TREATMENT IN PULMONARY TUBERCULOSIS.

BY BEVERLEY ROBINSON, M.D.,
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I AM prompted to write briefly on this subject by an article which appeared in the May issue of *Western Medical Times*. According to that article, Dr. Albert C. Geyser of New York, apparently does not think favorably of this treatment. It seems to him that what might appear to be due to treatment in a beneficial way is probably brought about by healthful conditions of food, air, and employment. Now, while all these latter may be most advantageous in promoting and establishing a cure when that is possible, or great amelioration of a patient's symptoms even when inhalations are not employed, I, for one, hold that dry vapor inhalations from certain volatile substances are very valuable and assist many times, in a sure and remarkable manner, when merely hygienic rules of life are not in themselves sufficient.

For many years in all cases of pulmonary tuberculosis, I have used and insisted upon the frequent, almost constant employment of the perforated zinc inhaler. With it, I am very apt to employ equal parts of beechwood creosote, spirit of chloroform, and alcohol. Of this mixture a sufficient number of drops, ten to twenty, are poured upon the moistened sponge of the inhaler and the inhaler is worn over the nose and mouth, while the patient inhales naturally, and without effort, the vapors which proceed from the mixture. The inhaler is held in place by two light rubber cords which take hold behind the ears. At first, the inhalation may increase the cough, and the patient finds it objectionable on this account. But this drawback is soon overcome by removal of the inhaler, after a few moments' inhalation and resuming its use after a short time of rest—say fifteen to thirty minutes. Very soon the patient can wear the inhaler without discomfort and, indeed, with some relief to cough and breathing, an hour or more at a time.

Before long, the patient can wear it almost constantly and with little or no discomfort. In many instances, one may sleep with the inhaler on during the entire night. The drops on the sponge should be renewed from time to time and whenever the odor of creosote becomes less appreciable. When the inhaler is worn almost constantly, it is well to examine the urine every day or two, and if a trace or more of albumin appears, to lesson the length of time or frequency of its use.

There are indeed, a few patients who cannot wear the inhaler for any length of time, or find it very irksome to do so. To these especially, I give a treatment of creosote in an acceptable form and in small or moderate and frequently repeated doses. A formula I have frequently and widely used in the past, is six minims of beechwood creosote, one ounce of the best glycerin, and two ounces of good whiskey. Of this I gave a dessertspoonful every two, or three hours. Even when the patient uses the inhaler frequently and almost constantly, I think it is wise sometimes to give creosote internally, in small doses.

Of course, if creosote is given internally by the mouth and also, used almost continuously with the inhaler, the frequent, almost daily examination of the urine must not be neglected. I am convinced that creosote should not be given undissolved in capsules, as they are often upsetting to the stomach. I am also convinced that creosote should not usually be given in anything but small, repeated doses, for a like reason, and besides, I do not consider it curative in large doses. Some patients, or their attendants, or indeed their near relatives, complain much of the very unpleasant smell of creosote. When this is the case I combine creosote with oleum pini sylvestris, or with compound tincture of benzoin, both of which have a pleasant odor and are also beneficial.

When the cough is very racking and evidently hurtful to the patient, pure chloroform may take the place, for a while, of spirit of chloroform, but when this change is made, the inhalation should not be prolonged at any one time and the effect of it should be closely watched and intermitted for a while, if in any doubt as to its helpful effects. There is much evidence to show that the use of pure chloroform in the inhaling mixture, will at times afford great temporary relief to cough.

Now then, a few words as to the effects from dry vapor inhalations of beechwood creosote. In many instances, during the past thirty years, I have

known them to be of untold value, combined or not with creosote given internally, in the manner I have indicated.

I have written much and frequently, about this treatment in former years and might not think it desirable for me to write again what precedes, were it not that I wish my convictions to be widely shared, since I know them to be *very* important and not to be ignored by the rising generation of physicians or go unrecorded. We old practitioners have learned some, not to say many, useful lessons from long experience and it is well maybe at times, to give them forth again and again, even at the risk of wearying our readers with a twice-told tale.

As a matter of fact, creosote is to me the only drug, when properly used, which has a very real value in the cure of pulmonary tuberculosis. It will not cure, or even materially benefit all cases, but surely it will greatly help to save some who otherwise are destined to a fatal termination. The reason why creosote is not adhered to, or believed in, as it was at first, now many years ago, is in my judgment simply because it was badly prescribed. Again, that the perforated zinc inhaler is not used in almost all cases as it should be depends simply upon lukewarmness, ignorance, or what is to me, to-day, a great and increasing evil; namely, the far too great respect and following of laboratory, or what is termed *scientific* medicine. But it is not; this is a misnomer.

The only real, useful, practical—indeed scientific, medicine, is what almost wholly depends upon close, accurate bedside observation, always noting results clinically and allowing all mere abstract theories, or even reports of physical instruments of latest finding and doing, influence us very little or not at all.

To complete my brief paper and maybe to the doubting Thomases to help establish in their observation my own convictions, I would cite two men in whose judgment and wide experience I have great confidence.

Dr. J. M. Anders writes in the last edition of his admirable work on Practice (p. 283): "Creosote by inhalation is the remedy par excellence for tuberculous bronchitis combined with spirits of chloroform and alcohol."

In the latest edition of Osler's *Modern Medicine*, Dr. Lawrason Brown states (Vol. 1. p. 504): "Inhalations often markedly benefit the cough, especially when the irritation is in the larger bronchi. The oronasal respirator (Yeo), which can be worn continuously, is probably the best means of administering vapors."

Further, he adds (p. 505): creosote "in some cases seems to act almost as a specific upon the accompanying bronchorrhea and intercurrent attacks of simple bronchitis. For this effect small doses only are necessary in most patients."

Anders also writes that in his experience creosote has helped greatly diminish the fever in tuberculosis. These few but very valuable quotations are surely sufficient to uphold with authority my affirmed and corroborated statements, during many years in which I have had much experience and followed carefully many patients affected with undoubted pulmonary tuberculosis.

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THE ADMINISTRATION OF ARSPHENAMINE BY RETENTION ENEMA.

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The main interest in this report naturally centers in the results obtained by the administration of arsphenamine by retention enema. With the advent of American-made salvarsan, the number of reactions[1] following the intravenous administration of this drug were so numerous that I became more or less discouraged regarding the intravenous route and decided to employ some method whereby we could accomplish the same results clinically and serologically and still avoid the undesirable and sometimes fatal reactions which have occasionally followed the intravenous method of administration. It is not to be inferred that reactions are due to our American product, for some patients have tolerated this domestic product very well when given intravenously, nor is it due to poor technique, for we have observed nitroid crises under the most strict asepsis; then to what is this salvarsan reaction due?

The factors that can cause salvarsan reactions excluding a poorly made product and bad technique are:

1. The possibility that the patient has had some food previous to receiving the drug;

2. A deficient amount of alkaline salts in the body fluids;

3. A low degree of activity from the organs of internal secretion;[2] and last but not least,

4. The probability that the patient has a heart lesion so imperceptible that none of the available instruments can help us in discovering the lesion. These are factors which must be considered and adjusted when one contemplates giving salvarsan intelligently by the intravenous route. To go into further details in the subject of reactions would be to defeat the purpose of this paper, and therefore I shall now enter upon the subject proper.

With the method which will shortly be described no sequelæ such as headaches, nausea, vomiting, fever, dizziness, or subsequent nitroid crises acting destructively upon the eyes, kidneys, liver, or fatal termination have ever been observed. There was only one case of Jarisch-Herxheimer reaction developed in a child with hereditary syphilis thirty-six hours after the administration of the arsphenamine enema. In this case the cutaneous eruption and edema of the face cleared completely in seventy-two hours. This is just about the time when it is believed that arsphenamine is completely eliminated from the body fluids.

From the dawn of salvarsan therapy, syphilographers have tried to administer this powerful drug in such a way that it would not be so obnoxious to the patient. Bagrow[3] of Moscow was the first one to employ suppositories of coca butter with 0.10 to 0.20 centigrams of neosalvarsan. Weil, Morel, and G. Moriquand in 1912 employed glycerin suppositories and their results were very satisfactory, leading them to conclude that the rectal route is the ideal method for the administration of salvarsan and that the intravenous route

may be used only in cases of emergencies. They came to this conclusion after a comparative study of the intravenous, the intramuscular, and the rectal methods. Following these workers came Geley,[5] who was the first one to use the enteroclysis. Rajat[6] was so enthusiastic over his results that he pronounced the intravenous injection a dangerous procedure. Oulman and Wolheim[7] in 1913 also concluded that their results were superior to the intravenous method. Benoit[8] and Guiard,[9] who employed neosalvarsan by rectum, claim that their results were not as good as those obtained by the intravenous method. Last year Boyd and Joseph[10] arrived at the conclusion that their results were just as good as those obtained by the intravenous method, minus the reactions, and that their method was so simple that the whole procedure could be left in charge of a nurse or the patient himself.

At the Metropolitan Hospital, where this work has been carried out, the cases that have been available are of a very low grade character. The majority are prostitutes who have been sent to the hospital from correctional institutions and as a rule meet the treatment only half way. In spite of this difficulty some of them have co-operated with the doctors and the results obtained have been decidedly satisfactory. All cases have the Wassermann taken before, during, and after the treatment. No tests from private laboratories were depended upon, for many and many a time a case which has been declared negative has been found to be positive by our laboratory.

At our pathological laboratory the results of a Wassermann test are based on the combined readings of three antigens: Antigen No. 1—Human heart cholesterin; No. 2—Guinea pig heart cholesterin; No. 3—Guinea pig heart alcoholic extract. Each antigen according to the degree of hemolysis is read off as one, two, three, or four plus, and then the sum total of the three antigens is summed up. One can see then that a very accurate result is thus obtained.

Technique.—1. The patients are given a mild laxative the night before and no breakfast on the following morning. About three hours before the time set for administering the arsphenamine enema, they are given a soap suds enema till the return flow is clear and then urged to evacuate completely.

2. The solution of arsphenamine is prepared in the usual way, observing all the rules of asepsis and diluting it to anywhere between 200 c.c. and 250 c.c. This depends on the size of the individual. Azemar introduces in the solution a few drops of tincture of opium, but for obvious reasons this procedure has always been avoided.

3. The apparatus consists of a glass cylinder of a capacity of about 300 c.c., connected at one end with a rubber tubing having a glass window and a stop-cock and a rectal tube of sufficient calibre so that the fluid can flow easily and swiftly. The tube we employ is No. 30 French. No dropper bulb is necessary for the reason that the solution is to be kept away from contact with air as much as possible. The whole outfit must be sterilized before using.

4. In administering the arsphenamine enema, the position that the patient assumes while and and after the enema is given is very important. The solution having been prepared and placed in the cylinder and the air having been expelled, the patient, if a male, is allowed to assume the genupectoral position, and if a female, the lateral or Sims position, and after the rectal tube has been introduced into the rectum for four or five inches the solution is allowed to flow into the rectum by gravity after the stop-cock in the rubber tube has been opened. As a rule the average patient can hold this enema from twenty to twenty-four hours. In exceptional cases it has been held for four days. Arsphenamine seems to have a constipating effect on the intestinal tract. Where a patient cannot retain the enema, it has been the custom to give a dose of the tincture of opium or paregoric by mouth. In children this is a standing rule. The enema having been given, the patients are sent to bed and allowed to remain in bed for about four hours instructing them to change their position at frequent intervals. Reverse peristalsis can be more readily facilitated when the foot of the bed is elevated.

5. In adults the initial dose is 0.3 gram and every dose thereafter 0.6 gram. The enema can be given either once or twice a week, all depending on the condition of the patient. By giving the enema twice a week it is believed that the spirochetes are kept in a constant arsenic saturation and thus the duration of the infection is materially shortened. The ideal time to give these enemas is in the evening so that one is assured that the patient goes to bed and rests completely in the reclining position.

6. As to the number of enemas necessary in order to effect a cure clinically and serologically there is no absolute rule. Each case is to be treated individually. On an average a case usually clears up clinically and serologically after five arsphenamine enemas. One case I recall cleared up after three enemas. Then again, another case was still four plus after twelve enemas. This latter case, by the way, was one of tertiary syphilis with extensive bone pathology, and it is probable that no amount of arsphenamine, regardless of the method used, could affect the Wassermann test or improve the symptoms. It is not to be concluded that in tertiary syphilis rectal therapy is not of any avail; far from it, for in some cases splendid results have been obtained both symptomatically and serologically. In some of these tertiary cases, at this writing, the Wassermann test has been changed from four plus to two plus, besides improving the symptoms, and with further treatment such cases no doubt will give gratifying results.

7. During the course of arsphenamine enemas, the patient should undergo a course of active mercurial treatment. Unless there are very good contraindications against giving mercury during the arsphenamine treatment, the patients are usually instructed to stop their mercurial treatment on the day that they receive the arsphenamine enema. Of course, in cases of nephritic lesions or pulmonary tuberculosis one naturally must be very cautious as to the procedure of treatment.

Case I.—S. B., age 22, female, colored, admitted to

hospital January 7, 1919, with crustaceous lesions in the face, neck, arms and legs which she has had since last month. On January 11, 1919, the Wassermann reaction was: Antigen No. 1, Human heart cholesterin, four plus; No. 2, Guinea pig heart cholesterin, four plus; No. 3, Guinea pig heart alcoholic extract, four plus. Diagnosis: Positive (four plus). On February 21, 1919, after she had received five injections of arsphenamine intravenously and six mercury hypodermics, the Wassermann reaction was still four plus. In March, 1919, she began to receive arsphenamine per rectum and daily mercurial inunctions.

March 7.—Arsphenamine 0.3 by retention enema. Retained for twelve hours. Complained of only slight gurgling sensation in the abdomen. No pains.

March 24.—Arsphenamine 0.6 by retention enema. Retained for fourteen hours. No complaints.

March 29.—Arsphenamine 0.6 by retention enema. Retained for six hours. No complaints.

April 12.—Arsphenamine 0.6 by retention enema. Retained for eight hours. No complaints.

April 18.—Arsphenamine 0.6 by retention enema. Retained for twelve hours. No complaints.

April 24.—Wassermann reaction negative. May 5, Wassermann reaction negative. May 14, Wassermann reaction negative. The patient was discharged from the hospital, her skin lesions having completely cleared up.

Case II.— M. L., age 19, female, white, married. On admission to the hospital patient had a pustular eruption over the thorax and abdomen and also on the left wrist and left leg. Both breasts were covered with papular syphilides. The labia majora were a mass of chancres. The anal region was full of condylomata. She claims that she first noticed the chancres about four weeks after intercourse. The Wassermann reaction on admission was reported as four plus. Previous treatment: she received mercury salicylate hypodermics weekly and mercurial inunctions daily. While her condition improved with mercurial treatment, the Wassermann reaction on January 31, 1919, was still four plus. She then received the following treatment:

March 7.—Arsphenamine 0.3 by retention enema. Complained of "cramps" for about four hours. Retained enema for ten hours.

March 8 to 13.—Daily mercurial inunctions.

March 14.—Arsphenamine 0.6 by retention enema. No complaints. Skin lesions almost completed cleared up.

March 21.—Arsphenamine 0.6 by retention enema.

March 26.—Wassermann reaction negative. Two other Wassermann tests (April 29 and May 5) were both reported negative.

Case III.—B. M., age 28, female, white. Admitted to the hospital giving the following history: She first noticed a "sore" in the labia majora of the left side, the early part of September, 1918. Three weeks ago she had "sores" breaking out over various parts of her body and complained of headaches, chills, and fever. She then noticed that her hair began to fall, and suffered with sore throat and loss of appetite. Examination: Crustaceous lesions over the forehead, axillæ, on the labia majora, and the mucous surfaces of the vaginal wall, and also in the anal region. These sores were hard, concave, and not painful. The treatment which she received prior to her coming to the hospital was more or less of a desultory nature.

February 21.—Wassermann reaction weakly positive.

February 22 to March 12.—Daily mercurial inunctions.

March 13.—Arsphenamine 0.3 by retention enema. Retained for twelve hours.

March 21.—Arsphenamine 0.6 by retention enema. No complaints.

March 22 to April 18.—Protoiodide of mercury, gr. 1/5 t.i.d.

March 29 and April 12.—Arsphenamine 0.6 by retention enema.

April 24.—Wassermann reaction negative and all cutaneous lesions healed up.

Case IV.—R. U., age 31, female, white. About four years ago, she fell against a tree, striking her leg and six months later she began to have an itching sensation in the area where she struck her leg. She then began to scratch herself and an open sore was the result. She was treated in various hospitals for this sore but it never healed. She denies any venereal disease. The gamut of antiluetic therapy with the exception of salvarsan had been employed in this case but it had failed to heal the ulcer. Wassermann reactions of this case taken between December, 1915, and January, 1918, are here appended. In each reaction only two antigens were employed.

December 10 and 23, 1915, reported negative by Dr. L. H. Cornwall.

April 12, 1916, reported doubtful by Dr. W. W. Hala.

January 7, 1917, and January 5, 1918, reported negative by Dr. W. W. Hala.

On March 7, 1918, after the ulcer had spread considerably, and the leg had reached almost twice the size of the other one, the surgeons did an amputation above the knee. A microscopic examination of the tissue reported by Dr. W. W. Hala: "On microscopical examination, the specimen consists of epidermis and subcutaneous tissue. The epidermis in one area has disappeared by ulceration. Elsewhere the epidermis is normal. The subcutaneous tissue, however, and particularly beneath the ulcerated area shows distinct pathological change. This change consists in an enormous infiltration of small round cells arranged in many areas concentrically around the small blood vessels. The histological appearance suggests granuloma and the lesion is probably due to syphilitic infiltration." Final diagnosis of specimen: Syphilitic ulceration. The stump, however, never healed and finally four weeks later a skin graft was performed which proved to be unsuccessful. On February 21, 1919, the Wassermann reaction was reported as doubtful by Dr. J. G. F. Hiss and Mrs. Williams. In March, 1919, the patient came into my service and the laboratory data which I had collected satisfied me conclusively and I began to give her arsphenamine weekly by retention enema, and protoiodide of mercury 1/5 gr. t.i.d.

March 3, 1919, arsphenamine 0.3 by retention enema.

March 21, 29, April 12, 15, and 18, arsphenamine 0.6 by retention enema.

The Wassermann reactions, using three antigens, were reported by Dr. Hiss and Mrs. Williams as follows:

April 29 and May 14, negative.

May 20, a provocative arsphenamine injection was given by retention enema.

May 21 and 23, Wassermann reported negative.

She retained those arsphenamine enemas from twenty to thirty-six hours. Throughout the course of treatment, the stump has markedly improved and is now almost completely healed.

This is an unusual case and shows how a luetic condition can predispose to malignancy. Czerny and Caan of the Heidelberg Cancer Institute have observed that a very large percentage of these cases have a positive Wassermann.

Case V.—A. M., age 12, female, white. On admission to the hospital she was examined by the oculist and the case was diagnosed as one of interstitial keratitis. The Wassermann reaction was reported four plus. The case was then started on daily mercurial inunctions, atropine to the eyes, and arsphenamine enemas weekly. After two weeks of antileutic treatment she began to have vision from her left eye which progressively improved so that she could walk about the ward and recognize the nurses and patients. After four more weeks of antileutic treatment she showed improvement in her other eye but her serologic test was still four plus. The remarkable feature of this case is that the patient has practically regained her vision without my using the much advocated yellow oxide of mercury which every text-book mentions. In fact, it is well shown that the inunctions and the arsphenamine combined in addition to the atropine have brought joy and happiness into this patient's life.

Analysis of Results.—In the gynecological section of the Metropolitan Hospital, the rectal method of administering arsphenamine has been employed on 25 cases representing the various stages of

syphilis. Five cases, or 20 per cent., have been completely cured serologically and clinically. Nine cases, or 36 per cent., have improved clinically and their Wassermann reactions have been changed from four plus to two plus. In this series is included a patient who recently became hemiplegic and has now regained complete function of her left leg and partial use of her left arm. In 10 cases, or 40 per cent., while the treatment did not affect the Wassermann reaction, the cases showed marked improvement clinically. Some of these cases left the hospital before their treatment was completed when their term was at an end.

When these arsphenamine enemas were first started there was some skepticism as to the possible local injury on the alimentary tract that the drug would produce. As the patients hardly complained we were very much encouraged, until we have now given about 500 of these enemas with no apparent injury to the intestinal tract or the production of any reactions. Its necrotic action is without dispute, but it is readily seen that its action on the intestinal tract is different. Just what the chemical changes that the drug undergoes in the intestinal tract are, is problematical. According to Fleig,[11] salvarsan precipitates into an insoluble albuminate derivative which is not favorably absorbed in an alkaline medium. While this view is an appreciable one theoretically, practically as shown clinically and by the laboratory, it is negligible.

Conclusions.

1. The administration of arsphenamine by retention enema is a successful and practical method of giving this powerful drug and therefore the method demands a place in the therapy of syphilis.

2. The slow absorption is an advantage and prevents the production of nitroid crises.

3. In children it is the method of choice.

4. The contraindications to this method are nil.

5. The results obtained by this method are just as good as those obtained with the intravenous method.

6. What better method can there be where a patient with very fine veins is encountered? How many vein dissections is your patient going to tolerate?

I wish to acknowledge my obligations to Dr. Joseph H. Fobes, the attending surgeon from whose service the cases were selected, and also to the staff of the Metropolitan Hospital for their kind co-operation.

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Medicolegal Notes.

Results of Attendant's Negligence.—In an action for alleged negligence against a physician, the evidence showed that the defendant operated on the plaintiff's wife while she was under the influence of an anaesthetic, and after the operation placed her in bed while she was unconscious. He told an attendant employed by the plaintiff to place something warm at or around the patient's feet to relieve her from the shock of the operation. The attendant, an intelligent, competent person, but with no experience as a nurse, placed a hot stove lid on the patient's feet while she was still unconscious, which burned her feet. It was held that the defendant was not liable. The attendant was as competent as he to judge whether the iron was hot enough to burn, and to know that it should not therefore be placed on the patient's feet, and the defendant had a right to rely on this. The doctor's direction to the attendant did not create the relation of master and servant between them.—Malkowski v. Graham, Wisconsin Supreme Court, 172 N. W. 785.

Privileged Communications Statutes.—The Utah statute prohibiting physicians, without the consent of their patients, from testifying in a civil action as to any information acquired in attending a patient which was necessary to enable him to prescribe or act for the patient does not preclude the physician from testifying merely as to the fact of his having been consulted. The statute does not prevent a physician from testifying that he performed an autopsy and as to the result thereof. The privilege claimed does not exist at common law, but was conferred by statute, and in order to be available the claim of privilege must be brought within the clear meaning and spirit of the statute.—Chadwick v. Beneficial Life Ins. Co. (Utah), 181 Pac. 448.

Glanders a Disease, Not an Accident.—The New York Appellate Division holds that the contraction of glanders through inhalation of the bacteria of glanders, while leading a horse affected with glanders through the streets, resulting in the death of a stableman, was not an "accidental injury arising out of and in the course of the employment" wtihin the New York Workmen's Compensation Act. In answer to the argument that such diseases are produced by "external" means, because the bacteria which cause them are introduced into the human body from without, the court said that bacteria are daily received into the body, by contact or inhalation, without resultant disease. The fact of their presence is not the fact of disease. Disease results only from the toxins which the bacteria produce while within the body, and the cause is native, not foreign to that body. The argument would place substantially every infectious disease in the injury class, since in nearly every instance such a disease is produced by bacteria which are the outgrowth of bacteria introduced into the body from without.

Another argument was that in certain diseases the cause is "violent" because of the impact of bacteria when they invade the body. The court considered this reasoning unsound because, granted that there is an impact of bacteria whenever they enter the body, so that accidental injury occurs, then every day of our lives we receive accidental injuries, for daily we breathe in bacteria, or take them into our systems, without resultant disease.—Richardson v. Greenburg, 176 N. Y. Supp. 651.

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THE VARIATIONS OF RESIDUAL NITROGEN IN THE BLOOD SERUM.

IT is at present believed that the liver plays a considerable part in the disassimilation of nitrogenous substances. This decomposition begins in the tissues where, under the influence of endocellular diastases, the albumins and nucleoproteins are brought in successive phases to the state of purine bases and amino acids. To this diffuse tissue phase succeeds the hepatic phase. By the action of the liver uric acid is transformed into urea, the amino acids are either directly decomposed into urea or else are dissociated into fatty acids and ammonia. The fatty acids give rise to carbonic acid and water, the ammonia becomes urea. Hepatic insufficiency must therefore result in an imperfect ureogenesis and several methods founded on the analysis of urine have been proposed to place this insufficiency in evidence. They all have the disadvantage of taking as a subject for study urine difficult to collect in totality, still more difficult to guard from secondary changes, and whose composition may be modified by existing renal lesions.

For these reasons Brodin looked to the blood serum for more precise results. He at first studied the variations of the nitrogenous coefficient of the blood serum and found that it was frequently low in cases of hepatic insufficiency, but it was not long before a conclusion was reached that this low coefficient was not to be relied on. It also lacked preciseness, because it varied with the nature of the food taken, a fact which explains the divergence among writers as to its exact determination. The method was unreliable because in the very frequent cases in which a renal and hepatic lesion coexist, the renal lesion overshadows the hepatic lesion, the two lesions acting in an inverse sense, the former increasing, the latter lowering the coefficient. Consequently, observers have been led to study the variations in the residual nitrogen with the following results:

The residual nitrogen of the blood serum is only slightly influenced by the nature of the food consumed. In normal subjects it oscillates within very narrow limits and is always less than 10 centigrams per liter. In subjects with renal lesions, even when advanced but without an appreciable hepatic lesion, the total nitrogen and ureic nitrogen have a higher percentage the greater the renal permeability. The residual nitrogen, on the contrary, remains constant, always less than ten centigrams and, as Widal has shown, almost all the retained total nitrogen in these patients is in the form of urea.

In chronic affections without hepatic changes or action on the general physical condition, the residual nitrogen remains normal, while in all types of hepatic lesions—cardiac liver, advanced cirrhoses, abscess, or cancer—there is an increase in the percentage of the residual nitrogen which appears to be proportional to the extent of the hepatic changes. In acute processes—pneumonia, typhoid fever, tuberculosis—the increase of the percentage of residual nitrogen, although not constant, is met with in a certain number of cases. It would seem logical to admit that the liver has become involved in exactly the same way as the kidneys, so frequently observed during infectious diseases. The special gravity of these cases and the possible appearance of icterus in acute processes, plead in favor of this hypothesis.

Experimental work carried out by Brodin has confirmed his clinical experience. In the dog, after ligation of the ureters, he found an increase of the total nitrogen and ureic nitrogen without any change in the percentage of the residual nitrogen. On the contrary, ligation of the choledochus, complicated with angiocholitis and areolar abscesses, produced a great increase of the residual nitrogen. From these results, he concludes that an increase of the residual nitrogen is dependent upon a morbid change in the hepatic cell. The residual nitrogen is to the liver what ureic nitrogen is to the kidney; its increase in the blood is due to an hepatic lesion while an increase of the ureic nitrogen is the result of renal lesions.

ABDOMINAL AORTITIS.

OUR knowledge of abdominal aortitis has been recently acquired and is due especially to Peter of Paris and to Teissier. From the viewpoint of the etiology there is an important point to be remembered—besides the habitual causative factors of any aortitis—namely the extension of inflammatory processes arising in viscera near the aorta, among which mucomembranous enterocolitis is foremost. The painful manifestations may be explained by irritation of the solar plexus or by vascular disturbances in the form of a local ischemia from arterial spasm or arterial hypertension. So far as the pathology is concerned, the frequency of atheromatous localizations on the abdominal aorta and the relative infrequency of the clinical syndrome of the morbid process are the most worthy of note. The localization of the lesions around the orifices of the large abdominal collaterals, especially of the celiac trunk and superior mesentery, is of particular interest. The intensity of the painful phenomena and the secretory and functional disturbances of the viscera frequently lead to an error in diagnosis, so that

the principal symptoms of the arotic process should be recalled, although they are occasionally difficult to recognize.

It is not always an easy matter to distinguish the syndrome of abdominal aortitis from various disturbances arising from lesions of the celiac and mesenteric collaterals because in reality the various etiological factors are frequently inseparably united. The abdominal syndromes to which vascular morbid processes give rise have an aspect comparable to those which arise in disturbances of the coronary arteries resulting in angina pectoris, hence the name of angina abdominis which has been given them. In fact, it is not too much to say that it is not always possible to distinguish abdominal angina from the pseudogastralgic type of angina pectoris, and in some cases there is an unquestionable identity.

The prognosis of abdominal aortitis should always be guarded, even in the acute forms; in the chronic forms it is invariably serious, death usually taking place at an early date. The diagnosis of this morbid process is far from being always easy as the functional symptoms are prone to lead the physician astray. The physical signs are apt to draw the attention, but it is often impossible to make out when a simple dilatation of the aorta ends and an aneurysm begins. The happy effects of inhalations of amyl nitrite at the time of the paroxysms of pain is likewise valuable from the viewpoint of the diagnosis. Revulsion over the epigastric region will also prove of service in relieving the patient's discomfort.

COLLOIDAL GOLD TEST IN MULTIPLE SCLEROSIS.

LANGE'S colloidal gold test of the cerebrospinal fluid has been of great use in the diagnosis of the various forms of syphilis of the central nervous system and the various curves presented have come to be considered as almost pathognomonic of the conditions with which they are associated. The curve found in general paresis has been obtained in a number of other conditions which are not syphilitic and this fact is of importance and should be well known to avoid errors in diagnosis. Lead poisoning, tuberculous meningitis, brain tumor, and multiple sclerosis are mentioned as diseases in which this form of reaction has been observed. It is apparently inconstant in the first three of these conditions but fairly regular in the last.

Moore has investigated the fluids of twenty-eight cases of which twenty were clinically certain and eight clinically doubtful. He reports (*Archives of Internal Medicine*, 1920, xxv, 58) that in eighteen of the twenty certain cases the colloidal gold test gave a "paretic curve," while in two it was negative. Of the doubtful cases, three gave a "syphilitic curve" and five were negative. In all cases the Wassermann reaction was negative. This association is important, for whatever may be the dispute concerning the significance of the Wassermann when done upon the blood serum it appears to have a high degree of specificity where the spinal fluid is concerned and further it is positive in a large percentage of the cases. It may therefore be said that a "paretic" gold chloride curve and a negative Wassermann on the spinal fluid, together with suggestive signs and symptoms, is highly indicative of multiple sclerosis. In addition to these findings Moore found that eight of his twenty certain cases showed a pleocytosis of from five to seventy cells and thet eighteen of them gave a positive globulin test.

Multiple sclerosis is not always easy of diagnosis and this finding should at times give valuable aid. There is as yet no satisfactory explanation of the colloidal gold reaction. That it is an evidence of the presence of proteins in the spinal fluid is naturally probable but that does not explain the difference in the reaction in different conditions. Much remains to be found out concerning the chemistry of Lange's test but its clinical significance is growing gradually clearer and its place in laboratory procedure is an assured one.

VARIOLATION IN SPAIN IN 1776.

INOCULATION for smallpox was introduced into England in the first half of the XVIII century and the custom quickly diffused itself through Northern Europe—Great Britain, Germany, and Scandinavia—and was maintained up to the time when vaccination succeeded it. The Jennerian resource was promptly adopted in Spain, but it is not generally known that before this epoch variolation was also practised with success. Dr. Lasbennes of Madrid calls attention in *La Medicina Ibera* for November 29, 1919, vol. ix, 108, to an old document which has just come to light from which it appears that on October 31, 1778, Doctor Francisco de Cabarrus, a well known practitioner of the period, made an enthusiastic contribution to the Sociedad Economica Madridense which had reference to variolation carried out by Dr. O'Scanlan in Ferrol and Corunna. The documented report shows that 50 individuals were also inoculated at Madrid by Dr. MacCarthy. The British nationality of the inoculators is readily intelligible, as variolation had existed in England for many years. The original report which was made public by Lasbennes was drawn up and signed by Dr. Maurico Echandi, who was then at the head of the Royal Military Hospital at Corunna. The motivation of the experiment seems to have been the fact that the royal families of England and Germany as well as the King of France and Czar of Russia, with similar notables in other countries, had submitted themselves to variolation as an example to their subjects. It appears, however, that some inoculations had been done in Spain in 1773-4 which had not given good results either in the line of conferring immunity or in assurance against local accidents. It was felt, nevertheless, that such cases were due to defective technique. As an offset it was announced that O'Scanlan who was at the head of

the Marine Hospital at Ferrol had been practising variolation with excellent results since 1772. This official also inoculated a number of subjects in Corunna and the reporter was witness to the inoculation of a series of twelve children in January, 1776. The period of incubation was eight days and the number of pocks in the eruption varied from less than 10 to 30. The disease ran its course briefly without the dreaded suppurative fever. One of the twelve, indeed, developed a general outbreak, but without confluence. The local reaction was undeniably severe, the ulcers sometimes extending to the bone; but this seems to have been anticipated and there were no serious consequences.

Retrospect of the Influenza Pandemic.

Despite the plethora of articles on the subject of the influenza pandemic, many of these are of special value in bringing out new or overlooked data, and until the final account can be written the fragmentary contributions will not be superfluous. In the *Archives Médicales Belges* for June, 1919, lxxii, 6, there is a review of the epidemics of 1918, including influenza. The reviewer uses the term pneumosepticemia to distinguish the fulminating fatal cases which occurred in massed incidence. In France pneumosepticemia first appeared among and for a time was limited to the Senegalese soldiers. It was held at the time that the latter showed a special susceptibility, but this notion was promptly abandoned. The opposite view, that no special susceptibility or immunity existed, held good with some exceptions, one of which was that the young, healthy subject had the least tolerance. The Portuguese steamer *Mozambique* sailed for that colony to repatriate Portuguese colonial soldiers in September, 1918. The disease appeared on shipboard and smote fatally 199 out of 952 passengers and of this number all but 19 were young and healthy soldiers. No less than 43 died within the first 24 hours. Pneumosepticemia in influenza suggests that other form of pneumonia known as plague, but the possibility of identity has never seriously troubled the laboratory men. The author is sceptical of any solid immunity derived from the first wave of influenza, but this point will have to be threshed out later. In regard to plague pneumonia of bubonic affiliations, this was epidemic in China during the winter of 1917-18, but only about 12,000 deaths occurred. The important fact was learned that healthy subjects could act as carriers for this malady. A woman who had lost husband and brothers from the latter, herself escaped infection, but having visited a relative, the latter developed the disease. She then went to other neighborhoods where several more persons developed the infection. It seems therefore certain that either natural immunity exists or that the affection may appear in mild, unrecognizable form.

Rapid Orientation in Reflexes.

The busy practitioner who has to see from 20 to 30 patients at a sitting finds the outlay of time necessary for eliciting the reflexes burdensome. Many patients, however, complain of vague pains and other subjective symptoms, so that the time must be spent and the question becomes one of economic efficiency. In the *Archives médicales Belges* for August 19, 1919, lxxii, 8, Marchal briefly considers this subject. Merely to prescribe a lotion for these cases without any attempt at diagnosis will almost always end disastrously. The patient will not return or he will derive no benefit or upon his next visit there may be a very different picture which has not been foreseen. But it is possible in two minutes' time to explore sufficiently the reflectivity of the subject. The superficial or cutaneous reflexes are of not much value and may be passed over. One should concentrate on the plantar reflex, the tendon reflexes and the forced flexion of the toes with associated flexion of the foot on the leg, leg on the thigh, and thigh on the pelvis. To elicit the tendon reflexes a satisfactory percussion hammer is indispensable. The author insists that the various reflexes of the upper extremity are of importance. By means of these tests we quickly obtain an idea of the integrity or reverse of the pyramidal paths.

News of the Week.

Opposition to Compulsory Health Insurance.—The following resolution was passed by the Medical Association of the Greater City of New York at the regular meeting held January 19, 1920:

Preamble to the resolution: There is now going on in this State a movement to secure legislative enactments establishing compulsory health insurance of the wage-earning class. Such legislation appears undesirable and pernicious for many reasons, and especially for the following:

Compulsory health insurance is contrary to the fundamental principles of Americanism, encouraging class consciousness and being essentially Socialistic and destructive of that individualism which is necessary for best national development. If the medical profession, whose members are naturally highly individualistic, can be Socialized, there is no limit to the extent to which Socialism may be carried in this country. The adoption of compulsory health insurance would be equivalent to the acceptance of Socialism as a universal dogma.

Compulsory health insurance would substitute for the medical care and treatment now received by the wage-earning class, medical care and treatment of an inferior character, thereby doing a positive injury to that class.

Compulsory health insurance would also injure the wage-earning class by practically depriving them of the benefit of the personal relation between patient and physician, the great value of which is universally recognized, both in regard to its effect on the character of medical treatment which patient receives and on the patient's peace of mind.

Compulsory health insurance compels citizens to invest their savings in a certain way, and it fixes the remuneration of a class of special workers (physicians, dentists and nurses) without their consent.

Compulsory health insurance would practically

deprive the wage-earning class of the free choice of their medical attendant.

Compulsory health insurance would impose on the wage-earning class the annoyance of extensive inquisition into their private affairs by Government officers and agents.

Compulsory health insurance would impose a heavy financial burden on the community.

Compulsory health insurance would damage the medical profession both morally and materially. It would change the character of the occupation of those who participated in it from that of a learned and noble profession, which to a considerable extent is its own reward for hardships and poor financial returns, to a poorly paid, poorly esteemed trade characterized by drudgery and routinism and an appendage to a political machine; and it would, as a preliminary measure, confiscate what is of the nature of property, viz., the medical practices of the physicians, to acquire which they have in many cases worked for years, and from which they derive their incomes.

Compulsory health insurance would lower the general standard of medical practice and the personal standard of the medical profession.

Compulsory health insurance would be a potent factor in checking the advance of medical science.

Compulsory health insurance, by making the profession less attractive, would drive many now practising it into other occupations, and would discourage many from taking it up.

Compulsory health insurance would invite malingering and idleness.

Compulsory health insurance has proved a comparative failure in Germany and Austria where it has been in existence for a generation, and where the character of the people and of the institutions make the field more favorable for it than the character of the American people and institutions. It has also proved far from satisfactory in England.

In view of the facts herewith mentioned, *Be It Resolved*, that The Medical Association of the Greater City of New York is thoroughly convinced that compulsory health insurance as we now understand it is both undesirable and pernicious, and that legislation to establish it should be and hereby is condemned absolutely, without reservation.

Committee, George L. Brodhead, M.D.; Nathan B. Van Etten, M.D.; Robert E. Coughlin, M.D., *Chairman;* Edward E. Cornwall, M.D., *President.*

First Congress of the Association of French-Speaking Gynecologists and Obstetricians.—This society recently held its first session at Brussels. The two French national societies, one devoted to obstetrics and the other to gynecology, obstetrics, and pediatrics, which flourished before the war, were also open to members in French-speaking countries. But as far back as 1913 the two national societies were amalgamated under the presidency of Pozzi, under the name of the Association of French-Speaking Gynecologists and Obstetricians. The Belgian and Swiss national societies devoted to the same branches were affiliated and the first session of the newly consolidated body was to have been held in October, 1914, at Lyon. Five years elapsed, however, before the meeting actually took place, as above stated. The newly organized body is a federation of older societies. The Belgian national society, which is one of the federated bodies, naturally took over the organization and supplied all the executive officers. The countries represented in the federation were France and colonies, Belgium, and French Switzerland. The majority of the distinguished guests came from Italy and Spain, and the significance of this fact is deeper than is at first sight apparent, for Professor Pestalozza of Rome, in the course of the closing address of the meeting, referred pointedly to Latin confraternity and the attempt to place the Latin culture at the head of civilization. The proceedings of the first Congress are published in the *Revue Française de Gynécologie et d'Obstétrique* for October, 1919, xiv, 10.

Centenary of a Great Medical Journal.—With the January issue of the present year *The American Journal of the Medical Sciences* completes one hundred years of uninterrupted existence, being, with one exception, the oldest medical periodical published in the English language. It was founded under the editorship of Dr. Nathaniel Chapman in 1820, and has enjoyed continuous publication since, through periods of war as well as peace.

Increase in Hospital Pay Patients.—In its fortieth annual report, for the year ending September 30, 1919, the United Hospital Fund of New York announces that the proportion of free patients has decreased 16 per cent during the last eight years, while the proportion of patients who pay all or part of the ward rate has increased 17 per cent. The United Hospital Fund began in 1879 with nineteen hospitals, caring for 8,688 patients during the year, with receipts amounting to $26,455.07. During the last year the organization gave support to forty-six hospitals, which cared for 147,422 patients, and gave 2,443,562 days' treatment, with receipts amounting to $221,535.34. It now costs about $9,500,000 a year to maintain and operate the forty-six United Hospitals. Payments for treatment amount to $5,000,000, and incomes from endowments amount to $1,500,000, a total of $6,500,000, making necessary annual gifts amounting to $3,000,000. This amount, however, has never been raised in a year, the recent drive for $1,000,000 bringing in something over $900,000. The average cost per day for ward patients was $2.06 two years ago, and $2.69 last year, an increase of 30 per cent.

Fund for Student Nurses.—A gift of $50,000 was recently made to Mt. Sinai Training School for Nurses by William D. and Frederick Scholle, in memory of their father, Albert W. Scholle, who was once president of the school.

Classes for Hard of Hearing.—Under the direction of the Board of Education of New York City special free classes in lip reading for men and women who are hard of hearing are held in the Evening School 93. Special instruction is given also for those who stammer and lisp.

Reports of Too Early Discharge of Tuberculous Soldiers Denied.—The reports recently circulated

in certain newspapers regarding the alleged discharge from army hospitals before cured of the disease have been denied by Major-General Meritte W. Ireland, Surgeon General of the Army. No man, he declares, is discharged until the medical department has done everything for him which it can do. No man is discharged, if he is not in condition to care for himself, until arrangements have been made to turn him over to the War Risk Insurance Bureau.

Nursing Course in New York University.—New York University will include in its curriculum for the next semester, beginning in February, a course in industrial nursing. The course, which forms a part of the work of the School of Commerce, will be given by Miss Elizabeth Hallam Bohn.

Midwives Attend One-Sixth of All Births.—That midwives attend 16 per cent of all births and 35 to 40 per cent of all foreign births is the statement made recently by the New York State Department of Health. In this country few restrictions have been placed upon the practice of midwifery, with the result that many unqualified women have entered the field, have not been able to meet even ordinary emergencies, and have thus thrown this occupation into disrepute. In order to help to prevent the many unnecessary deaths of babies and mothers at or immediately after childbirth, the State Department of Health has required the licensing of midwives since 1914. This has resulted in driving out of business most of the incompetent and unfit, and of raising the standard of those who have shown themselves qualified to practise. Licenses are renewed annually and any midwives who have had charges made and proved against them lose their right to practise if it can be shown that they have violated the health regulations or are incompetent. In the case of grave offenses the license is revoked.

Strange Disease in Oklahoma.—A disease, thought by some physicians to be a mild form of cholera, has appeared in Oklahoma City, Okla., where 500 of the inhabitants are ill with the strange malady. Several deaths have occurred. The State Health Department has sent physicians and inspectors to the town to investigate the epidemic.

To Study Measles.—Dr. Royal S. Copeland, Health Commissioner of New York City, has requested Dr. William H. Park, Director of the Bureau of Laboratories, to undertake the serious study of measles. During the first ten days of January more than two thousand cases of measles were reported, an unusual number for this season. The statistics of the Department of Health show that there were 8,194 cases in 1919, with 218 deaths; 28,675 cases in 1918, with 790 deaths; 27,419 cases in 1917, with 516 deaths, and 21,603 cases in 1916, with 490 deaths.

Encephalitis Lethargica in London.—According to cable dispatches, several cases of encephalitis lethargica are under treatment in the London Hospital. The chief symptom is sleepiness, in these cases, yet the disease has nothing else in common with the "sleeping sickness" of Africa.

Dr. W. E. List, assistant superintendent of the Cincinnati General Hospital, has been elected superintendent of the Minneapolis City Hospital, to succeed Dr. Herbert O. Collins.

Dr. Herman M. Biggs, of New York, has been reappointed by Governor Smith as State Commissioner of Health.

Medical Fraternity Meets.—The bi-annual convention of the Chi Zeta Chi medical fraternity was held the first week in January at the Piedmont Hotel, Atlanta, Ga. Nearly a hundred delegates from all sections of the United States attended.

Medical Society Elections.—THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER, at its annual meeting, New York City, November 5, elected Dr. Charles A. Powers, of Denver, Colo., to succeed the late Dr. George C. Clark, the first and only President of the Society. Sir Arthur Newsholme, the eminent British sanitarian, now Director of the School of Hygiene and Public Health of the Johns Hopkins University, was elected as the Society's first Honorary Vice-President. Dr. Francis Carter Wood, of New York City, and Dr. Robert B. Greenough, of Boston, were elected to fill the vacancies in the Executive Committee created because of the increase of the committee from thirteen to fifteen. Dr. Edward Reynolds, of Boston, and Mr. Thomas M. Debevoise, of New York City, were re-elected respectively as Chairman and Secretary of the Board of Directors. The election of Vice-Presidents and other officers was referred to the Executive Committee, with power. The Board of Directors approved the action of the Executive Committee in appointing Mr. Frank J. Osborne as Executive Secretary of the Society to succeed Mr. Curtis E. Lakeman.

THE BUCHANAN COUNTY (KAN.) MEDICAL SOCIETY, at its annual meeting, December 3, elected the following officers for the ensuing year: *President,* Dr. L. J. Dandurant; *First Vice-President,* Dr. H. S. Conrad; *Second Vice-President,* Dr. T. M. Paul; *Secretary,* Dr. F. X. Hartigan; *Censor* 1920-21-22, Dr. F. H. Ladd; *Delegates* to the State Society, Dr. Daniel Morton and Dr. Floyd Spencer.

THE SOUTHWEST VIRGINIA MEDICAL SOCIETY was reorganized at a recent meeting, after a lapse since 1916. The reorganization was effected under the State Medical Society, in accordance with the laws of the American Medical Association. The following officers were elected for the ensuing year: *President,* Dr. W. R. Cushing, Dublin; *Vice-President,* Dr. J. A. Noblin, Radford; *Secretary-Treasurer,* Dr. A. B. Greiner, Rural Retreat.

THE FORSYTH (NORTH CAROLINA) MEDICAL SOCIETY at a recent meeting elected the following officers for the coming year: *President,* Dr. S. D. Craig; *First Vice-President,* Dr. Frederic M. Hanes; *Second Vice-President,* Dr. W. L. Grimes; *Secretary,* Dr. V. M. Long.

THE DOUGLAS COUNTY (MINN.) MEDICAL SOCIETY, at its annual meeting December 10, elected the following officers for the ensuing year: *President,* Dr. W. E. McEachern; *Vice-President,* Dr. C. B. Ridell; *Secretary-Treasurer,* Dr. J. C. Kyllo; *Censor* (three years), Dr. G. H. Conklin; *Delegate,* Dr. L. A. Potter.

THE BALTIMORE CITY MEDICAL SOCIETY, at its annual meeting December 5, elected the following officers: *President,* Dr. Harvey B. Stone; *Vice-*

President, Dr. Edward A. Looper; *Secretary,* Dr. Frank S. Lynn; *Treasurer,* Dr. Charles E. Brack. The retiring president, Dr. Guy L. Hunner, was appointed a member of the board of censors.

THE SOUTHERN MINNESOTA MEDICAL ASSOCIATION, at its annual meeting held in Mankato December 1 to 4, elected the following officers for the coming year: *President,* Dr. Herbert Z. Giffin, Rochester; *Vice-Presidents,* Dr. Archa E. Wilcox, Minneapolis, and Dr. Walter J. Richardson, Fairmont; *Secretary,* Dr. Henry T. McGuigan, Red Wing (re-elected); *Treasurer,* Dr. George F. Merritt, St. Peter (re-elected).

THE OKLAHOMA COUNTY MEDICAL SOCIETY, at a meeting held December 20, elected the following officers: *President,* Dr. Horace Reed; *Vice-President,* Dr. J. S. Hartford; *Secretary-Treasurer,* Dr. Tom Lowry.

THE TRI-STATE MEDICAL SOCIETY, at a recent meeting held at Marshall, Texas, elected the following officers for the coming year: *President,* Dr. C. R. Hargrove of Marshall, Texas; *Vice-Presidents,* Dr. L. H. Lanier of Texarkana, Texas, Dr. H. W. Jarrell of Mansfield, La., and Dr. Joe Becton of Greenville, Texas; *Secretary,* Dr. F. H. Walke, Shreveport, La.

THE WHITEFIELD COUNTY (GA.) MEDICAL SOCIETY, at its meeting held in December the following officers were elected for the coming year: *President,* Dr. H. J. Ault; *Vice-President,* Dr. H. L. Erwin; *Secretary-Treasurer,* Dr. B. L. Kennedy.

THE POLK COUNTY (IOWA) MEDICAL SOCIETY, at its annual meeting, December 23, elected the following officers for the next year: *President,* Dr. Channing Smith; *Vice-President,* Dr. Charles F. Smith; *Secretary,* Dr. Thomas F. Duhigg; *Treasurer,* Dr. E. B. Mountain.

Obituary Notes.—DR. BRITTON D. EVANS, Superintendent of the State Hospital for the Insane, Morris Plains, N. J., died in that institution on January 14 of heart disease. He was born in Bridgetown, Md., in 1858, and he was graduated from the College of Physicians and Surgeons, Baltimore, in 1885, specializing in diseases of the mind and nervous system. Dr. Evans first became known to the medical profession and the public at large through his connection with the trial of Harry K. Thaw for the murder of Stanford White, when he added the suggestive term "brainstorm" to psychiatric terminology. He was a member of the American Medico-Psychological Association, the American Medical Association, and other scientific bodies, and was a frequent contributor to the literature concerning mental and nervous diseases.

DR. C. C. MADDOX of Alpharetta, Ga., died in a sanatorium in Atlanta, January 6, at the age of 61. He was graduated from Oglethorp Medical College, Savannah, Ga., in 1880.

DR. JOSHUA R. WEEKS of Brooklyn, N. Y., died January 12, in his sixty-fourth year. He was graduated from the University of Buffalo Medical Department in 1877.

Dr. HOMER ANDREW BUSHNELL, of North Adams, Mass., died December 30, in the Westfield State Sanitarium, where he had been under treatment for a complication of diseases for a number of months. He was 40 years of age. Dr. Bushnell was graduated from Albany Medical College in 1905.

Correspondence.

INFLUENZA AND SINUSITIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—May I ask you to give this letter space in your correspondence column? The following points may not be without interest at the present time:

1. In the MEDICAL RECORD of May 27, 1917, I published an article entitled "Epidemic Nasal Sinusitis; Influenza and Grippe Its Misnomers." I enclose a copy of it to you, in which the marginal notations represent what I consider a two-year discount of every acknowledged happening in the late epidemic, including the latest monkey experiments.

2. In the *Boston Medical and Surgical Journal* of Nov. 28, 1918, under Correspondence, I described Spanish influenza as an acute mucous sinusitis. I also described the path of infection as I then conceived it. I know now that while this was true, it was not the whole truth.

3. In the late epidemic the suddenness of attack and collapse were conspicuous features, and they were the main objections raised to my contentions. A man went down town in the morning apparently well. An hour or so later he stepped into the telephone booth and collapsed.

4. These objections were not sound. Constitutional absorption from an infected nasal sinus may be divided into two stages, (1) Acute, (2) Chronic. The acute stage ensues immediately upon infection of the mucous membrane, and the path of infection is by blood stream and lymphatic system. Formerly I thought only the latter was involved. Chronic absorption takes place when the cavity is filled with secretion. In this case we also have to deal with overflow into the nose and throat. This is a late stage.

5. Very briefly the key to the nasal sinuses is the lateral nasal wall. One predicates the other. Their mucous membranes are continuous and their blood supply one and the same (Zuckerkandl, Hajek). The nasal sinuses, therefore, are either continuous with, formed by, or incorporated in the lateral nasal wall.

6. I applied the phenol-sulphone-phthalein test to this wall at various places in order to determine the rapidity of absorption from this region. I injected it submucously because this was the nearest approach which I could make to the method of actual infection *i.e.* direct attack on the membrane. Following the rules for this test I was able to get the dye in the urine, by natural micturition, in the average time of 20 minutes. Had the ureters been catheterized the time would have been shorter. If one considers the lung a half-way station, it is probably passed in 10 minutes. This is a preliminary statement, and I intend to do more along this line. I have seen enough to know that rapidity of onset is not a valid objection to my contention.

7. Considering the disease, influenza, as it was described in the literature prior to 1918, all authorities from Weichselbaum to Osler were agreed that purulent nasal sinusitis was a constant factor. Back in 1906 I first discovered that this was the only admission of constancy in this kaleidoscopic disease. Constancy means 100 per cent. Purulent nasal sinusitis was, therefore, an essential, not a com-

plication. Its presence or absence supplied the acid test as to whether a suspected victim, man or monkey, had influenza or not, because all authorities were agreed that it was constant.

8. But nasal sinusitis is a distinct disease with distinct symptomatology. Its picture from onset to the final encephalitis lethargica cannot be distinguished from the symptomatology of influenza. Furthermore nasal sinusitis has always conformed to Koch's laws. To infect a nasal sinus and in this way to fulfil the third law of Koch is a very simple matter.

9. When Spanish influenza came along I immediately looked for my constant factor, purulent sinusitis, and it was absent. I no longer had influenza; I had something else. But if nasal sinusitis was an essential to the picture I probably had it in another form, with no change in substance. I then described Spanish influenza as stated above, and all autopsy reports and authorities have sustained my contention that the sinusitis was present in its mucous form. This confirmation was macroscopic, whereas it should have been microscopic.

10. What is the most common invading agent in nasal sinusitis? By common consent the *B. influenzæ*. It has a specific, selective, infective affinity for the nasal sinuses, just as the virus of anterior poliomyelitis has for the anterior horns of the spinal cord.

11. Sporadic and endemic nasal sinusitis may have other invading organisms. In epidemic and pandemic nasal sinusitis the invading organism is the *B. influenzæ*.

12. To me the term influenza with or without qualifying adjectives remains a misnomer.

P. S.—Since writing the above I have completed a most severe test on the nasal sinuses with regard to constitutional absorption. The antrum, because of its anatomical position, with the head upright, and the fact that its ostium is at the top, not at the bottom, as is the case with the other sinuses, is admitted to be opposed to gravitation, therefore less likely to overflow and empty itself.

Taking exactly 1 c.c. of standard phenol-sulphonephthalein solution I punctured the antrum with a needle, having first sealed its ostium with cotton, and dropped the solution into the cavity. Withdrawing the needle I sealed its point of entrance. This was not a fair test because I did not have the advantage of multiplication and manufacture, which are the properties of the *B. influenzæ*. Nevertheless I accepted battle. The patient was instructed to save a 24-hour specimen of urine, which amounted to two quarts. I had to find the dye in a two-quart solution, and this time whatever dye was found in the urine was the direct result of mucous-membrane absorption. It was not injected submucously. I found it. This means that sometime within 24 hours secretion can be absorbed from the nasal sinuses. In such a dilution, and by this method the reaction is not as strong as otherwise, and is best found in the meniscus after addition of sodium hydroxide and shaking.

This is an example of chronic (?) absorption from the nasal sinuses and rather revolutionizes even my radical ideas.

JOHN J. HURLEY, M.D., F.A.C.S.

194 BAY STATE ROAD. BOSTON, MASS.

A NEW REMEDY FOR INFLUENZA?

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Epidemic influenza has made its appearance again and thousands of new cases are reported daily. We do not know of any prophylactic measures to ward it off or prevent it from spreading, nor do we know its origin, and we are just as ignorant in regard to its treatment. Most people afflicted with it get well in spite of any treatment. We are unaware of any specific which will cure it. Vaccines and serums have been useless.

Under these circumstances you will pardon me for suggesting a remedy which may be of great benefit. I was told of this remedy by a noted chemist, well known throughout this country. He informed me that during the great epidemic in the fall of 1918 *none* of the thousands of men and women regularly employed in the Edgewood arsenal in Maryland contracted influenza, although there were hundreds of cases in the immediate neighborhood among people not employed at the arsenal. Chlorine gas was manufactured at the arsenal for war purposes and all the employees inhaled minute quantities of this gas every day. The chemist referred to above attributed the immunity to influenza of the employees to this inhalation of chlorine gas, and I see no reason to disagree with his conclusions.

Chlorine gas in minute quantities is not dangerous nor deleterious to health. Physicians are advised to use it for disinfecting themselves after visiting contagious diseases. Anders' "Practice of Medicine," 13th edition, page 204, gives the method of generating the gas, which is briefly as follows: Into a saucer place one level teaspoonful of potassium chlorate and add two teaspoonfuls of commercial hydrochloric acid. This will effervesce and a small amount of chlorine gas will fill the room.

As a prophylactic measure each household could generate and inhale this gas for fifteen minutes every evening. Those already attacked by influenza could take three or four inhalations during the day for about fifteen minutes at a time. I have repeatedly disinfected myself in the above manner after visiting contagious diseases and cannot see how any harm can result from trying it on influenza cases. Patients should keep at least six feet away from the saucer, as the gas is very strong before it gets mixed with the air.

One of my patients worked in the fall of 1918 in a munitions factory employing about 3,500 women. It was noticed at the time that very few cases of influenza developed among them. Inquiry elicited the fact that every Saturday evening the dressing rooms and toilets were disinfected. When the employees came to work on Monday mornings they noticed a strong, pungent gas in the dressing rooms and toilets. I made some chlorine gas by the method previously described and the patient identified it as the same as that in the factory. It seems, therefore, that a weekly disinfection materially reduced the number of cases. A friend informed me recently that a physician in New Jersey used chlorine gas during the influenza epidemic last year, and not only did not lose a case, but that all his patients recovered in an incredibly short time.

Considering the above facts, chlorine gas in small amounts should be given a trial. It can do no harm

if used cautiously, and it may do a great deal of good. It is high time that a systematic investigation of the immunity of workers in certain industries be undertaken to determine the cause of that immunity in order that it may be applied as a remedy in the treatment of diseases.

F. TWEDDELL, M.D.,

GREAT NECK, N. Y.

LETTER FROM PARIS.

PARIS, January 1, 1920.

Trypsin Intravenously.—Trypsin has often been advised in the treatment of malignant neoplasms, but when exhibited *per os* it appears to have little activity and when given subcutaneously it frequently provokes violent reaction and painful sloughing. Loeper of Paris has had the happy idea of resorting to intravenous injections of trypsin, using a 5 per cent. or 10 per cent. solution in pancreatin water, filtered on a porcelain filter or tyndallized. From all I can learn these injections are inoffensive and were first of all used in the most varied types of cancer—of the ovary, tongue, breast, uterus, and intestine, usually without any results whatever, while occasionally they were, to say the least, bad. On the other hand, they were better—sometimes very appreciably so—in cases of gastric cancer.

Loeper had had five cases under treatment. One was an epithelial neoplasm of the mucous type, located on the posterior aspect of the stomach, and accompanied by mesogastric symptoms; three others presented extensive pyloric cancers, extending to the antrum and lesser curvature, while the fifth subject presented a pyloric cancerous stenosis with gastric dilatation and retention. One of these cases was in no way benefited by the treatment; the stenosis was very narrow, vomiting was constant, and the peritoneum, liver, and lymph nodes were the seat of metastases, which naturally accounts for the unsuccessful results. Another patient died after four months of a veritable resurrection, because from the very onset of the treatment there was a pelvic generalization and a neoplastic infarct of the spleen. The three other cases were distinctly ameliorated. One of them underwent gastroenterostomy without resection of the pylorus and during five weeks, in spite of substantial feeding, he gained only four pounds in weight; after receiving thirteen injections he gained eleven pounds; the weight then remained stationary, but when the injections were resumed he added another two pounds. In the remaining two cases the patients put on weight: in one case five pounds and a half after thirty-five injections of one centigram each, and in the other six pounds after twenty-three injections. An increase of the appetite was also noted and, above all, an increase in the globular resistance was noted in the blood, likewise an increase of the antitryptic power as well as the percentage of red blood corpuscles and hemoglobin.

It would seem that the intravenous injection of one to two cubic centimeters of pancreatic extract really exerts a favorable action on certain symptoms of gastric cancer. It is probable that trypsin has no direct action on the neoplasm, but it undoubtedly gives rise to an increase of the antiproteolytic power of the blood serum, as well as an augmentation of the globular resistance and the number of erythrocytes. It therefore acts as an antigen, developing the reactions of defense of the organism, and because of this it should find a place in the medical treatment of gastric cancer.

Memorial to the Medical Martyrs of the War.—During the late war the medical corps of France suffered cruelly, and as is only right, this admirable holocaust should be forever commemorated. Many projects have been advanced for the commemoration, but up to the present the Faculties of Medicine has not offered an opinion. It is, however, known that negotiations were under way and certain arrangements had been agreed upon, but all this has been rather vague. Now that the Dean of the Faculty of Paris has spoken it is assured that the glorious dead will be honored as they should be. It only now remains for the public powers and generosity of all to carry out the plan. It has been agreed that a commemorative monument shall be erected in Paris not far from the School of Medicine. Divers projects have been put forward, but there is one particularly seductive, because it will have the twofold advantage of escaping from the too current vulgarity in these kinds of manifestations and to unite the past with the present. There exists at the Rue de l'Ecole de Médecine at Paris a very fine vestige of the old School of Surgery, namely, its amphitheater, at present wedged into the School of Decorative Arts and which is menaced with being demolished. Now, all this part of the old Latin quarter is soon to undergo an entire transformation. The buildings of the Art School will have to be considerably enlarged, thus extending to the Boulevard St. Michel, and the new construction will end in a little square at the corner of the Rue de l'Ecole de Médecine and Rue Racine. It has been proposed to demolish the amphitheater of the School of Surgery stone by stone and then to rebuild it in the square and thus it will be made a kind of temple where, on marble slabs, will be engraved the names of physicians and students of medicine who died for their country. The plan is a dignified one and should be carried out without too long a delay.

Nervous Complications of Parotitis.—The nervous complications of mumps are usually meningeal syndromes, but true paralyses are rare, so that a case recently observed by Lortat-Jacob and Hallez is worth while recording. The patient was a young man of eighteen years who was treated for mumps in March, 1919, and at this time presented an orchitis and dysuria for a week, requiring the use of the catheter. During his stay in hospital, the patient noticed that his legs were weak, to such an extent that he could not stand. However, when he was discharged he could walk almost normally, but he became quickly tired. But in a few days the paresis of the lower limbs recurred, without pain, and the motor disturbances increased to such a degree that the patient was obliged to remain in bed. It was in these circumstances that he came under the observations of the two physicians referred to, on May 27, 1919. At this date an incomplete limp paraplegia was found. The patient could sit on his bed without the help of his legs, but with much difficulty. The left foot was in slight equinism, the muscles of the leg, particularly the extensors,

were deprived of any strength and all attempts at standing were futile. Except these signs, the patient seemed normal, excepting that the tendon reflexes were weak on both sides. There were no disturbances of the sensibility and the general state of health was satisfactory. Galvanoparadisation was begun and, given that there was a marked hypertension of the cerebrospinal fluid, several lumbar punctures were made. By June 7 the patient could take a few steps by dragging the feet, while three days later he could walk alone, and all that remained of the paraplegia were diminished reflexes on the diseased side and the persistency of Babinski's sign. The observers regard this case not as a polyneuritis, although most writers include nearly all instances of paralysis resulting from epidemic parotitis under this heading, but as having a meningeal origin.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 8, 1920, clxxxii, 2.

1. President's Address at the Annual Meeting of the New England Surgical Society, Boston, October 28 and 29, 1919. John B. Wheeler.
2. Diagnosis of the Lesions of the Nervous System Produced by Violent Explosions in Close Proximity without External Lesions. Tom A. Williams.
3. A Note on the History of Epidemic Encephalomyelitis. F. G. Crookshank.

2. Diagnosis of the Lesions of the Nervous System Produced by Violent Explosions in Close Proximity without External Lesions.—Tom A. Williams holds that the name commotion has been used without sufficient precision, being applied equally to the result of physical disturbances of the nervous system and to the syndrome which occurs on account of the psychic impression caused by the explosion. Certain observers make a diagnosis of hysteria in all cases where explosion has not produced visible wounds or where neurological examination has not revealed organic lesion. The tendency to such diagnosis is due to the fact that a large proportion of the cases recover in a few weeks or even days after violent concussion. However, that this generalization is quite unjustified is proven not only by the considerable number of instances where patients whose symptoms have been thought purely hysterical have developed shortly afterward definite physical signs which at first were absent, but also by the results of experiments with animals subjected to violent explosions. In a series of experiments producing concussion on rabbits results were as follows: Animals in a large meshed cage showed only slight and evanescent stupefaction. Rabbits which were in a ditch and subjected to explosion evidenced dyspnea from the gas remaining in the trench. When the animals were suspended above the level of the residual gas some of them showed no symptoms, others were depressed and inert, while others showed marked excitement, one of them fleeing in screams whenever approached. But in nearly all there was an increased respiratory rate for half an hour. There was no correspondence between the first symptoms and the progress of the case; for instance, an animal which would lie inert with contracted pupil would appear quite well the next day, while another which seemed much less affected died the following day. Two animals which seemed to recover completely within a day died eight and thirteen days later. The most manifest and rapidly ascertained signs of commotion in the human subject are the general muscular relaxation, including that of the face, the muscles of the hands and the hypotentions of the pulse, the dilated pupils and the diminished reflexes, both tendinous and cutaneous. The only one of these symptoms which can be simulated is the general muscular relaxation, but this is not the kind of reaction which simulators are apt to attempt to imitate. This condition may be quite temporary. In order that the prognosis be made quickly it is advisable to examine the cerebrospinal fluid. If, after twenty-four hours, no excess of albumen is found the diagnosis of commotion can be excluded. The presence of albumen, on the contrary, should forbid the sending of the patient back to duty, although he appears functionally to have recovered. Its presence is believed to be due to damage of the choroid plexus, which permits the transudation without diapedesis of leucocytes. Indeed, the lesions may be severe enough to permit of the transudation of erythrocytes, in which case there will be a yellow tint of the spinal fluid. One fallacy in relation to this diagnosis is that in conditions of chronic compression, such as result from tumor or hematoma, there is usually an albuminosis of the spinal fluid. Hyperemotivity is particularly frequent in the milder cases of emotion. In some cases this may be purely psychogenetic reaction, the man's accident imbuing him with a terror of the future. But in some cases it is due to cerebral sideration. In this case it is nearly always accompanied by clearly perceptible vasomotor modifications in the head. The congestion aggravated by posture or excitement is seen conspicuously in the superficial palpebral and sclerotic veins. It is often conspicuous, too, in the temporal artery and the large veins of the neck. There is, often, a widening of the eyelids and a prominence of the eyeballs which remind one of the aspect in Graves' disease, especially when the patient shows a tachycardia, which is often the case. But other ocular signs of hyperthyroidism, fine tremor, hyperhydrosis, emaciation, the gastorintestinal symptoms do not appear. The symptoms which do occur may be attributed to damage of the sympathetic nerves in the head. They are even very persistent, lasting for years, and they occur in cases where hyperemotivity is not a conspicuous feature at all. This persistence contrasts with the usually rapid disappearance of the hyperemotive syndrome in the patients in whom it has occurred merely as a result of excessive fatigue or of disease. Finally, one has to consider the cases in whom a hyperemotivity has been fostered by the patient's own mental attitude. The occurrence of such cases is dependent upon the general attitude of the medical corps towards the phenomena of pithiatism, and their power to distinguish accurately between (1) the cases due to lesions, (2) the cases where a real hyperemotivity exists, (3) the cases where pithiatism is the predominent or sole feature. The differential diagnosis of the syndrome of hyperemotivity and anxiety from that of cerebral commotion and that of pithiatism is given in tabular form.

New York Medical Journal.

January 10, 1920, cxl, 2.

1. Hysterical Vomiting. Arthur F. Hurst.
2. Errors in Present Day Abdominal Diagnosis. John B. Deaver.
3. The Vaccine Antitoxin Method in the Treatment of Diphtheria. Frank M. Wood
4. Repairs Following Labor. William E. Parke.
5. A New Conception of Asthma. Mark I. Knapp.
6. The Blood Pressure Vogue. D. Nathan.
7. Poland in the World War, from the Medical Aspect. Francis E. Fronczak.
8. Radical Operation for Cholesteatomatous Mastoiditis. Otto Glogau.

5. A New Conception of Asthma.—Mark I. Knapp returns to this subject, discussed previously in the MEDICAL RECORD of March 8, 1919, xcv, 10. He says he was led to his present conception of asthma through an experience with four cases, the first one observed seventeen years ago, in which he was consulted for stomach trouble by patients who were also subject to asthma. These patients suffered from insufficiency of the pylorus. Cure of the asthma in the first three cases he ascribed to mere accident, but after the fourth case he came to the conclusion that there must be an intimate connection between asthma and the insufficiency of the pylorus. In the majority of cases of insufficiency of the pylorus there is increased intraabdominal pressure, which is due to increased gas formation in the gastrointestinal tract. The pylorus is more or less relaxed, that is, the sphincteric action of the pylorus is weakened, has become insufficient to act normally. The degree of the insufficiency varies from a slight relaxation to complete patency of the pylorus, when there is no transition noticeable between the stomach and the

duodenum. The result is that the food leaves the stomach in a way which is not intended by nature. There is only one result possible and that is that the patient sooner or later will suffer. The food which should have been acted upon by the stomach and undergone acid digestion gets into the intestine where the digestion is alkaline. It stands to reason that chemical changes contrary to the normal will follow and these are accompanied by gas formation in excess. Both the patency of the pylorus and the increased gas distention can be visualized by the fluoroscope. The increased intraabdominal pressure forces the diaphragm upward against the lungs, which are interfered with in their normal expansion. This interference continues for weeks, months and years at the rate of eighteen times a minute. Such continued interference with the pulmonic function is bound to have a bad effect upon the lungs and the resulting bad effect manifests inself as the clinical picture which we have designated as asthma. Therefore, when the patient had been cured of the gastroenteric trouble and the abdominal pressure again became normal, the lungs had no more obstruction, and so the asthma was cured. The soundness of this theory, which the writer first promulgated in 1902, has been proved in over 400 cases. The treatment is discussed under three heads: (1) treatment of the paroxysm; (2) medicinal treatment of the asthmatic constitution; (3) dietetic treatment of the asthmatic constitution. The best and quickest relief for an attack is washing out the stomach. The medicinal treatment of the asthmatic constitution has for its object the remedying of the underlying cause, which is first the insufficiency of the pylorus. Of chief importance is the diet, for without the proper regulation of the diet one cannot hope to cure asthma.

Journal of the American Medical Association.

January 10, 1920, lxxiv, 2.

1. The Patient Himself. Hugh T. Patrick.
2. Pelvis of Kidney as Possible Source for Infection of Blood Stream: Preliminary Report. J. A. H. Magoun, Jr.
3. Intravenous Injections of Hypertonic Glucose Solution in Influenzal Pneumonia. Clifford W. Wells and R. C. Blankinship.
4. An Outbreak of Botulism: Report of Cases. Charles G. Jennings, Ernest W. Haass, and Alpheus F. Jennings.
5. A Revolution in Treatment of Congenital Dislocation of Hip in Young Children. Henry W. Frauenthal.
6. Treatment of Goiter with Injections of Phenol, Tincture of Iodin and Glycerin: A Further Report of Eighty Cases. Joseph Eastman Sheehan and William H Newcomb.
7. Addison's Disease. Morris J. Balen.
8. Control of Diphtheria by Cultures of the Noses and Throats of Schooi Children. L. B. Gloyne.
9. A Case of Cerebrospinal Meningitis Due to a Diphtheroid Bacillus. George F. Dick.
10. A Plastic Operation for the Cure of Urethral Stricture. Maximilian Stern.
11. Carcinoma of the External Ear. Richard L. Sutton.
12. Tumors of the Bladder: Their Diagnosis and Treatment. Robert H. Herbst and Alvin Thompson.
13. Two Cases of Mongolian Idiocy in the Same Family. Irving H. Pardee.
14. A Case of Lumbosacral Paralysis (Traumatic). G. B. Hassin, David M. Levy, and W. E. Tupper.

4. An Outbreak of Botulism.—Charles G. Jennings and his associates in this study, after reviewing the case of botulism which recently occurred in Michigan as the result of eating ripe olives, and discussing the symptoms and diagnosis, outline the serum treatment employed. Antibotulinus serum was obtained through the kindness of Professor Robert Graham of the University of Illinois. Forty-two c.c. of the serum were administered intravenously in one case forty-eight hours after the initial symptoms. It did not affect the disease. Another patient received 10 c.c. of antiserum intravenously forty-eight hours after the initial symptoms, and twelve hours later 10 c.c. were given subcutaneously. The illness of this patient was very mild, and they could not state that the serum had any influence on her recovery. To be of value the serum must be administered early. This can be accomplished only by an early recognition of the disease and by having depots of serum in various centers about the country. The dosage has not been fully established. McKaskey used small amounts, while Dickson reports the use of 85 c.c., or about 250,000 units. If a case of botulism occurs, careful search for the poisoned food should be made and all persons who have eaten it should be given good sized prophylactic doses of the serum. Gastric lavage, free catharsis, supportive measures and, in the subacute cases, feeding by the stomach tube are indicated.

The Lancet.

December 20, 1919, ii, 25.

1. Reflections on the Evolution of Disease. Sir W. Arbuthnot Lane.
2. Psychotherapy in Ordinary Practice. W. A. Potts.
3. Hysterical Sleeping Attacks: Treatment by Gross Suggestion, Reinforced by the Operation of Trephining, With Notes on Behavior in Hypnotic Sleep. Hildred Carlill.
4. Notes on Some Occasional Manifestations of Malaria. D. W. Carmalt Jones.
5. A Note on the Treatment of Recurrent Malaria and Malarial Relapses. Henry Fraser.
6. Congenital Dislocation of the Hip: Note on a Method of Dealing with Refractory Cases. A. H. Tubby.

2. Psychotherapy in Ordinary Practice.—W. A. Potts holds that in general practice cases suitable for psychotherapy, many of which cannot be treated in any other way, frequently occur. The general practitioner has a great advantage in that he is able to select both the case and the patient; he is not confronted with the difficulty of the patient being disheartened by the failure of other treatment. He also knows in advance the patient's previous history, habits, and temperament, and so can quickly pass on to treatment. On the other hand, the quickest and best results of psycho-therapy are usually obtained with patients one has never seen before, especially if treatment is started at the first interview. The ordinary practitioner may not have sufficient reputation in this kind of practice to produce the impression on a patient that a specialist can; he suffers from an additional handicap in that often he has not time either for a prolonged interview, or for a sufficient number of consecutive treatments. The cases which the writer describes never required long treatment; many of them were cured at one sitting. The necessity for careful diagnosis is emphasized. With psycho-therapy the greatest refinement of diagnosis is required—not merely a general idea of whether the condition is in the main functional or organic, but a decision often in regard to the nature of each symptom, because experience has shown that it is absurd to limit the use of this important branch of therapeutics to the so-called neuroses. Certainly it is valuable in them, but it is even more valuable in dealing with many of the symptoms of psychic origin associated with organic disease, such as continued vomiting in phthisis, and insomnia and chronic pain in many illnesses. Cases are cited in which psycho-therapy was employed in the treatment of neuroses, of paralysis agitans, in pregnancy and lactation, in neurasthenia, and for the investigation of criminal cases. The writer believes it will furnish the explanation of many illnesses and diseases, and is a powerful agent in relieving chronic pain, distress, and anxiety; it is also, in his opinion, an important factor in promoting efficiency and in strengthening character.

British Medical Journal.

December 20, 1919, ii, 3077.

1. An Address on the Evolution of the Surgeon and on His Training. W. Thelwall Thomas.
2. Chronic Intestinal Stasis in Children. Godfrey Taunton.
3. Health Resorts for the Diagnosis and Treatment of Chronic and Functional Diseases. F. Parkes Weber.
4. Tick Fever in Palestine. F. D. Nicholson.
5. Erythema Nodosum and Tuberculosis. E. Ward.

2. Chronic Intestinal Stasis in Children.—Godfrey Taunton states that chronic intestinal stasis is apt to be regarded as a condition affecting maturity because it is generally after this stage of life has been reached that patients present themselves for treatment, but only a few, if carefully questioned, fail to give a history which leads to the susupicion that their condition started in childhood or early infancy. Chronic intestinal stasis in children produces ill effects in several ways. In the first place, from autointoxication—the introduction of poisons into the blood stream through the intestinal mucous membrane affecting harmfully

all the tissues of the body. In the second place, it produces ill effects by bringing about a condition that leads frequently to infection of the sterile gall bladder and pancreas, and of the appendix, which cannot be claimed to be sterile. In the third place, it produces ill effects in the bowel itself. The portion of the intestine in which the stasis occurs is dilated, and from constant weight of its contents that part of its mesentery is lengthened, and a loop is formed which tends to gravitate toward the pelvis. Ulcerative processes, often tuberculous, are common, and by many cancer of the bowel is regarded as the end result of stasis. So great is the misery produced in later life that if, as a result of its study in children, the condition can in some cases be prevented, in some cured, and in others improved, a great advance will be made, and we shall see fewer of those chronic invalids—dyspeptic, neurasthenic, incapable of performing useful work or enjoying active pleasures, with a distaste for food and an abhorrence of sexual intercourse. The earlier the condition is recognized the easier it is to effect a cure, and in some cases in which an operation is called for it is one of less severity than in later years. In far the greater number of cases at an early age an operation is not necessary —other treatment will prevent the progress of stasis and ultimately overcome it. After discussing the types of chronic intestinal stasis, its various manifestations, its complications, and the diagnosis, the writer considers the treatment, dealing first with preventive measures and next with the treatment, by operation or otherwise, of the condition once it has appeared.

Le Bulletin Médical.

November 8, 1919, xxxiii, 49.

Glandular Insufficiency in Pediatrics.—Tixier mentions the great importance of this subject. Many severe infections of childhood incidentally damage the endocrine bodies. The resulting picture shows much polymorphism which is increased by the fact that a gland may be involved in very different degrees. In many cases therefore it is very difficult to name the particular syndrome. Thyroid deficiency of a notable degree is seen in the subject with congenital myxedema, the cretin and in so-called Brissaud infantilism which may also be called acquired myxedema. The younger the child when the condition appears the more pronounced the picture. The petty signs of thyroid insufficiency are of much interest. Some of these are a migranous type of headache or occipital neuralgia which is worse in the morning and interferes with school work; marked exhaustibility without great effort having been made; tendency to fall asleep after eating; pale and cold extremities; slight tendency to obesity, etc., etc. The author next mentions the addisonian syndrome which in the child nearly always means tuberculosis of the adrenals. A special syndrome accompanies the acute infectious diseases and has been often described. The abortive forms of hypoadrenia present apathy and an unconquerable sluggishness of mind and body, emaciation and slowing of growth and subnormal temperature, and are almost peculiar to boys. Other syndromes are in doubt and the senile dwarfism of Gilfort seems entirely inconsistent with the hirsutism of Apert. However, while the former has been encountered in atrophy of the adrenals, the latter has only been seen in tumors of the same. Pituitary insufficiency is not very common nor well defined in the child. Insufficiency of the gonads causes a form of infantilism in boys which is probably the same as eunuchoidism of authors while ovarian insufficiency causes also infantilism with slight inversion of the secondary sexual characters. Of pluriglandular syndromes must first be mentioned the adiposogenital dystrophy in which the hypophysis and testicle or ovary participate.

La Presse Médicale.

November 5, 1919, xxvii, 65.

Alimentation of Children.—Nobécourt states that the alimentation of the child above 3 years of age has been comparatively neglected. This neglect extends throughout the entire period of childhood or up to the time when the adult ration is consumed. This is termed neglect only in comparison with the extraordinary interest in the nutrition of the very young child, but the student will be well repaid by the same intensive study of the requirements of the older child. The limits placed on the problem in the present article are from 2½ to 15½ years of age. Since the growing child has a special requirement of tissue-food, the problem differs from that of the adult. While the dynamogenic requirement can be readily calculated from the factors of weight, sex and activity, the tissue-builders are neglected. These can well be ignored when food is plentiful and cheap, but in times of rationing must be carefully reckoned. There is a loss of heat radiated from the surface which should be borne in mind under calory requirements. The specific surface or amount which corresponds to a kilo of weight diminishes from the time of birth when it is 6.5 sq. dm. to 3.5 sq. dm. at the age of 15 and after. There is but little change from then on, for in the adult the specific surface is reckoned at 3 sq. dm. for a weight of 55 to 60 kilos. The number of calories radiated per specific surface is diversely computed. For the nursling a safe estimate is 15 per day. This holds good up to the weight of 30 kilos, and above that 14 per day per surface should hold good. We then have only to multiply the two figures—surface and calory number—to get the total radiation per kilogram-day. Then at each gain in weight we can calculate the increase in radiation. If a nursling gains one gram in weight he loses by radiation two more calories. These increments are known as growth calories. The work calories despite the great activity of the young child are comparatively few as the real output of energy is small in comparison with that of an adult engaged in an occupation. Hence all but a small fraction of the heat and energy food goes to maintain the animal heat. A child aged 5 years needs less than 1000 daily calories. The requirements at 15 are practically those of an adult whose occupation is not too active. Under protein requirement for growth and repair the author has but little to state although this appears to be the crux of the matter. The daily protein for a child of any age is made the same outright as that for the adult, or 100 grams, but the child uses more animal protein and less vegetable protein (sixty animal as compared to about fifty, and forty vegetable against fifty).

Le Bulletin Médical.

November 1, 1919, xxxiii, 48.

Treatment of Inoperable Cancer of the Tongue.—Belot states that radiation is the only treatment for this condition, for electrotherapeutics has not made good. In regard to the relative merits of radium and the *x*-rays, the former is the more satisfactory, according to the consensus of opinion, but the author dissents and finds what in theory should be the case that the action is essentially the same in either case. The recent improvements in *x*-ray technique give them a rank in part equal to that of radium for this locality. In fact, with the improvements mentioned, the rays are the more available remedy. Nevertheless radium retains certain advantages in an organ like the tongue, for the radium tube can often be inserted at the very seat of the mischief, when the rays are at a disadvantage. Or rather it might be best to state that the two methods can supplement each other, for radium can, so to speak, attack from within outward while the rays reverse this order. An important feature of the treatment is radiation of the glands, beginning with the submaxillary and anterior carotid and extending later to the lateral nodes of the neck. The deepest rays should be used through a 4 or 5 millimeter aluminum filter. At the same time tubes of radium are used within the mouth and also in very large ganglia. But while the immediate results may be brilliant it must be remembered that the treatment is essentially palliative, because it is impossible to reach all the cancerous tissue. Untoward results are due to defective technique, however, for the treatment properly given should never aggravate. In three cases cited by the author, one patient had a nodule on the tip of the tongue which had begun to ulcerate; while the submaxillary glands were enlarged. The first treatment was excision, as

the case was deemed operable. The microscope showed that in all probability the tumor could not have been completely removed and radiation followed. The patient has lived six years, and has had no relapse as yet. The second patient showed a diffuse cancer of the organ which was extremely painful. Both forms of radiation were used and the patient secured relief from pain and increased mobility of the organ, while the glands dwindled in size. The patient lived two years and died of an intercurrent pulmonary affection. In a third patient with inoperable recurrence the disease has been brought almost to a standstill. But such cases are the exception and are outweighed by numerous others, in which treatment has proved almost inert.

Correspondenz-Blatt für Schweizer Aerzte.

November 6, 1919, xlix, 45.

Acute Death in Heart Diseases.—Frey refers to sudden cessation of cardiac action and respiration, with death in a few seconds. It has been called "second" cardiac death. These deaths are not uncommon in patients with heart disease and during the last three years at one of the Kiel medical clinics there have been seventeen such. Eight occured in children with diphtheria. Three others occured in acute endocarditis with valvular lesions. Two occurred in mesoaortitis luetica with aortic insufficiency. Concerning the rationale of these cases we know but little. It might be said that the cardiac muscle gives out, becomes insufficient. But if this were the case there should be acute dilatation and venous stasis and neither is present in typical cases. Hering, who introduced the term "second" death believes that the cause is heart flutter, but the author does not concur. The electrocardiac proof cannot of course be forthcoming in such subjects as a matter of routine. The author, however, has taken electrocardiograms of the dying in 20 cases but never saw flutter, although he has observed extrasystole and hemisystole. Clinically he never saw heart flutter in "second" death. The synchronous stoppage of respiration should throw light on the subject, for this is not present in many forms of sudden death. In psychic shock we may see circulation and respiration arrested together and it has been seen in the mysterious deaths which follow falling in the water and also in chloroform deaths. The mechanism of "second" death is attributed to a shock action which affects simultaneously the centers of respiration and circulation. As a psychogenic motivation cannot be accused the author is forced to suggest a reflex mechanism originating in the heart itself. The reflex paths are naturally sensitized by the underlying disease of the heart.

La Médecine.

October, 1919, i, 1.

French Surgery, 1914-1918.—Mathieu states that French surgery during the great war exceeded all expectations. Owing to the fact that the internes in French hospitals are trained in operative surgery France possessed at the outbreak of the war thousands of potential operators from which the elite could be chosen for rapid mobilization. Each surgeon was the nucleus of a unit which comprised an assistant surgeon, anesthetist and two orderlies. The work of the surgeon was supplemented at the front by that of the radiographer, bacteriologist and chemist. Founded on laboratory data the first great step agreed upon was wide extirpation of infected foci, followed at the right moment by secondary suture. In certain cases immediate suture was found to be justifiable. This resource had to be practised at a very early moment and gave good results in joint and bone lesions, and wounds of the lungs and brain, where wide resection was contraindicated. As a tribute to radical methods gas gangrene and tetanus became increasingly uncommon. Naturally such a result was due largely to preventive serotherapy. The Paris Society of Surgery acted throughout as a clearing house of surgical practice and the numerous important subjects which came up for discussion included not only technics in the limited sense but organization and administration. We are now in position to appraise the value of military experiences for civil practice. Accidents which occur in the industries will benefit by the lessons in preparation of wounds of the extremities with immediate closure. The course of healing should be shortened, the functional result better than of old. In some cases of open fracture the bones will be sutured at once and the exposed joint cavities closed promptly. But there will be lessons in the opposite direction, wider exposure of deep structures when there have been penetrating wounds or when drainage is everything. Reconstructive and plastic work will have a great impetus with especial reference to grafts of all kinds. Valuable experience in the use of anesthetics of all kinds has been gained.

La Presse Médicale.

November 19, 1919, xxvii, 69.

Epilepsy and Anaphylaxis.—Pagniez and Lieutaud remark on the frequency of comitial attacks after gastrointestinal disturbance and the natural tendency to accuse special food articles. Well known to be of anaphylactic nature at times are urticaria, asthma and migraine, as shown by the nature of the cure. An epileptic boy of 18 with mentality of 13 or 14 was suspected of having a change in his blood picture before some of the attacks and hence blood counts were taken from time to time. Normally after a meal there was a slight upward change in the white cell count (digestive leucocytosis) and blood pressure; while on special occasions there was a sudden fall in the white count, the latter being reduced by as much as 2000 for a brief interval. The "clue" was a slight one, but the authors followed it up. In seeking for a food article which might figure in an anaphylaxis, chocolate was thought of; for on two occasions migrainous subjects had accused it of bringing on paroxysms. With a given meal the boy received 50 gms. chocolate, whereupon the white count made a sensational fall to 3600 from an initial 7000. Several hours after the count was taken an epileptic seizure followed. The authors then waited for another attack to come about spontaneously and two days after this event the boy was again given chocolate. The leucocyte count showed no change and no seizure developed. A few days later the experiment with chocolate was repeated in a little larger amount. Once more the white count suddenly fell—from 11,500 to 5400. The blood pressure, unchanged in the first experiment, also fell considerably and that night patient had three seizures. A control patient, non-epileptic, ingested chocolate without any disturbance of the white count. This case is only an entering wedge for further study, but it seems assured that a relation subsists between certain food articles, a hemoclastic crisis and an epileptic seizure in a predisposed subject.

Folk Syphilis in Denmark.—Ehlers writes entertainingly of this subject, making a sharp distinction between folk syphilis and the venereal form. The former was well known in the XVIII century and resembled the "radesyge" of Norway, especially in its destruction of the nasal skeleton. The victims were either infected extragenitally or had their disease overlooked. While the socalled "Juske" syphiloid was not known before the close of the XVIII century there are several accounts of local epidemics of folk syphilis at earlier periods, including one at Jutland itself, where the "Juske" syphiloid later originated.—*Norsk Magazin for Laegevidenskaben.*

Specific Treatment of Vincent's Angina.—Capitan injects colloidal arsenic into the buttocks, using Frouin's technique. In 24 hours we find the buccal cavity nearly sterile of these germs, even in the absence of local treatment. In another 24 hours not a spirochete or fusiform bacillus is to be found. Only in very severe cases was a second injection necessary. The treatment is absolutely specific.—*Le Progès Médical.*

Pantoponism.—As could have been anticipated the introduction of this proprietary has led to numerous cases of habit formation which practically merge with morphinism. The prevalence of the habit will vary inversely with the strictness of enforcement of anti-narcotic laws and with the existence of restrictive laws. —*Office International d'Hygiene Publique.*

Book Reviews.

TRANSACTIONS OF THE FORTIETH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION, held at Atlantic City, N. J., May 27, 28, and 29, 1918. Together with the Record of the Association in the Great War. Published by the Association, under the Direction of the Acting Secretary, Dr. David Bryson Delavan.

This volume, which records the Jubilee Celebration of one of the oldest, ablest, and most distinguished of the organizations representing the specialties in this country, is a valuable addition to the literature of the World War period, for it contains the inspiring war record of the association. The total membership of the organization, as we are told in the Foreword, is 81. Of these not more than 48 were eligible for active service; of this number 38 were in uniform. The list includes 1 brigadier-general, 4 colonels, 6 lieutenant-colonels, 15 majors, 5 captains, 3 lieutenants, and 4 contract surgeons. The volume includes the honor roll of those who served overseas and at home, whether in the Medical Reserve Corps, the Volunteer Medical Service Corps, or miscellaneous service, and contains 3 portrait groups and 15 portraits. The Report of the Activities of the Committee on Oto-Laryngology of the Council of National Defense, by Col. Charles W. Richardson of Washington, D. C., and an Informal Report on Oto-Laryngology in the First Year of the War, by Col. Harris P. Mosher of Boston, form valuable records of the activities of otolaryngologists who saw service during the war.

The history of laryngology is reviewed in a paper on the early days of laryngology, by the honorary president, Dr. J. Da Silva Solis-Cohen of Philadelphia, reminiscent sketches by Dr. Henry K. Oliver of Boston, Dr. Samuel Johnston of Baltimore, a letter from the late Dr. E. Fletcher Ingals of Chicago, and a paper on the influence of New York upon the development of laryngology, by Dr. D. Bryson Delavan of New York. A unique feature of the historical part of the volume is the reproduction of the report of the proceedings of the meeting in 1878, at which the association was organized.

The remainder of the volume contains the report of the regular scientific proceedings, an account of the annual dinner, and the record of the executive sessions, together with the list of members, 44 cuts and 2 vignettes, and the table of contents.

PSYCHOSES OF THE WAR, including Neurasthenia and Shell Shock. By H. C. MARR, Lt.-Col. R.A.M.C. (Temp.), Director of Medicine; Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow; Neurological Consultant to the Scottish Command; H. M. Commissioner of Control for Scotland; Formerly Specialist in Nervous Diseases to the Troops in Malta (1915-1916); Physician Superintendent of Glasgow District Mental Hospital, Woodilee, Lenzie; Referee, Under the Workmen's Compensation Act, for Dumbartonshire; and Mackintosh Lecturer in Psychological Medicine, St. Mungo's College, Glasgow. London: Henry Frowde, and Hodder & Stoughton. New York: Oxford University Press, American Branch, 1919.

IN the first chapter, or Introduction to this book, the author deals with the borderland of mental disease; normal obsession, abnormal obsession, imperative ideas; the seat of mind and mental phenomena; means of observation of mental phenomena, with a table giving the classification of mental affections; simulation of mental affections; malingering, feigned insanity. The author then proceeds, in chapter two, with the discussion of the psychopathies, under which he considers hereditary and constitutional psychoses—neurasthenia (shell shock), which he classifies as simple, hysterical, and organic.

The third chapter is devoted to psychasthenia, which Dr. Marr considers to be the counterpart of neurasthenia, in the latter the nervous weakness being most prominent, while in the former the mental phenomena attract most attention. Psychasthenia, in other words, is a mental state superimposed on one of the forms of neurasthenia. In the fourth and fifth chapters are considered, respectively, mental deficiency (infantile), and mental enfeeblement (adolescent). In the sixth chapter the author deals with toxic psychoses or confusional insanities, the essential features of the toxic mental conditions being the confusional insanities. In the seventh and last chapter are considered organic psychoses (cerebropathies), under which are included cerebral syphilis; metasyphilitic affections, such as general paralysis and locomotor ataxia; head traumatisms; and insanities associated with arteriosclerosis, senile decay, and cerebral tumor. The general considerations herein outlined are the results of observations, begun shortly after the beginning of the war, of some 18,000 officers and men. Relatively little space is devoted by the author to the treatment of the several conditions discussed in the volume, with the single exception perhaps of the general treatment of neurasthenia.

AN OUTLINE OF GENITO-URINARY SURGERY. By GEORGE GILBERT SMITH, M.D., F.A.C.S. Genito-Urinary Surgeon to Out-Patients, Massachusetts General Hospital; Assistant Visiting Surgeon, Collis P. Huntington Memorial Hospital; Captain Medical Corps, U. S. A.; Member of the American Association of Genito-Urinary Surgeons and of the American Urological Association. Authority to publish granted by the Surgeon-General, U. S. A. Illustrations by H. F. Aitken. Philadelphia and London: W. B. Saunders Company, 1919.

THIS little book has been written with the idea of presenting to students and general practitioners the important points in the symptomatology and pathology of genito-urinary diseases. It fulfils this promise and justifies its reason for existence. The author's style is clear, direct and simple, and his book adequately bridges that hiatus between the quiz compend and the pretentious text-books on urology.

STERILITY IN WOMEN. By ARTHUR E. GILES, M.D., B. Sc. (Lond.), M.B., Ch.B. (Vict.), F.R.C.S. (Edin.), M.R.C.P. (Lond.). Captain R.A.M.C. (Temp.). Senior Surgeon to the Chelsea Hospital for Women, Gynecologist to the Prince of Wales General Hospital, Tottenham. With eleven illustrations. London: Henry Frowde, and Hodder and Stoughton; New York: Oxford University Press, American Branch, 1919.

THIS is a good book on an important subject. The author is well known as joint-author with Sir John Bland Sutton of a book on Diseases of Women which has gone through several editions, and as the author of a useful little volume on Gynecological Diagnosis. The present work is somewhat on the lines of the Gynecological Diagnosis. The author begins by disclaiming any idea of being considered a specialist on the subject; but his book is based on a very large experience, and his statistics and inferences are based on some 4,500 cases. The fact that the author does not claim to be a "specialist" adds to the value of his book, in that he does not take the narrow view of the subject which so often characterizes the work of the mere specialist. There is an introductory chapter on man's share of responsibility for childless marriages, and the author gives the figures of different authors placing this responsibility anywhere between 10 per cent and 90 per cent. The next chapter is on the proportion of unproductive marriages. Then follow two chapters on the causes of sterility; in one, the classification of these causes is on a pathological basis, in the other the subject is viewed from the clinical standpoint.

The interesting subject of functional sterility is next discussed. This is followed by several chapters on primary sterility, which is regarded as of two kinds, congenital and acquired. Secondary sterility is next considered, and then the author discusses the diagnosis of the causes of sterility. Two chapters follow on the prognosis and treatment. The volume closes with a valuable bibliography on sterility, arranged chronologically and including approximately 250 titles, and ranging from 1609 to 1913. The work includes the labors of others as well as the author's own experience, and the whole is welded together in a masterly manner. The general practitioner will find this a valuable volume on a subject which is always of interest and never more so than at the present time.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held October 9, 1919.

DR. MURRAY H. BASS IN THE CHAIR.

Chronic Arthritis with Subcutaneous Nodules and Enlargement of Lymph Tubes and Spleen.—Dr. MAY WILSON presented this patient, a girl of 8 years of age, with a tuberculous family history, and giving a positive von Pirquet reaction. The child had a rheumatic history. She developed an arthritis of the right knee-joint at the age of 5½ years followed by repeated involvement of joints in the following order: knees, wrists, spine, ankles, carpus, and phalanges, with periarticular thickening, stiffness, no redness and little pain in the joints. An enlargement of the lymph glands was associated with the arthritis, the course of their involvement following closely that of the joints. There was early and persistent enlargement of the liver and later enlargement of the spleen. Subcutaneous rheumatic nodules had developed along the tendons and bony prominences. Since the child had been under observation enlargement of the heart had developed with pericarditis and possibly endocarditis. The onset of the condition was acute. It had lasted two and one-half years. Thus far no focus of infection had been found. The case presented a problem in differential diagnosis. Was it a case of intractable rheumatism, characterized by swelling of the joints of a subacute nature, fibrous nodules near the joints, with lymphatic gland involvement, and a rheumatic history? Such a form of rheumatism was rare in this country. Or was it an early case of Still's disease (infectious arthritis), since in addition to the arthritis the glands and spleen were involved? Again, might it be a case of tuberculous rheumatism as described by Poncet, who cited a similar case in which there was a tuberculous family history and a positive von Pirquet. Finally, could it be a case of arthritis deformans occurring in childhood? The blood culture was negative, during exacerbations. The urine showed albumin ½ plus. An *x*-ray of the heart showed slight hypertrophy of the right ventricle. There was no evidence of bone or cartilage destruction.

Dr. OSCAR M. SCHLOSS said he had had the opportunity of seeing the case and probably the diagnosis was subacute rheumatism with tremendous development of rheumatic nodules. As to the question of Still's disease, some of these cases were very slow in developing and had recurrent attacks and intervals of remission such as this child's history showed. However, the evidence at the present time was in favor of this being a rheumatic case with fibrous rheumatic nodules.

Dr. HERMAN SCHWARZ said that in rheumatic fever with heart complications, where the patient had had a high temperature and was very sick, one usually found rheumatic nodules if he followed Dr. Brenneman's advice and looked for them. If one removed a nodule, examined it and found Aschoff bodies, he could be sure he was dealing with a case of rheumatism. If the nodule was too old Aschoff bodies would not be found. He agreed with Dr. Schloss that this case was one of subacute rheumatism since the child had had the trouble for several years and there was not much deformity. One rarely saw the kind of a hand this child presented at such an early age, and this made him think that possibly Still's disease should be taken into consideration.

Dr. GODFREY R. PISEK said that the child fell in with the description given by Still, but even if the case were accepted as one of Still's disease we would be just as far away from knowing the etiology as though we called the case one of chronic rheumatism. The fact that the child had had various arthritides, the character of the temperature chart, and the splenic enlargement made him feel that it should be put under the classification designated as Still's disease.

Dr. HENRY BERG expressed the opinion that cases of Still's disease seemed to be much more numerous formerly than at the present time, and he wondered whether there were really fewer cases or whether it was because he did not see as many dispensary cases as some years ago. The fact that the nodules in the case resembled those of arthritis, that the joints were stiff, that enlargements had not occurred unless there was fever, that there were recurrences, and that there was enlargement of the liver, spleen, and lymph nodes, together with a tuberculous history, would make one think immediately of Still's disease. Though very little was known of the pathogenicity of this disease it was certain that the symptoms presented in this case came very close to the picture of Still's disease.

Dr. L. E. LA FETRA said the unusual feature in this case was the enlargement of the lymph nodes; otherwise it would be easy to classify the case as one of subacute rheumatism. Among hundreds of cases of rheumatic arthritis it was rare to find a case with enlargement of the lymph nodes. It was quite possible that the child, as suggested by Dr. Schloss, was on the way to develop Still's disease.

Dr. SIDNEY V. HAAS called attention to the fact that it was not so very long ago that the finding of these fibrous nodules was considered as indicating a bad prognosis. This opinion had undergone a change. This case would seem to substantiate this attitude, for although the child was rather sick the prognosis for an early death did not exist. The case illustrated very well the confusion which existed in the literature of rheumatism. Still's disease was in reality only a chronic sepsis. This child represented the clinical picture of three diseases: (1) Lymphadenitis, (2) rheumatism, (3) Still's disease, due to one etiological factor, chronic sepsis.

Dr. ROGER H. DENNETT stated that Dr. Haas had described the situation exactly. The fact of importance was that the child was suffering from a chronic infection. It might be from the middle ear, a sinus, the teeth, or what not. He felt that on this point the future textbooks would be simplified, not being satisfied with describing various pictures of each type of infection and giving them a name, but would say "this is one of the many manifestations of blood infection coming from focal infection."

Dr. WILSON, in closing, said that they were expecting to have an examination of a nodule, but they were waiting until they could get a fresh one, as Poynton and Paine in "Researches and Rheumatism" state that fresh nodules showed the characteristic morphology and could be stained for organisms. Dr. Koplik and Poynton and Paine had cited similar cases. Poynton said he could not classify the disease, but thought it took a middle position between chronic rheumatic arthritis and Still's disease. The teeth and sinuses had been examined and found negative.

Hyperpigmented as Contradistinguished from Hemorrhagic Measles.—Dr. HENRY W. BERG presented this paper, in which he stated that true hemorrhagic measles was an extremely fatal disease, being considered by many experts in communicable diseases as uniformly fatal. Others believed that some exceptional cases might recover. Many years ago he had been impressed with the fact that the cases of measles with a hemorrhagic skin eruption that recovered were not clinically very sick patients. The cases of hemorrhagic skin eruption that showed the manifestations of severe illness and finally died were from their beginning entirely different in type from those that recovered. The temperature was very high or subnormal, the pulse very rapid, there were hemorrhages from the nose, eyes, and other mucous membranes, including those of the stomach and bowels; there was hematuria, and there were toxic cerebral symptoms. It was a curious fact that in these malignant cases most of the eruption was not hemorrhagic, but disappeared during pressure as did the eruption of ordinary measles. There were cases in which the eruption was a perfectly normal one accompanied by a lesser degree of hemorrhages into the mucous membranes and a lesser degree of cerebral and general toxemia. Yet even in these cases it was proper to predict a fatal result with the preceding occurrence of a bronchopneumonia, nephritis, or other serious complication, for these were also cases of nonfulminating yet true hemorrhagic measles. The cases to which he particularly called attention were those in which the eruption as a whole was hemorrhagic, that was to say, it did not disappear during pressure, but on the contrary became more brilliant during pressure.

This was true not only in spots, but over whole extremities and large areas of eruption, or even over the whole surface of the skin eruption. The eruption looked as though it were painted with fixed dyes underneath the epidermis. It was slightly elevated and was apt to be confluent. The more the skin was compressed the more brilliant the eruption became. This type he had called "pseudo-hemorrhagic" or "hyperpigmented" measles. The hyperpigmented character of the eruption was rarely marked on the first day, but generally observed on the second or third day by the failure to pale and disappear on pressure as happened to ordinary measles. The hyperpigmented eruption was much more brilliantly red than ordinary measles; the papules were more elevated, and the macular portion of the eruption was almost as red as the papule. The eruption endured in its full brilliant color up to the seventh or eighth day before it began to fade, during all of which time it retained its characteristic of not fading on pressure. In hyperpigmented measles the desquamative stage was delayed, and when it began the furfur was coarser with larger scales than those of ordinary measles. There were cases in which the whole eruption was of the hyperpigmented type, while in others only a portion of the eruption was hyperpigmented, the rest of the body being covered with ordinary measles. The exanthematic portion of the eruption, particularly on the soft palate, was more marked and clearly defined than in an ordinary case of measles. In these cases, in contradistinction to true hemorrhagic measles, there were no petechial or purpuric spots and no extravasations of blood, and no hemorrhages from the nares, throat, mouth, conjunctiva, stomach, or bowels, etc., as in hemorrhagic measles. Koplik spots were present about as early and to the same extent in hyperpigmented as in normal measles. The essential pulse and temperature curves characteristic of measles were present in cases of hyperpigmented measles but were as a rule on a higher scale than in cases of ordinary measles. The hyperpigmented cases never presented a subnormal temperature curve. The fastigium stage of the temperature curve in the hyperpigmented cases was fully two or even three days longer than in ordinary measles. The resolution of the temperature curve by crisis, so characteristic of normal measles, occurred in hyperpigmented cases, too, but generally two or more days later. Myocarditis and arrhythmias were not present in uncomplicated cases of hyperpigmented measles. Bronchopneumonia occurred as a complication, but not as frequently as in ordinary measles. The prognosis for recovery of such a complicating bronchopneumonia was very much better in the hyperpigmented cases than in ordinary cases of measles. A point to be particularly stressed was that the prognosis of hyperpigmented measles was an extremely favorable one.

Dr. E. M. GIDDINGS stated that he had observed some 2,000 cases of measles and had found among them 60 cases of hemorrhagic measles and one case only of hemorrhagic measles in the sense of being the malignant form of hemorrhagic measles, that was with hemorrhages from the various mucous membranes. Among these there were 17 patients with bronchopneumonia, of whom 9 died. Twenty-four cases had otitis media, which was a little less than the average incidence of this complication among measles cases. The course of the disease when of the hyperpigmented type was usually milder as to complications than that of ordinary measles. The temperature curve in hyperpigmented measles was as Dr. Berg had described it. The fever usually lasted three or four days longer than in the ordinary type of measles, usually coming down on the seventh or eighth day.

Dr. L. E. LA FETRA said all were familiar with this type of benign hemorrhagic measles and the thing that struck one when he first saw such cases was the surprisingly good outcome as compared with that of true hemorrhagic or malignant measles. With reference to designating this type of measles by the term "hyperpigmented," Dr. Berg had criticised his own caption when he said that the term hyperpigmented described only the latter part of the disease. Why, then, give the disease that name when one wanted to know something about the disease when he made the diagnosis? Dr. Berg had used the term hyperpigmented to mean bright red and also to mean dark brown. Would not the use of some term such as benign hemorrhagic or mild hemorrhagic be better?

Dr. HERMAN SCHWARZ expressed the opinion that the terms malignant and nonmalignant, with or without hemorrhages, would serve as a simple index to distinguish these different types of measles.

Dr. MURRAY H. BASS said he was particularly interested in the statement that these cases of hyperpigmented measles should be differentiated from the ordinary ones on account of the fact that the complications ran a more favorable course than in the other type. It had seemed to him that the difference was due to a difference in the skin of the patient and to the fact that the blood capillaries of such patients broke easier than those of others; or he thought that hemorrhagic measles might be complicated with some other condition which rendered the skin capillaries of the patient particularly susceptible, so that they broke easily. The fact that these cases ran a longer course might be due to the absorption of the extravasated blood. If these cases of hyperpigmented measles ran a milder course as regards complications it was perfectly proper to think that we were dealing with a different type of measles.

Dr. BERG, in closing, said he was glad to see that Dr. Giddings brought out the point that there was a large number of cases of hyperpigmented measles. However, the cases were not simple hyperpigmented measles if the patients died. The important points in reference to hyperpigmented measles were the longer course of the disease, the fact that the patients did not have severe constitutional symptoms, and that they had hemorrhagic essential measles lesions. These cases had been called hemorrhagic measles, but they were not hemorrhagic measles. Hemorrhagic measles was a fatal disease, so that from the prognostic standpoint one should not make a diagnosis of hemorrhagic measles when the case was one of hyperpigmented measles. The term pseudohemorrhagic would not do because there was hemorrhage so far as the lesion itself was concerned, but one would not find other hemorrhagic spots or petechiæ; compressing the lesion did not cause these measles spots to disappear or fade. If one found no other hemorrhages except the hemorrhagic measles lesion the condition was hyperpigmented measles, and one was at liberty to make a perfectly good prognosis in the noncomplicated cases. There were two kinds of true hemorrhagic measles: (1) The foudroyant, in which the patients died promptly, and (2) a type in which there were severe complications and the patient died after two or three weeks. The hyperpigmented type was an absolute entity and one could make the diagnosis on the eruption and on the fact there were no constitutional symptoms and no toxemia, and the patients never died but invariably got well. Even when complicated, hyperpigmented measles had a better prognosis than simple measles when complicated. The fact to be impressed was that these cases must not be classified as hemorrhagic, but must be called by some other name, it did not make any difference whether it was hyperpigmented or a name that came nearer the truth. If a more appropriate name could be found he was willing to have it adopted. If those members of the section who had charge of large children's contagious disease services would watch their cases of measles for a winter or two they would find a certain number of cases which they would designate as hyperpigmented, and when there was a discussion on the next paper on this subject they would be able to talk about hyperpigmented measles as an absolute entity.

Thick Cereal Feeding in Malnutrition in Infancy.—Dr. HAROLD RUCKMAN MIXSELL read this paper. He stated that his attention was first called to thick cereal feeding in infancy through an article by Dr. L. W. Sauer of Chicago on thick cereal feedings in cases of pyloric stenosis and pylorospasm. He later had the opportunity of taking care of one of Dr. Sauer's cases and had noted the remarkable results obtained in this condition. It occurred to him that it would be an excellent idea to try out the thick farina feedings in cases of marasmus. Accordingly four cases in the Nursery and Child's Hospital and 12 cases in private practice were selected, the ages running from four

weeks to six months. The hospital cases were babies who had approached hospitalization, were physically not abnormal, and had all been tried on various formulæ in the endeavor to make them gain. The cases in private practice were the same type. The stock formula on which these babies were started was approximately one tablespoonful of farina to seven ounces of a one per cent. milk. Skimmed milk was used on account of its comparatively higher protein and salt content. To the entire formula about three per cent. of cane sugar was added. Later dextrimaltose was added. All of this was cooked for at least thirty minutes, or until the cereal was so tenacious that it would barely fall off an inverted spoon. It was found that if the cereal was not well cooked the baby might get up a diarrhea from the high starch content. In four of the cases rice flour was used. This had the advantage of being more soluble and had better protected colloids than farina. The pyloric reflexes, therefore, were better inhibited and were not as active. Two cases were described in detail as typical of the other 14. In every case there was a decided change for the better physically and a decided gain in weight. A striking point about these feedings was the high caloric intake which these babies would handle, in many cases it being 300 calories or more over their requirements. In regard to the length of time one could keep a child on thick cereals, there was no fixed rule. In one of the writer's cases it was persisted in for eight months with good success. Naturally, other articles of diet were added from time to time, the green vegetables and fruit juices in particular being used. It seemed best, however, to make a change back to a milk formula at the end of about two months, dry milk being used in the majority of cases. In order to supply the water deficiency in these babies there was ordered water in amounts up to six ounces three times a day. The urine in every one of these cases was found normal, there was no loss of weight, or edema, or evidence of water retention. By the thick cereal feeding there was increased sugar tolerance with no disturbance of sugar or starch metabolism. In closing the writer said, in view of this series of tests, he felt that although we did not have a cure-all for all difficult feeding cases, the results justified its thorough trial.

Dr. L. E. La Fetra congratulated Dr. Mixsell on his good results with the thick cereal feeding. He felt that these favorable results were in a measure due to the use of protein in the form of skimmed milk boiled with the cereal. They had used the cereal boiled only in water, and while in that way they had been able to prevent vomiting, they had lost sight of the protein requirements.

Dr. Herman Schwarz said that if from no other standpoint it was interesting and instructive that infants of two, three, and four weeks of age could be fed with thick cereals.

Dr. Charles Hendee Smith said that it had been known for some time that cereal gruels were a last resort in the feeding of vomiting babies. There were many ways in which these gruels could be made up. As he remembered Dr. Porter's paper, rice flour was used and, as rice flour did not thicken as much as some other cereals, it was necessary to use twelve or fourteen tablespoonfuls to make up 30 ounces. It was the speaker's practice to use cream of wheat, which took only five level tablespoonfuls to make 30 ounces, which was practically the same proportion as Dr. Mixsell's mixture, one tablespoonful to six ounces. Dr. Smith said he ordered the cereal cooked in a pint or less of water for one hour and then the milk in any amount necessary to be added and brought to a boil or not, as desired. The result was a solid cereal when cool. In this method whole or skimmed milk might be used and any form of sugar might be added. The results with vomiting babies were regularly excellent. Dr. Mixsell's paper suggested a valuable extension of thick cereal feeding to other difficult feeding cases.

Dr. Sidney V. Haas said it was interesting to know that one could get good results from thick cereal feeding and it gave a possible explanation of the good results obtained with malt soup. In both of these types of feeding there was a large quantity of carbohydrate. Dr. Mixsell had called attention to one point that was likely to be lost sight of, and that was the character of the colloids. The colloids were a factor of importance and one that was much neglected.

Dr. Henry W. Berg said he was impressed by the unimportance of the disturbance that might be caused by cereal feeding, but he felt that the results of feeding with atropine might be very important. He thought the feeding of food should be separated from the feeding of drugs, so that one would know just what the child was absorbing. If it became a habit to feed atropine in the food of sick infants there might be a higher death rate notwithstanding perfect feeding. In this food Dr. Mixsell gave all the chemical elements the child needed and he obtained good results. The feeding of thick, almost gelatinous food, prevented the slight tendency to vomit mechanically, and the child would retain such foods while fluids would be vomited. He had wondered, as had one of the other speakers, how many other children would have done as well as these children cited. He had known instances in which all kinds of scientific methods of feeding had been employed and failed, and then someone would induce the mother to try a patent food and the child would do well. There were a great many things we did not know about the patient and the way in which various foods affected various types of patients. The method of feeding which Dr. Mixsell had described was suggested only as an additional resort in cases of difficult feeding, and it would do good in some cases and do badly in other types of cases.

Dr. Mixsell said that Dr. Berg had expressed just what he felt by his last remark; this was simply one method of feeding that might be employed in difficult cases. He did not think it a cure-all by any means. In using rice one had to use twice as much as of other cereals. Feeding methods seemed to run in cycles and this was a modification of the pap feeding used in the sixteenth and seventeenth centuries. It was not a new method, but it might be used with advantage in a good many cases.

Intestinal Toxemia in Infancy; A Suggested Explanation.—Dr. Marshall C. Pease read this paper, in which he stated that it had long been recognized that the number of bacteria in the feces was much greater than the number of colonies that developed on plates. This discrepancy had been in part at least explained by improved methods of culture so that many of the Gram-positive spore-bearing anaerobes had been identified. A few of the more easily grown anaerobes had been isolated, but for the most part the field of research had yielded few results or had been neglected, so that but few identifications had been made. The *B. welchii*, the *B. sporogenes*, and the *B. putrificus* had been frequently found, as they were easily grown and recognized. There were two reasons for the neglect of the study of the anaerobes. In the first place it was the least developed field of bacteriology, the methods were cumbersome and difficult of application, the organisms for the most part were unclassified, and there was no literature in all medicine so unsatisfactory as that which had to do with this subject. In the second place the so-called putrefactive organisms had not been supposed to have a poisonous action, and it was taken for granted that their harmful effects resulted from the breaking down of the proteins rather than from any inherent quality that existed in the bacteria themselves. The easy acceptance of a tradition was no longer possible when we considered that we were dealing with a group of bacteria that were capable of elaborating toxins and could be shown to produce many and severe symptoms. Without a doubt it was these toxins that furnished the hitherto unknown toxic agent of those cases that had been designated as gastrointestinal toxemia of unknown origin occurring in children. It was now possible to indicate a source from which such toxins might be derived and to prove that they were capable of causing either mild or the severest possible degree of toxemia. These toxins were derived from a group of anaerobes that were commonly found in the intestinal tract of both infants and adults. They had been classified in the order of their pathogenicity and with an indication of their main action as regards the sugars and proteins into three groups. Group I was capable of elaborating a high titer toxin and included the *Vibrion septique*, *B. edematiens*, and *B. perfringens*, all of which had a saccharolytic action, while

the second and third had also a proteolytic action. Group II included organisms having a low titer toxin, as *B. fallax*, which had a saccharolytic action, and *B. sporogenes* and *B. aerofœtidus*, which had a proteolytic action. Group III included organisms which, so far as was known, never produced toxins and were chiefly of importance because of their association with the organisms which did produce toxins and their influence in heightening the toxicity of the toxin producing organisms. In this group were included *B. putrificus*, *B. tertius*, which had a proteolytic action, and *B. fermentans*, which had a saccharolytic action. The organisms of the first group showed great variability in their ability to produce toxins which they produced in high titer and in quantities in a medium rich in proteins and having an alkaline reaction. The putrefactive organisms derived their importance chiefly from the fact that they tended to keep the medium of an alkaline reaction and break down the proteins into their simpler compounds which might be more easily attacked by the pathogenic saccharolytic organisms. The symptoms developed by these toxins were dependent not alone upon the kind and titer of the toxin, but also to a measurable degree upon the size of the dose, namely, the number of organisms, conditions that favored the elaboration of a toxin, and the rapidity of the absorption. The writer discussed these conditions and the possibility of producing an antitoxin that should be effective against these toxins, and concluded that such an antitoxin was not yet on a satisfactory basis for practical purposes. However, such toxins could be experimentally produced, but had a low titer owing to their inability to obtain a sufficiently strong toxin. The variety of organisms against which protection must be furnished was another difficulty which at present seemed almost insurmountable. In this discussion only the more obvious toxic disturbances were considered. It was probable that many other conditions that had a milder and more chronic course would be found to have their real basis in these toxins—toxins that had a low titer and were slowly absorbed. As some of the toxins at least caused hemolysis, it might be that the severe unexplained secondary anemia loosely ascribed to faulty conditions in the gastrointestinal tract might find their real cause in these toxic agents.

Dr. GODFREY R. PISEK said they were very fortunate in that Dr. Pease, while engaged in army work in France with the gas bacillus, had thought of this subject from the pediatric standpoint and applied the principles and findings to infants and children. He had reopened an untrodden field. How unsatisfactory had been the subject matter dealing with the intestinal flora was shown in a study of the literature. If the doctor could offer a good explanation of these bacterial activities with their elaborated toxins, whether along etiological lines or along the lines of treatment, the work would be worth while. What he had told them offered an explanation of certain disturbances caused by high protein feeding. If high proteins were fed there might occur alkaline putrefactive stools with production of powerful toxins, and in making a diagnosis one should have that fact in mind. He also explained why high acidity occurred with high carbohydrate feeding. If now they could come to some practical means of deciding when they should adhere to carbohydrates in feeding these cases and when to emphasize the protein, they would have gained a great deal. A fact that struck one in doing autopsies on children dying of intestinal toxemia, so-called, was that only fatty infiltration was found in the organs and nothing gross or microscopical was to be seen to explain the cause of disorders and the production of death. If Dr. Pease had done nothing more than to stimulate research along the lines of intestinal flora and their toxin production he had done his share. The rôle of the anaerobes in this regard should prove illuminating.

Dr. ROGER H. DENNETT said this was pioneer work. They all felt that they needed some help in differentiating the various types of intestinal infections, which at the present time was more or less guesswork. He felt that this work would do a great deal of good if they would follow it out.

Dr. OSCAR M. SCHLOSS said that in these cases of intestinal intoxication in infants there was a diminished volume flow of blood due to the great loss of fluid through watery stools, and in some cases there were pronounced circulatory symptoms, even though the volume of blood was sufficient, to be accounted for as symptoms of acidosis and to be regarded as due to diminished secretion of urine, the result of suboxidation. If there was a diminished oxidation there was a diminished volume flow of blood and a marked acidosis ensued. The treatment was to give water intravenously, subcutaneously, or intraperitoneally, in order to bring the blood volume to normal. A ten, fifteen, or twenty per cent. sugar solution might be given. A saline solution should first be given and then this should be followed by a dextrin solution. Dr. Marriott had used gum acacia solution with excellent results. A point brought out by Dr. Pease which was very suggestive was whether the toxin formed in the intestinal tract was the cause of the symptoms or whether it was the loss of water that produced the symptoms. The first symptoms might be due entirely to water loss. On the other hand it was possible that the toxins were responsible for both the diarrhea and these symptoms. This was the question that should be definitely answered.

Dr. HERMAN SCHWARZ said that some ten or twelve years ago he thought he could divide the bacteria that caused some diarrhea into (1) the proteolytic, spore-bearing, gelatin-liquefying bacteria, often anaerobic, and (2) those which were of the ordinary pathogenic variety. In the course of the work he found more exceptions than cases which followed the rule, so that he finally gave it up. Anaerobic culture methods were not so well developed at that time, so that perhaps they might get a little further today. It would have to be very definitely proven that the toxins produced by the anaerobic bacteria actually were produced in the body and caused these symptoms. It brought them again to the old discussion whether the poisons that caused these conditions were secondary to bacterial activity or just pure chemical processes.

Dr. PEASE, in closing, said he did not present these things as actually proven, but he presented a series of organisms which did form toxins and were capable of producing a general toxemia which was exactly as he had pictured it. Dr. Schloss in his discussion had brought out the mechanism of these cases. If one took, for instance, acidosis, the symptoms were brought about by the mechanism described, but why the acidosis and why the disturbance in circulation? In many cases of toxemia there was no diarrhea. In such cases he felt sure the cause was in the nature of a toxin, and these toxins given to animals experimentally were capable of producing every symptom that a case of toxemia showed. The men who undertook to work out these organisms did not enter upon an easy road. He knew nothing so difficult as the isolation of these organisms in pure culture. There might be six or seven anaerobes that started as a mixed culture and then the problem presented enormous difficulties. For instance, one might take a culture of *B. edematiens* and run it through eight or nine cultures, always getting this organism. and then the *B. fermentans* might appear. This was because these were spore-bearing organisms and the spores had been carried along through the previous cultures.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held October 26, 1919.

DR. SOLOMON WIENER IN THE CHAIR.

Unruptured Tubal Pregnancy—Seventh Week.—Dr. HERBERT C. CHASE reported this case. He stated that his reason for calling attention to this case was not because of the rarity of the condition or of any difficulty in diagnosis, or because it was in any way atypical. On the contrary, it was so typical in every way that it served to bring out the points with reference to the diagnosis of unruptured tubal pregnancy. He had been amazed to find that although unruptured tubal pregnancy occurred 29 times in 309 cases of ectopic gestation recently analyzed by Dr. Farrar at the Woman's Hospital, the condition was diagnosed correctly before

operation in only a few cases. This patient was 24 years of age and previously healthy. She began to menstruate at the age of 14 years. Menstruation was regular, at 21-day intervals, lasting four days. Her periods were always associated with cramps and backache. She had never been pregnant before. Her menstrual period in July came at its normal time and lasted until the 21st with the usual cramps and backache. No menstrual period appeared in August. On September 2 she began to flow slightly. On the fourth day of the flow sharp pains began to be felt in the lower quadrant. The patient came to his office in a cab. She seemed to be suffering intensely. She was pale, blanched, and in a cold sweat. Her temperature was 98° F.; pulse 92. Physical examination showed considerable bleeding, the uterus retroverted and slightly enlarged, and a small soft mass palpable in the left tube. The breasts were engorged and tender. She was sent directly to the Woman's Hospital with the diagnosis of unruptured ectopic pregnancy. At operation a curettage was first performed and considerable tissue (false decidua) removed. Examination under ether gave results the same as shown at the previous examination. The abdomen was opened by a transverse incision. A small amount of blood was found in the abdominal cavity, and a small amount of blood was oozing from the fimbriated end of the left tube. An unruptured tubal pregnancy, the size of a lemon, was found in the middle third of the tube. The tube was removed intact, the broad ligament reefed, and the uterus suspended by modified Gilliam methods. The patient made an uneventful recovery and was discharged in two weeks perfectly well. The lantern slides and pictures showed the tube unruptured and, after being opened, the fetus *in situ*, measuring 5.5 cm. The case illustrated the following important points which were valuable in the diagnosis of tubal pregnancy: (1) There was in almost every case of ectopic pregnancy, ruptured or unruptured, a variation from the normal menstrual cycle of the individual. (2) Pain was present in 96 per cent. of the cases. (3) With unilateral pain plus bleeding in any case that had skipped a period, or was overdue at the time of the onset of symptoms, our first thought should be of ectopic pregnancy.

Dr. ARTHUR STEIN said that the points brought out in reference to the differential diagnosis of unruptured ectopic gestation were perfectly correct, but there were other conditions to be considered. At the Harlem Hospital they quite frequently made the diagnosis just as Dr. Chase had indicated, but they found that their diagnosis was incorrect in at least one-half of six consecutive cases. In several cases they found that they were dealing with a tremendous hematosalpinx twisted on its pedicle which gave exactly the same symptoms as an unruptured ectopic pregnancy. They had also observed these symptoms on a very old pyosalpinx, though that rarely happened. They were now a little more careful in studying these cases which one was likely to think of only as a case of ectopic pregnancy.

Dr. WILLIAM P. HEALY stated that this case permitted them to emphasize two points in the history and management of ectopic gestation. First, this woman had never been pregnant before, and in her previous history there was no antecedent history of pelvic inflammation of any kind. In the second place, the mass in the tube might have been taken for an enlarged corpus luteum of an early pregnancy in a retroverted uterus with threatened abortion. One must also consider the possible coincidence of an ectopic and a uterine pregnancy. It was necessary to bear this in mind so that one would not interrupt an intrauterine pregnancy by curetting.

Syphiloma Vulvæ.—Dr. ARTHUR STEIN presented this paper in which he said that the reason why the descriptive term "syphiloma vulvæ" was applied to the disease under consideration rested on both histological and clinical grounds. Histologically the hypertrophied masses of the diseased area were gummatous and subject to the familiar necrotic changes and cicatricial contractions seen in gummata. Clinically, the vulvar changes manifested themselves a long period, sometimes many years, after the primary infection. Moreover, luetic induration of the vulva was apt to supervene in the absence of all other specific changes after a long interval of apparent health, thus accounting in part for the many mistakes in diagnosis that had been made. The old term "esthiomène" being purely descriptive and therefore too general was advantageously replaced by a name distinctlvely indicative of the syphilitic origin of the condition. He was thoroughly convinced that syphilis was always responsble for esthiomène and that specific treatment in combination with operative removal of the hypertrophied tissue was followed by decidedly favorable results in those cases in which the syphilitic character of the disease was not demonstrable by the customary tests. Unquestionably an etiological part was occasionally played by malignant disease and by tuberculosis in the production of similar vulvar changes. If on bacteriological examination the tubercle bacillus was found the case was one of lupus pure and simple and was not related in any way to the disease under consideration. Primary malignant disease of the vulva in the form of epithelioma was of very rare occurrence and of more rapid growth than syphiloma, as he had shown in a previous paper. ("Primary Carcinoma of the Vulva," *American Journal of Obstetrics*, 1916, lxxxiv.) It was recently pointed out by Thorn that syphilis might exactly simulate cancer in any location, either in the viscera or on the surface of the body. The microscopical findings, however, definitely established the existence of malignant disease. The great majority of vulvar indurations, including those in which no tuberculous or malignant origin was demonstrable, should in the future be charged to syphilis and a suitable descriptive terminology employed. Elephantiasis vulvæ, applied to these cases, was also wrong. It should have been named pseudoelephantiasis, a condition which simulated true elephantiasis, a disease of an altogether different etiology. Scattered through the older literature illustrative cases might be found showing an endeavor to incriminate syphilis as the responsible factor in these cases. The writer described in detail the microscopical, gross, and clinical pathology of syphiloma. Clinically the disease was characterized by its painlessness, noninterference with the patient's general health, and disproportion between the local changes and the resulting disturbances. As a rule there was no itching, no tenderness on pressure, and no evidence of acute congestion. Until the condition had become complicated by ulcerations of the vestibule with more or less invasion of the urethral orifice and urethra causing painful micturition, or by perineal infiltration with anorectal involvement resulting in painful, sometimes bloody stools, the patients, as shown by the writer's personal observations and by cases reported recently by Gallagher and others scattered through the literature, were remarkably free from pain and other subjective symptoms. The treatment of syphiloma vulvæ was both surgical and medical. Operative interference consisted of excision and destructive cauterization of all tumors and excrescences. This radical procedure was usually effective and not followed by recurrence of the condition. Intravenous injections of salvarsan were an essential supplement of the surgical treatment. The prognosis was very favorable as was to be expected in properly treated gummatous changes of tertiary syphilis. Dr. Stein reported in detail two cases of syphiloma vulvæ coming under his observation at the Harlem Hospital, together with the laboratory report and the results of microscopical examination. He concluded as follows: (1) In conformity with modern knowledge and in the interest of a better understanding of the disease, all misleading names, such as esthiomène or lupus vulvæ, should be exterminated from the literature. (2) Syphiloma vulvæ correctly designated the disease as a manifestation of tertiary lues. (3) A positive Wassermann test was not essential in view of the long-standing character of the specific infection in the majority of cases. (4) The treatment under all circumstances was thorough excision of all tumors, hypertrophied tissues, and ulcers, followed at the same session by energetic cauterization, and combined with intensive antisyphilitic medication.

Dr. ELISE L'ESPERANCE said that she was interested in Dr. Stein's paper not only because she had had the

privilege of seeing the case at the Harlem Hospital but because so many of these lesions of the vulvæ had been passed under the designation of lupus from which they differed both syphilologically and serologically. She exhibited the gross specimens, which she said demonstrated very characteristically the enormous hypertrophy sometimes encountered in these growths. This specimen showed some hypertrophy, but was almost entirely made up of edema and ulceration, though it still retained its papillary character. The fact that it retained its papillary character was also interesting in that it placed it among syphilitic conditions, for it was generally accepted pathologically that most of these syphilitic lesions started as papillary structures. She hoped that Dr. Stein's classification would become permanent. These lesions were nearly always grouped under lupus and that was a very large term; it was to be hoped that in the future accurate work would depend upon Dr. Stein's classification.

Dr. MILTON A. SCHLENKER said he presumed these specimens were from colored patients. This condition was of a most common occurrence in the South, prevailing almost to an exclusion in the negro race. They did not make the same classification as Dr. Stein did. They referred to the solid tumors, which were usually pedunculated and globular, as elephantiasis, and to the sessile form which underwent ulceration, as condylomata. These latter were sometimes quite extensive in their manifestations, extending as far as the upper part of the thigh. These conditions were described by Dr. R. Matas, in his book on "Tumors Peculiar to the Negro Race." The former growths were not regarded as specific in origin, and were treated by simple ligation and amputation; the latter were looked upon as luetic and in addition to antisyphilitic medication, the excrescences were treated by actual cautery.

Dr. WILLIAM P. HEALY said they were accustomed to consider syphilis under three divisions—primary, secondary, and tertiary. So far as syphilis of the vulva was concerned they seldom saw anything but secondary manifestations. In tertiary syphilis one got a breaking down of the gummatous lesion and when one examined with the dark field for spirochetes he did not find them. One had to depend upon the blood test to make the diagnosis of syphilis. A condition of so-called elephantiasis was not uncommon among negroes, and it was not uncommon to have syphilis present with such a lesion. He was not sure that Dr. Stein was justified in including esthiomène with syphilitic lesions. Esthiomène was a term that was applied to superficial, very painful, chronic, incurable ulcers of the vulva, a condition the etiology of which was absolutely obscure, and no one but Dr. Stein had been willing to include it with syphilis as it did not respond to antisyphilitic treatment. Esthiomène was a condition practically incurable except by thorough excision. Neither did esthiomène respond to syphilitic tests. He thought the etiology of esthiomène still remained to be elucidated, and at the present time to describe the lesion as syphilitic was unwarranted. That there was a difference between esthiomène and syphiloma was further emphasized by the different modes of treatment of the two conditions. Esthiomène was treated by excision of the lesion while syphiloma was treated by excision and constitutional treatment.

Dr. LEON T. LE WALD mentioned several points in syphilis of the stomach related to syphiloma vulvæ as Dr. Stein had described it. In a case of suspected syphilis of the stomach, an authority on pathology sent back the diagnosis tuberculosis, but the tubercle bacilli could not be demonstrated. The pathologist then acknowledged that the condition found might very well be syphilitic. In other cases pathologists had reported at first examination that these conditions were tuberculous, but the confirmation that they were tuberculosis was not forthcoming, and many of these cases were no doubt syphilitic and would give a positive Wassermann reaction. In growths involving the stomach it was perhaps more important to make the differentiation between carcinoma and a syphilitic growth than in the case of growths in the vulva, because in the latter situation should the operator make a wide resection less serious consequences to the life of the patient would result than when the growth was located in the stomach. Among their cases they had had fourteen or sixteen, two of which they had considered as late manifestations of congenital syphilis. The cases which Dr. Stein had reported might possibly be delayed manifestations of congenital syphilis particularly as he reported that the case showed no evidence of acquired syphilis.

Dr. STEIN said that in regard to the question whether he would give antisyphilitic treatment even in cases in which the Wassermann was negative, he would say that it was difficult to obtain information with reference to congenital lues in these cases. On the other hand, as he had pointed out in his paper, in at least one case there was a probable luetic infection in the husband. So far as so-called "elephantiasis" in negroes was concerned, he was well aware of the fact that the condition was found among them, but the literature had very little to say on this subject. Elephantiasis was due to a well-defined infection; it was always due to filariasis. These cases referred to should be called "pseudoelephantiasis." Dr. Gallagher of Texas had just published four rare cases of syphiloma vulvæ in the negro which were entirely similar to the two cases reported by the speaker, so the condition could not be so very common in the South.

Dr. SCHLENKER said that Matas described the disease in a book published twenty years ago.

Dr. STEIN said that so had R. W. Taylor and others. Esthiomène, as he pointed out in his paper, was a disease *sui generis*, and up to a few years ago very few thought of syphilis as an etiological factor. As he had said before, Dr. Heiman and he published a case in 1912 which they called "esthiomène and secondary elephantiasis vulvæ" and he did not hesitate to say that this was wrong. It was a case of syphiloma of the vulva true and simple. If these cases were followed up it would be found that ultimately they could all be traced to syphilis. So far as he was concerned he was converted to that idea.

Gangrenous Appendicitis Coincident with Labor.—Dr. JAMES FRANCIS GRATTAN read this paper in which he reported an unusual case of appendicitis in which the initial attack occurred and operation was performed during the first stage of labor in a primipara, 24 years of age. He stated that he had been unable to find a similar case in the literature. The following facts added to the rarity of the case: (1) The patient was a primipara; (2) she had never had an attack of appendicitis or any type of abdominal pain up to the time of the event; (3) she had had a perfectly normal gestation course, promising nothing unusual. Early labor pains with abdominal symptoms occurred simultaneously, leading to the diagnosis of appendicitis. A totally gangrenous appendix was removed through a right lateral oblique incision four inches in length reaching from an inch above the iliac crest to a point one inch below and mesial to the anterior, superior spine. There was present a beginning peritonitis of a seropurulent character. A normally formed and developed full-term baby was delivered nine hours after the operation. The baby was in a state of apnea lasting forty-five minutes, with good pulse, followed by a normal period of three hours. There were recurrences of the apnea with normal periods between, with final failure of the baby's heart action, and death seven and one-half hours after delivery. The baby was probably toxic from the pus in the mother's appendix. This opinion was borne out by the almost fatal postoperative complications of the mother. She suffered from cardiac and renal failure, undoubtedly of toxic origin from the appendix. A subsequent jaundice gave evidence of the effect of the toxemia on the liver function. Complete recovery followed without residual pelvic exudate, and without cardiac, renal, or other residue of the complications, and without invalidism of any kind.

Dr. WILLIAM H. HASKIN said Dr. Grattan was to be congratulated on the very successful outcome of this remarkable case. He had described it very graphically but he did not think anyone could realize from a description the condition with which he was confronted. Though the girl was courageous she became neurasthenic and difficult to manage. Dr. Grattan was to be congratulated on getting the appendix out without rupturing it, in view of its large size and the fact

that the appendix was out of its usual location on account of the gravid uterus. He had never before heard of a complicating appendicitis in such a late stage of gestation.

Dr. GRATTAN stated that they had tried every chemical means available to find the cause of death of the child, but discovered nothing that gave any clue. He had followed the mother's urine all through gestation and found nothing abnormal. The albuminuria that developed was only of about twenty-four hours' duration. Toxemia due to the gangrenous appendix seemed the most reasonable explanation of the child's death and the mother's postoperative cardiac and renal failure. If the child's death was due to the morphine given the mother, they would not have been able to resuscitate it in the first place; the effect of the morphine would have been greater at that time than seven hours later.

Dr. STEIN said he thought Dr. Grattan was perfectly right in his assumption as to the cause of death in the child. In severe cases of eclamosia the child was sometimes born in a stupor and yet survived. In this case the toxemia was a little too far progressed; that was the plausible theory as to the cause of death.

Dr. GRATTAN, in reply to a question as to the temperature of the child, said the temperature was taken just after birth and once during the day and was normal. In fact the child seemed perfectly normal in the intervals between the periods of apnea. As Colonel Haskin had said, it was impossible to describe the amount of work attached to a case of this kind. He had been with the patient during four days following the operation, and during the third and fourth days the urine had been examined every few hours. The patient had had absolute suppression for twelve hours.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held December 5, 1919.

DR. SETH M. MILLIKEN IN THE CHAIR

Extensive Actinomycosis in a Soldier; Recovery.—Dr. WALTER M. BRICKNER presented this case which, he said, was exceedingly interesting from many standpoints: etiological, diagnostic, therapeutic, and clinical course. The patient was in an engineer regiment near the front when, on March 25, 1918, he noticed a red spot just above the left hip and at the same time had pain in the left testicle. On April 1, he entered a large base hospital and had a dressing applied to the hip lesion. He was put to bed, treated with wet dressings and an *x*-ray picture was taken. On April 11th he was operated upon for varicocele on the left side, although the records stated that he then had a large mass in the left groin! The wound from the varicocele operation apparently healed normally. On April 30th another *x*-ray picture was taken and pus discharging from the lesion near his left hip was examined. At this time he was losing weight and strength very fast. A small incision was made to permit freer discharge of pus from the sinus near the hip. It was thought that he had tuberculosis of the hip and on May 21 he was discharged to another base hospital with that diagnosis. On June 11, he was transferred, with the same diagnosis, to Base Hospital No. 3 where he then came under observation of the speaker in charge of the surgical service. He was weak, pale, emaciated (weighing less than 100 pounds), and had a small discharging sinus above the left trochanter, a purplish, inflammatory, hard plaque in the skin of the left lumbar region, and a mass in the iliac region above Poupart's ligament. He was first seen by Dr. Brickner with Dr. Celler (chief of the medical service) sitting as members of the Disability Board. The appearance of the skin involvement and the character of the pus from the sinus made both of them feel sure that the soldier did not have tuberculosis but actinomycosis. and this diagnosis was confirmed by the microscopic examination of the pus (by Dr. Denzer). With that diagnosis, Dr. Brickner said he would have done his full military duty if he had marked the soldier "Class D" and sent him back to the United States; but, since it would take several weeks before he could then get radical treatment, the boy would have lost the apparently small chance of survival that he might still have, so the speaker decided to give him that chance by immediate operation. X-ray pictures showed involvement of the ilium, but none of the hip or the lungs. The sinus was laid open down to the iliac bone and the involved portion of the bone cleaned out. The incision was then carried up into the loin and the inflamed skin area widely excised just as one would for carcinoma. Another incision was then made along Poupart's ligament where there was a large swelling, and the large retroperitoneal actinomycotic abscess evacuated. The iliac lymph nodes were extensively involved. Some were removed. Others, extending up along and too densely adherent to the external iliac artery were not removed, but were split open. Several sinuses were found extending down the thigh under the fascia lata, all containing pus. These were laid open. This brief statement of the operation gave but an inadequate idea of how formidable and extensive the procedure was. The patient was put to bed and kept continuously in the open air. Every pocket and angle of the huge wound was irrigated, at first twice, then once, daily with iodine solution; and the patient was as well fed as possible. In addition, large doses of potassium iodide—700 grains daily[!]—were administered, which huge dose did not upset the patient at all. The patient was also given two doses of salvarsan, but so far as the speaker was able to judge this produced no effect on his progress. A fresh skin involvement in the loin was excised in August. Towards the end of August the patient had gained many pounds, was feeling well, and the vast wound was almost healed. At this time Dr. Brickner was ordered from the Base Hospital to an Evacuation Hospital, and he urged upon the officer succeeding him as chief of the surgical service and upon the patient himself that the latter should not be discharged until the wound had been entirely healed for two full months. But the soldier was impatient as soon as he was apparently cured and the officer in charge finally yielded to his supplications and, on September 13, 1918, discharged him to the United States. While at Brest, October 10th, the wound was again suppurating and on the way home the soldier was very ill, but again responded, aboardship, to large doses of potassium iodide. He was sent to the General Hospital No. 3, Colonia, N. J. The speaker saw him again in New York in March, 1919—just a year since the first symptoms. He then had two pustules in the scars, about to break. At the speaker's suggestion, by letter, to Major Albee, these were incised and swabbed out with tincture of iodine, the administration of potassium iodide was resumed, and *x*-ray treatment added. Following this he had from time to time some slight local pustular recurrences in the scar; but for the past few weeks was apparently cured. To-night there was again to be seen a small pustule in the scar, which would no doubt heal, like its predecessors. when opened and iodinized. The soldier had not recently been taking his potassium iodide. It would be unwise to regard him as entirely cured or to discharge him from the army until several months elapsed with no further suppuration. It was very important also that he should continue to take large doses of potassium iodide. As seen to-night he was fat and strong.

Dr. GEORGE E. BREWER asked Dr. Brickner if he had any idea how the infection had taken place because it was in an unusual location. He also asked how long the administration of the potassium iodide was kept up and how large doses the man took.

Dr. EDWIN BEER said Dr. Brickner spoke of using 700 grains of potassium iodide daily—he would like to know whether that was necessary, whether that was better than using—say 15 grains. He asked this because it had been distinctly stated by those using potassium iodide in disturbance of the thyroid function that amounts above 15 grains were not absorbed.

Dr. BRICKNER, in closing, said that potassium iodide was the remedy recommended by the text-books for actinomycosis but it could not be regarded as a specific because many patients suffering from actinomycosis died in spite of potassium iodide. He had heard Dr. Moschcowitz say that he had never seen a patient cured by potassium iodide. This patient was not cured by potassium iodide alone. but by combination of a very extensive operation, the thorough persistent use of

iodine locally, and the iodide internally. Every pocket of the wound was irrigated daily with iodine solution (Lugol's or other). To-day the patient could stand about 70 grains of potassium iodide a day, intermittently; but while he was very sick in the summer of 1918, 700 grains daily did not upset him at all. It was possible that the potassium iodide tablets they were using in the army were not of the strength that they should have been. The important point was to give the iodide up to the limit of toleration. The speaker did not think that what applied to thyroid conditions in reference to potassium iodide applied in a case like this. Just as in syphilis, in some cases small doses might be insufficient but with large doses one got results. The point that Dr. Brewer brought up was the most puzzling feature of the case. The infection was apparently not contracted through the respiratory or gastrointestinal tract. The source of the infection in this case was unknown. Another feature of interest was that with such an extensive local involvement, extending into the iliac bone up into the lumbar region, into the retroperitoneal nodes, and down the thigh, there were no metatases, and no extension, after operation, beyond these areas. Recent *x*-ray pictures show no lung involvement. Dr. Brickner said he had seen patients with localized actinomycosis recover, but he had never before seen so extensive a case as this one that did not develop metastases or die before metastasis took place.

Fracture of the Humerus Treated by Traction.—Dr. KENNETH BULKLEY presented this patient as a text to lantern slides presented. This patient and the lantern slides illustrated a point not always appreciated, the necessity of external rotational deformity correction. It was the early result that he wished to show particularly. It was now about two months since this patient had fractured her humerus. She was treated by suspension and traction and by mobilization, not immobilization. Forty-eight hours after the fracture was treated she was able to touch her shoulder joint and to extend the arm fully. At the present time the *x*-ray showed that she had a good callus. Dr. Bulkley then exhibited lantern slides that emphasized the importance of external rotation and that the forearm should be extended on a bar at quite a distance out from the bed. Another point was that with the traction band still on the humerus and extension bands still on the forearm, the patient was allowed out of bed before union was firm, and while angulation still potentially existed. By night the patient was again suspended, the angulation disappearing by morning. While the patient presented had practically perfect function, the lantern slides of another patient, of practically the same age and having a fracture exactly similar but treated by the application of plaster of Paris, showed a great deal of functional disability, inasmuch as she could not get external rotation further than a right angle, and that was a distinct disability.

Dr. MORRIS SMITH said that in gunshot wounds it seemed to him this method of treatment should be given a very careful and thorough trial. It would be especially interesting to know whether fractures of the neck of the humerus treated in this way would give as good results as fractures of the shaft.

Dr. MILLIKEN said that this was certainly a satisfactory method of treating fractures of the humerus. He had seen a case of Bellevue Hospital which Dr. Bulkley had treated in this way, a man 70 years of age with an oblique fracture of the humerus. After four weeks the man had practically perfect function.

Dr. SEWARD ERDMAN asked if this method would be applicable to fractures of the humerus with non-union following bone grafting.

Dr. BULKLEY, in closing, replied that he had not had any experience with the method in non-union following bone grafting in fracture of the humerus, his cases having all been primary fractures and not pathological ununited ones. This method rather operated for the prevention of nonunion. The mobilization promoted circulation and one was not so likely to get non-union as when the fracture was put up in plaster of Paris. In a series comprising some hundreds of cases he had not as yet encountered a case of non-union following this method of treatment. He wished again to emphasize the fact that the method allowed of union with a degree of external rotation which it was impossible to obtain with any of the various types of ambulatory treatment with which he was acquainted.

Aseptic Amputation of the Rectum.—Dr. EDWIN BEER presented this patient, a woman 52 years of age, admitted for strangulated femoral hernia, December 21, 1915. On examination of her rectum for hemorrhoids, an extensive carcinoma of the anterior wall involving the wall of the vagina was discovered. On January 5, 1916, four years ago, an asceptic amputation of the bowel as was described in the paper was performed. The patient did not suffer from ligation of the bowel until forty-eight hours had elapsed, when the ligature was opened and the tube tied in place. Owing to the fact that the whole posterior wall of the vagina as well as a large piece of the sigmoid, together with the rectum, had been removed, the patient was kept in bed for twenty-four days. During that time the wound rapidly healed and she was discharged from the hospital practically healed, on February 12, 1916, thirty-eight days after operation. She was at the present time free from recurrence. He had hoped to show two other cases but they had failed to appear.

Dr. BEER then read a paper in which he said that in presenting the following modification of amputation of the rectum as usually practiced, he did not wish to give the impression that he was describing an entirely new procedure. Before the New York Surgical Society some years ago (Annals of Surgery, Vol. 66, pp. 241) he presented several cases in which he carried out the technic about to be described. The great advantage that he saw in this technic was in the rapid healing of the large wound made by the excision of the rectum and lower sigmoid. By this method patients could be discharged from the hospital with the wound closed in a relatively short time and it was to call attention to this that he was again presenting the subject before this Society. The first step in the operation, the patient's intestines having been thoroughly cleaned by two courses of castor oil, was to shut off by suture the anal opening. With a separate set of instruments a skin flap was turned up all around the circumference of the anus, and with a heavy silk suture this circular skin flap was sewed together so as to prevent any leakage of the intestinal contents during subsequent manipulations. (Fig. 1.) This area was then well painted with iodine and covered with a towel. After putting on a fresh gown and gloves, with fresh instruments the surgeon then exposed the rectum with an incision well above the perianal denudation and running at a little to the left of the median line. The coccyx was removed in the usual way and the rectum liberated well above the growth. Douglas' pouch was opened and the sigmoid was drawn down as far as necessary, and, after sufficient of the sigmoid had been liberated to warrant the surgeon in believing that he was above the growth and the glandular involvement, the peritoneum was closed at the new level on the sigmoid and the skin incision was continued down to either side of the anus, meeting the denuded area which was made preliminary to the closure of the anus. After liberating the anus from all its attachments, the rectum, sigmoid, and anus, unopened, were thrown over on the patient's sacral region. The levator ani muscles are united to make a firm pelvic floor and a tube is inserted in the most dependent part of the wound where the anus originally was. Skin stitches are inserted and a small packing introduced up to, or close to, the suture line in Douglas. With a heavy silk ligature the protruding gut was tied off by about one-half inch from the lebel of the closed skin wound and a clamp was placed across the bowel about one inch distal to the ligature. The intestine was sutured to the skin without entering its lumen so as to attach the gut at the new position (artificial anus). A small packing was inserted above the new position of the gut. The whole wound was then dressed, the gut still being attached, after a vaseline dressing was applied to the large wound with the cautery resection was made between the ligature and the clamp. In this way the lumen of the bowel had not been opened until after the wound had been sutured and dressed. The ligature was allowed to remain in place until the patient complained of distention or became distressed by cramp-like pains. Then to give relief the ligature was opened and a rectal tube

was introduced well into the bowel and held in place by a purse-string suture, which tube continued to protect the wound, now well on the highroad to complete healing from contamination by the fecal current. He recommended this method of aseptic amputation of the rectum, as it saved the patient a long stay in the hospital. The average stay of patients operated on in the older way with the peritoneal cavity opened was well over eight weeks, as opposed to twenty-eight days in these cases. Moreover, by keeping the wound free from infection the nursing and house staff were spared a lot of unnecessary work and the patient a great deal of discomfort.

Dr. WILLIAM C. LUSK stated that he had performed aseptic removal of the rectum by the combined routes, through the preliminary construction of what he termed a *left subcostal colonic vent*, which consisted in an opening in the descending colon, made just below the extremity of the left 11th rib, of sufficient size for the introduction of a large sized catheter. This *vent* served the following purposes: Before the abdominal operation (1) It enabled one to wash out the lower bowel through and through from above downward. (2) It allowed the escape of practically all the gas from the intestines, so that at operation the latter were fully collapsed. At the abdominal operation (3) After sectioning the sigmoid, it afforded the opportunity to close tightly by suture, the proximal segment of gut, after the latter had been drawn through an opening in the abdominal wall for the construction of an artificial anus, without the supervention of intestinal obstruction, thus permitting union of the abdominal wounds to get well advanced before the artificial anus was established. Following the abdominal operation (4) *Of greatest importance* was the advantage, that immediately upon completion of the operation, water could be administered to the patient through the vent. (5) When the proximal bowel end was finally opened up, the size of the aperture could be controlled. (6) After the artificial anus had been established, while the patient was lying in bed convalescing, enemas given through the vent evacuated the bowel very completely, thus avoiding involuntary movements.

The left subcostal colonic vent was constructed as follows: An incision, about five inches in length, was made half an inch below the forward extremity of the left 11th rib and parallel to the latter. The peritoneum was opened opposite the tip of the 11th rib, and the incision in the same was enlarged backward up to the site of retroperitoneal attachment of the descending colon. The lower flap of peritoneum was pulled over the muscular portion of the lower lip of the abdominal incision and was attached by two sutures to the outer surface of the external oblique muscle. The upper flap of peritoneum was sutured to the deep muscular margin of the upper lip of the incision. A cone-shaped fold of the descending colon, picked up by a thread, was drawn out into the wound and made to overlie the peritoneal flap covering the entire thickness of the muscles in the lower lip of the incision, its apex reaching as far as to the level of the outer surface of the external oblique, in which position it was then made fast by sutures. To the upper lip of the incision, only the base of the cone-shaped fold is attached, suture being made along the line of emergence of the process of bowel from the peritoneal cavity. Thus a double triangular fold of bowel was brought well out of the peritoneal cavity, the lower surface of which was fixed over the structures comprising the whole thickness of the abdominal wall, while its upper surface was left free in the wound to furnish the site for subsequent puncturing of the gut. Two loops of Pagenstecher thread catching this exposed surface of the bowel, were left *in situ* for the purpose of locating the bowel when the opening is made after three or four days. Gauze packing should protect the upper free surface of the cone-shaped fold of colon lying exposed in the wound from becoming buried in adhesions. Dr. Lusk said he would also like to draw attention to the fact that it was often impossible to liberate the lower bowel from its high attachments in the pelvic cavity, through the sacral route. This could be due to a too narrow pelvic cavity, or a too short attachment of the sigmoid. Comparatively often the pelvic cavity was too narrow for the superior hemorrhoidal vessels to be ligatured and severed from below. Sometimes it was so narrow that the knuckles could not be gotten through the pelvic outlet. Johae in 1893 had established a relationship between the distance between the posterior superior iliac spines and the size of the pelvic cavity. The speaker said that in cadavers, without making any allowance for a tumor of the rectum, he had found that where the distance between the inner surfaces of the posterior superior iliac spines measured no less than 2¾ inches, he was able to reach the superior hemorrhoidal vessels for ligature. If the measurement were but 2½ inches, one attempting a high liberation of the terminal bowel was very sure to have trouble from lack of room. As to the ability to descend the lower part of the sigmoid flexure by the sacral route, the possibility of sectioning the mesosigmoid in a way to preserve its arterial arcades in association with the liberated bowels had to be taken into consideration. Occasionally a sigmoid had no free portion at all. An *x*-ray of the sigmoid flexure could give some idea as to its redundancy.

Dr. JOHN DOUGLAS congratulated Dr. Beer on his excellent results. He asked with reference to the bowel control—if the patient had control and how she could use a cup, or what method of collecting the feces she employed, since with an anus in this position it would be difficult to use a colostomy cup such as they used with a high colostomy or even use an ordinary toilet seat. Another point, which Dr. Lusk spoke of, was bringing the sigmoid down in a narrow pelvis. He had found this difficulty in the sacral operation. In many cases in which he had hoped to do a radical operation he found metastases in the peritoneum or in the liver where they had been undiscovered when operating through the sacral route. If one continued to do the sacral operation he would have many disappointing results because of these metastases.

Dr. ROBERT T. MORRIS said he had not done this operation but he intended to do it. After the old operation of bringing down the sigmoid he had obtained pretty good results. In reference to the matter of bowel control, his patients had used a hollow rubber ball fastened to a perineal strap attached to a waist band, but with this arrangement it was necessary to immerse the ball in melted tallow frequently enough to keep it covered with this unirritating coating.

Dr. WALTER M. BRICKNER said the question of control was not concerned in the paper; but since it had been brought up in the discussion he would like to say that "control" with an artificial anus was not a question of location but largely a matter of training the patient and the patient's bowels. It had been his experience that, after amputating the rectum for carcinoma if the stools are kept solid by careful selection of the diet and the patient is trained to move his bowels once a day at a certain time, he would not be seriously inconvenienced, and, even with a "sacral" anus, could use the toilet seat. The only trouble such a patient was likely to have was when, from some unsuitable article of diet or from other cause, he had a transitory diarrhea. Dr. Brickner related that in France he had had under his care a young marine who was crawling face down in the Belleau Woods offensive, when an "high explosive" tore away his anus. When received at Base Hospital No. 3 he had simply a scar at the site of the anus, with no sphincter action, and a great deal of the glutal muscles had also been removed on each side. He had no control over his bowels and was continuously lying in his own feces. It was a question whether to perform an inguinal colostomy, in which event the control might be no better, or to attempt a restorative operation on the rectum and anus, or to train the bowel and select the diet. Before deciding on the latter, Dr. Brickner excised the anal scar to search for possible sphincter fibers, but there was no trace of these nor of available levatores ani; and even the doubtful expedient of attempting to fashion a sphincter from the glutei was impossible because so much of these muscles were absent—either because of the shell wound itself or as a result of the operation of débridement. In spite of the limitations of the hospital dietary—far different from that of a civilian hospital in peace—it was possible to select feeding that "constipated" the patient (at first with the help of opium), and soon his bowels were so regulated, with training, that he used the

latrine once a day, like the other soldiers and he practically never soiled himself. He now lives in Chicago and recently wrote to the speaker that he is "well and happy" and conducts his business as a traveling salesman with "very little discomfort."

Dr. MILLIKEN asked Dr. Beer what the pathology was in the case he had reported, whether it was adenocarcinoma and whether part of the sacrum was removed or just the coccyx.

Dr. BEER, in closing, said that two years ago he had seen a case operated upon by Dr. Lusk by the procedure he had described with the most ideal result. He asked Dr. Lusk whether there had been any recurrence in that case.

Dr. LUSK replied that there had been a slight recurrence, and he had operated again this fall.

Dr. BEER said he was not recommending this modification of the sacral operation for high carcinomata. Recent statistics of operation for rectal carcinoma, high and low, operated upon by the "Kraske" route as published in *Surgery, Gynecology, and Obstetrics*, Vol. XXI, page 496, by C. Davis, showed 68 per cent. recurrence. There was no doubt but that there were very definite limits to the sacral route. The operation he had described was not the typical "Kraske" with resection of the sacrum. Sixty-eight per cent. of recurrences meant that in trying to take out the carcinoma by this route portions of the carcinoma were left in, and this was all the more likely when high tumors were attacked by this route. The patient just presented was especially interesting in this connection since after freeing five inches of the bowel above the neoplasm, he found it necessary to remove an extra piece about four inches long as there was a mass well above the Douglas pouch as large as an egg, above the originally liberated gut. If this had not been detected the patient would have died of her metastases and would not have been well now, almost four years after operation. This was only another illustration of the fact that if the operation was extensive enough one could get out all of the tumor in many cases, and that was true of carcinoma of the stomach, breast, bladder, etc. He would not say that this patient was cured, but it was now four years since the operation, so it seemed that we might assume that she was cured. The second patient in whom he did the same radical operation was well at the end of three years. The modification was simple and made for rapid healing as the bowel was not opened until after the dressings were applied, so that there was much less likelihood of infection of the large wound. He believed with Dr. Brickner that if we put these patients on a proper diet and trained them to have one movement a day they would have control of their bowels even though they had no muscular sphincter. Control of gas they never acquire. This patient wore a pad but it was perfectly clean, and never became soiled.

A Consideration of Surgical Hazards in Diabetic Patients.—Dr. NELLIS B. FOSTER presented this subject. He stated that on account of his interest in the subject of diabetes it had been his experience to see a large number of surgical complications in diabetics. These were difficult to handle and yielded a high mortality. He had gathered statistics from three hospitals and analyzed them and it was to the deductions from this analysis that he wished to call attention, because they were of as much interest to the surgeon as to the internist. Of the fatal cases of diabetes seen in hospital practice beyond the third decade of life, 60 per cent. died following surgical operations, and of the fatal surgical cases 70 per cent. died in coma. He had been astonished to find that diabetic coma occurred as frequently in what supposedly were mild cases as in what they considered moderately severe cases. The mortality following operation was higher with some types of minor surgery than with some conditions that required major surgery. In other words an operation for a cellulitis in a diabetic was more dangerous than an operatoin for a scirrhus carcinoma of the breast, other conditions being equal. These figures were to him so astonishing that he spent considerable time analyzing them to determine the factors in the surgical hazard, how these could be estimated, and how they could be reduced. The old conception of diabetes was that it was a chronic glycosuria when the patient was on a normal diet, but it had been learned that a patient might have no glycosuria and yet be diabetic. The old definition was not adequate. A chronic hyperglycemia was characteristic of the diabetic. Any individual having diabetes for a long time was prone to develop a nephritis of the interstitial type and when it reached a certain degree of intensity sugar was no longer found in the urine. The blood sugar was therefore the index upon which we must depend not only in determining whether we had or had not diabetes but also the degree. Cases that were thought to be mild were not so when judged by the blood sugar, and that explained why the mortality was as high with supposedly mild cases as with the severe cases. What was the effect on the blood sugar of infection? Infection in the normal individual caused abnormal blood sugar, and when the diabetic had an infection it produced not only the usual effect of an infection on blood sugar but superimposed this effect on the diabetic condition, and this meant that whereas the ability of the diabetic to burn sugar was decreased the infection permitted him to burn even less than he ordinarily did. The immediate effect of his inabilty to burn sugar—this diminished carbohydrate assimilation—was that acidosis resulted. It was known that many infections not surgical were associated with ketonuria. When the diabetic developed infection if he had no assimilation of carbohydrate he was sure to become intoxicated by acid bodies. Thus it was that the blood sugar went up as the reparative processes went down, and because there was more sugar in the blood bacterial growth was advanced; an explanation offered might be that sugar was a favorble medium for bacterial growth. Thus a vicious circle was established, whereby the blood sugar increased the infection and the infection favored the increase in the amount of blood sugar. That was exactly what happened in individuals who were poor surgical risks. If the blood sugar was anywhere near normal (0.15 per cent.) the patient might be a safe surgical risk. The immediate factor was the acidosis. As was well known, following operation there would be some acidosis and if the patient already had a certain degree of acidosis before operation the probability was that he would not survive operation more than forty-eight hours. The amount of acidosis could be determined by the carbon dioxide combining power of the blood. If the carbon dioxide combining power of the blood was below 30 the patient would not survive the operation more than twenty-four or forty-eight hours. The speaker had yet to meet the first instance in which an individual had survived operation under such conditions. By these tests one could determine those cases in which operation would be futile. Of course one could not control the infection hazard. It was important to remember that when these cases were seen early one could accomplish by slight surgical procedures what later would require radical surgery. The diabetic hazard could be determined if one had time. If the individual must be operated upon at once this hazard must be determined by the acidosis quotient, but if forty-eight hours were allowed many individuals showing a considerable degree of acidosis might be rendered fairly safe risks. If, for instance, a patient showed a carbon dioxide combining power of 25 they brought the carbondioxide combining power up to 50 and then with suitable treatment after operation and a due regard for the diabetic condition during operation the patient might be carried through safely. Ether was always contraindicated. It was known that glycosuria frequently followed the administration of ether. Ether aggravated the diabetic state and could not be used without extreme risk. In diabetics who had to be operated upon as emergency cases the post-operative care was most important, and was directed entirely toward protecting the individual from coma.

Dr. ROBERT T. MORRIS said he was glad Dr. Foster placed emphasis on the blood examination. He had felt that reducing the amount of sugar in the urine and lowering the acidosis to a safe point had made it proper for him to go ahead with operative work in diabetic patients not infrequently, and he had used bicarbonate of sodium in the Murphy drip after operation, and had kept the patient under the observation of internists. Dr. Morris said he had another suggestion to make which was perhaps speculative in relation to the ques-

tion of patients not resisting infection when there was a high degree of blood sugar. The body cells in order to make enzymes in a normal manner for meeting antigens needed a definite charge of water. Sugar was hygroscopic and took up water from all body cells, the process being in the nature of an exosmosis, and hence the cells deprived of water could not attend to the formation of protective enzymes or antibodies. That might be speculative but it gave a working hypothesis.

Dr. JOHN DOUGLAS asked Dr. Foster whether gas oxygen anesthesia increased acidosis and whether it was safer than ether. Personally he knew of no harder problem than when, where, and how to operate in diabetic gangrene. The determination of the blood sugar was most valuable and he was glad to learn this method of estimating the amount of acidosis as an index of operative danger. Dr. Foster spoke of sugar causing small contracted kidney. Sugar also caused arteriosclerosis. It seemed to him that not only was infection a determining factor as to what one was going to accomplish in diabetic gangrene, but that the amount of arteriosclerosis was also a determining factor. Before he knew about the blood sugar he had determined whether or not a patient with diabetic gangrene was going to get through an operation and particularly where to operate by the amount of arteriosclerosis present. The accurate laboratory methods of determining these other things were going to be a tremendous amount of help. He was particularly anxious to know how much acidosis was caused by gas oxygen anesthesia as he had lost a case of carbuncle of the neck so anesthetized and he had done amputations under spinal anesthesia and yet the mortality was still high enough to be discouraging.

Dr. JOHN C. A. GERSTER asked Dr. Foster to tell them what the status of the Allen treatment was at the present time. He cited an instance of an old man who was on the Allen treatment and was becoming more and more drowsy. The Allen treatment was discontinued and the man became better, and he thought that possibly in this case the man was suffering from the acidosis of starvation rather than that of diabetes.

Dr. BRICKNER asked Dr. Foster to tell them something of the pre-operative and post-operative care of diabetic patients. He was not sure that the use of bicarbonate of sodium was always useful. It was clear that the surgical prognosis in diabetes depended upon whether one was dealing with an incidental condition or a condition resulting directly from the diabetes itself.

Dr. FOSTER, in closing, said the Murphy drip was one of the recognized methods of administering alkalies and fluid to counteract acidosis and it was perhaps the best method of administering large amounts of fluid in a short period of time. He had often speculated in reference to the dehydration of which Dr. Morris spoke; this was one of the things about which they did not know much. In diabetic cases at autopsy the most striking thing was the dessication of the tissues. There was no other condition in which there was such dessication except diphtheria, where the pateint might have anuria from lack of water, but dessication of the diabetic was more marked in the young than in the type of cases seen by the surgeon. In reference to gas-oxygen anesthesia, he had carefully studied the blood in normal individuals after gas-oxygen anesthesia and he could not find that the acidosis index was materially increased. He felt convinced that there was some other factor responsible for the fact that the results of gas-oxygen anesthesia were not as good as one would expect theoretically.

Dr. DOUGLAS asked whether gas-oxygen was as bad as ether.

Dr. FOSTER replied that it seemed to be. For the diabetic the best anesthesia was local anesthesia. This did for large carbuncles, but of course there were cases in which general anesthesia had to be employed.

Dr. DOUGLAS asked what the effect was of large amounts of hyosine and morphine.

Dr. FOSTER replied that diabetics did not stand morphine well. The ideal anesthetic for the diabetic had not yet been discovered. With regard to arteriosclerosis and the results in gangrene, it was curious that in patients having one type of gangrene of the lower extremities starting on the toe and extending to the bone of the foot, if one took an *x*-ray of the foot in a series of cases the majority would have enough calcium salts in the arteries to give a perfectly clear picture, so that one could trace out the arteries on the *x*-ray plate and yet the fact remained that many of these cases cleared up but the arteriosclerosis was fixed. There were two different types, one with endarteritis obliterans in which restitution could not be imagined and another type in which the arteries were large and stiff, but the lumen patent. In many patients having infections the infection would clear up and a great deal of the limb could be saved by careful diet over a period of time. It was an advantage for that type of patient to have a course of dieting before operation. He did not wish to give the impression of dogmatizing, but there were two types of cases, one responding to treatment, namely, that type associated with infection and another type, endarteritis obliterans, and that was hopeless. About the Allen treatment, there were many in the beginning who advocated the starvation diet; it was new in their experience and because it was new they thought that by its use they could eliminate acidosis. While the Allen treatment was a distinct addition to medicine for which Dr. Allen deserved credit, they had to find out when it was applicable and when it was not applicable. It was thought proper to starve any individual who had acidosis. Now they knew that it was fatal to starve some of these diabetics just as it was fatal to give them ether. A differentiation must be made. The patient whose blood analysis showed an increase in the acidosis index after the administration of carbohydrate might by rest in bed, proper diet, and judicious handling be brought to a more nearly normal condition. With regard to the preliminary treatment of surgical cases of diabetes, if the individual had pus it must be evacuated. Usually it was a superficial infection that could be handled under local anesthesia, and the least possible operative procedure should be done at that time. The acidosis should then be determined by blood analysis and if the individual showed acidosis he might be fasted for a day to see what happened in the alkali reserve. The standard method of treating acidosis was by alkalies, but there were very few patients saved from diabetic coma by the administration of alkalies and only a few cases brought out of diabetic coma by intravenous injections of alkali.

X-Ray of Pneumoperitoneum Due to Perforated Gastric Ulcer.—Dr. FREDERIC W. BANCROFT presented this report with the accompanying *x*-ray plates. He stated that this was an *x*-ray of a case of perforated gastric ulcer that was admitted to the Second Surgical Division of the New York Hospital. It was taken in the prone position immediately upon admission and the patient operated upon without waiting for the development of the plate. Knowing of the *x*-ray work on pneumoperitoneum he had felt that the presence of free gas ought to show in cases of ruptured gastric or duodenal ulcer. Clinically one recognised this by the absence of liver dullness. This large air space shown in the *x*-ray under the diaphragm could easily be recognized under the fluoroscope. There were some cases of emphysema where liver dullness was diminished and this procedure might be a diagnostic aid in such a case. Recently at the New York Hospital they had had a man admitted with general peritonitis with liver dullness diminished. due to emphysema, in whom it would have been a decided help in the diagnosis.

Dr. CHARLES GOODMAN said this presentation was very timely as they were now making injections of oxygen into the peritoneal cavity for diagnostic purposes. He believed that when the indications and technic were worked out the method would become more popular and more frequently used. He had injected a number of patients and obtained some interesting pictures, the outline of the kidney, the liver, spleen, and pelvic organs. Dr. Gottlieb, their radiologist, had found that two liters of oxygen sufficed to bring out a clear outline and more than that the oxygen was not absorbed as rapidly as they had thought, but remained in the peritoneal cavity as long as two weeks after it was injected. It had occurred to them to see if the oxygen remaining in the peritional cavity brought about a change in the blood picture, and according to his suggestion blood counts were made immediately preceding the injection of oxygen

and at the end of twenty-four hours after the injection. It was found that in each instance the blood count increased from 80,000 to 530,000 erythrocytes. Cases examined were those of kidney tumor, empyema, subphrenic abscess, pelvic tumor, and ulcer of stomach. In one case the blood count increased from 3,960,000 to 4,800,000; in another from 4,000,000 to 5,600,000; in others from 4,000,000 to 4,080,000; 3,680,000 to 4,160,000, and 5,730,000 to 6,260,000. Dr. Goodman said he did not know whether others had made such observations or whether they would be of therapeutic value, but the fact remained that the red blood count was increased by the injection of oxygen into the peritoneal cavity.

Miscellany.

The New Jugoslavic Medical Schools.—In the city of Agram, otherwise known as Zagreb, a faculty of medicine has been organized and there are enrolled for the first two years of study 200 Servians and from 600 to 800 Croats, Slovenes and others. The official language is Servian, and German is banned here, as it also is in the city gymnasia. An anatomical building and clinic are already in use. Some of the faculty are as follows: Mickulicz has the chair of experimental medicine and pharmacology; Perovic that of anatomy; Zarnith of histology; Smelouka, physiology, and Zivitch prosector. There are in Agram a Sisters' Hospital, an orthopedic hospital with electric and mechanotherapeutic installation and a bacteriological institute directed by Gutschky, formerly of the Pasteur Institute, which is provided with an antirabic service. The creation of a medical school at Agram was necessitated by the wrecked condition of Belgrade, but in time the old university at the latter city will be restored to usefulness. A third Jugoslavic medical school will soon be established in some Slovenic city.

Belgrade has the nucleus for a school and faculty in the Public Health Office, the surgical hospital, a general hospital, military hospital, ethnographic museum, etc. The surgical hospital operates a laboratory for the special study of pathology and parasitology, and a tuberculosis department. The general hospital has a special clinic for skin and venereal diseases directed by a graduate of the St. Louis Hospital of Paris. The military hospital operates clinics for the eye, ear, nose and throat and a dental clinic. Thus far the medical school of the future is sure of an anatomical department and dissecting room and sections of physiology, chemistry, physics and forensic medicine. —*La Presse Médicale.*

Death of Professor Luciani.—The celebrated physiologist of Rome died on June 23, last, at the age of 79. His early education was obtained from the Jesuits. For certain reasons he did not take a University degree, but after two years spent in literature, philosophy and politics he chose medicine as a profession. He spent two years at Bologna but changed to Naples in the third year because of the milder climate and the chances for studies under certain professors of that university. Here contact with Albini, De Martino and Schrön opened up new vistas in his mind. Nevertheless he returned to Bologna for graduation in 1865 and afterward held assistantships in ophthalmology and physiology at his alma mater. Having chosen the latter as his life work he studied two years under Ludwig (1872-4) and then became professor of pathology at Parma for 5 years. His professorships in physiology were at Sienna, 1880-2; Florence, 1882-1895, and Rome, 1893-1917. His original work has been chiefly performed in physiology of the heart, cerebral cortex and cerebellum, muscular movements and fasting. He supervised the activities of Succi, the professional faster, thereby placing these feats upon a rational basis, and made an extensive report on them.

Not so long before that period professional fasters were regarded as tricksters. He furnished a scientific background to the work of Krauss on cerebral surgery, inspired Benedict's voluminous research on inanition and corroborated the teachings of Gordon Holmes on wounds of the cerebellum. It is said to be almost unique for an Italian medical text book to go through five editions, but this happened to his book on physiology which was also translated into English, Spanish, and German.

Prophylactic Vaccination Against Apoplexy.—Ferrán, the distinguished Spanish bacteriologist, is contributing a serial article on this subject to *El Siglo Medico.* His theory is simplicity itself. The vascular changes which make possible rupture of the vessels are infectious in origin and due to familiar pathogenic germs. We have only to isolate them and prepare autovaccines or make use of polyvalent stock vaccines and thereby arrest the degenerative process. There may be seen even more to it than merely neutralizing germ activities for the author surprised himself by curing a congenital nevus vasculosus by a single injection of one of his cultures. Until the article is finished no serious comment can be made concerning it. Ferrán was one of the first men to take up the subject of vaccines and serums and was even active in this field before Koch and the leaders of the Pasteur Institute. Today he is practically at the head of epidemiology in Spain and upon him has been placed the responsibility for preventing the recrudescence of influenza in his native land.

Malaria in old Corinth.—Under the direction of American Red Cross physicians and engineers, the Greek authorities are providing the town of old Corinth with pure water and a modern drainage system. Recently fourteen children died in the town of blackwater fever—an alarming number in a population of 1,000—and the people are thoroughly infected with malaria as a result of the mud and seepage which has drained into the excavations, abandoned since 1917, and which affords a breeding place for mosquitoes. Thousands of Americans visit this place in peace time. Here stood the old city of Corinth at the foot of the great rock, Acrocorinth, and here extensive archeological investigation has been carried on by the American School at Athens. The excavations will be drained and thoroughly kerosened, and the ancient system of sewers, cisterns, tunnels, aqueducts, and wells will be cleaned out. The Red Cross will co-operate with the Greek Department of Antiquities in making this area healthful for the native population and the thousands of visitors.

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OBSERVATIONS ON THE EPIDEMIC OF INFLUENZA OCCURRING IN THE U. S. NAVAL HOSPITALS IN PHILADELPHIA IN 1918.

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THESE observations are based upon a study of the more serious of about three thousand cases of influenza occurring among the officers and men in the U. S. Navy in Philadelphia. Most of the patients were between the ages of twenty and twenty-six years and were in unusually good physical condition.

Influenza appeared in the British Army in May, 1918, and was brought to Philadelphia by ship. The first case of influenza was diagnosed on September 12, 1918, at the U. S. Naval Hospital, League Island, unrecognized cases having occurred earlier. At first the epidemic resembled that of 1889-90, but quickly marked differences were observed, such as a greater toxicity and mortality, susceptibility of young adults, and partial or complete immunity of those past middle age.

The epidemic was characterized by extreme contagiousness, rapid onset, early and rapidly developing adynamia, cyanosis, and a high rate of mortality. The period of incubation averaged from one to four days.

The U. S. S. *West Gaylock* sailed from an uninfected port in California, arriving at the Philadelphia Navy Yard on November 19, 1918. Although the epidemic was subsiding, 35 men were admitted to the U. S. Naval Hospital with influenza differing in no respects from cases observed during the height of the epidemic in October. This observation disposes of the theory that the virulency of influenza diminished at the end of an epidemic, and supports the idea that the disease disappears because most nonimmunes have been infected.

Influenza may be clinically classified as mild, ordinary, severe, or toxic. The toxic variety may be subdivided into pulmonary, circulatory, nervous, gastrointestinal, and renal.

A typical example of mild influenza occurred in a sixteen-year-old girl, who was suddenly seized with headache, backache, pains in the extremities, malaise, and attacks of slight or moderate perspiration, occurring two or three times daily. In the beginning the cough was slight, infrequent, dry, later becoming more frequent and accompanied by a small amount of mucopurulent sputum, containing many influenza bacilli. Auscultation revealed a few dry bronchitic rales in both lungs, and an extremely feeble respiratory murmur at both bases. The muscular element of the first sound of the heart was extremely weak and this organ did not react to the stimulating effect of fever. The pulse was easily extinguished by slight pressure and was less frequent than the fever would indicate; the systolic and diastolic pressures were low, and the pulse pressure large. The fever lasted but a day, coryza and sneezing were absent, the eyes were unusually brilliant, and the vessels of the ocular conjunctivae injected. During the first four or five days the only symptoms complained of were headache, weakness, frequent attacks of moderate perspiration, diminished appetite, and constipation. The urine showed no important change. Despite these few symptoms and the brief duration of fever, weakness continued, necessitating rest in bed for ten days. On the tenth day extreme fatigue was caused by sitting up for thirty minutes. Two weeks later the patient was improved, but weak, and required two weeks' rest at the seashore before complete recovery was secured. This case typifies an extremely mild influenzal infection, with ephemeral fever occurring in one previously healthy and illustrates the severity of the toxemia in a mild case of influenza.

Ordinary Influenza presents the same symptoms and signs as mild influenza, excepting that the fever, usually remittant in type, continues for four or more days, the pain in the head and extremities is more severe, cheeks more flushed, conjunctival vessels more injected, eyes brilliant, exhaustion more pronounced, lips cyanotic, and the few dry rales later become numerous and moist.

The urine shows occasionally a trace of albumin and a few granular and hyaline tube casts. The sputum usually contains not only the influenza bacillus but also the pneumococcus, streptococcus, staphylococcus, and the *Micrococcus catarrhalis*. The leucocyte count usually shows a moderate leucopenia.

Severe Influenza is characterized by an exaggeration of the symptoms and signs of ordinary influenza, and complications were frequent.

The following incident illustrates the onset: Two well developed unusually strong coal-passers were in the best of health on a Thursday, and when admitted to the U. S. Naval Hospital, League Island, the following morning were so weak that one fell on the floor and the other had scarcely sufficient strength to remain sitting on a chair.

The lips, lobes of the ears, and finger-nails shows cyanosis, varying in degrees from blueness to blue-

black, and occasionally extends to the extremities, trunk, and the mucous membranes of the pharynx and larynx.

In many cases adynamia is so profound that normal breathing was impossible. When the patient is commanded to take a deep breath he makes an obvious effort and breathes slightly more deeply, but each succeeding breath is weaker than its predecessor, evidencing weakness and rapid exhaustion. It is probable that feeble or absent breath sounds, when no pulmonary disease exists excepting a moderate bronchitis, is in part due to the excessive weakness of the intercostal muscles and diaphragm dependent upon deficient innervation and toxic myositis. Occasionally breath sounds were masked by numerous, loud, sibilant, sonorous, and mucous rales. Auscultation in bronchitis reveals an extremely weak respiratory murmur, and in many cases the breath sounds in one or both of the lower lobes are absent. Vocal fremitus and resonance are diminished, and bronchitis rales are few and scattered.

Lobular pneumonia is very common and usually begins in small areas disseminated throughout one or both lungs, frequently locating in the lower spinal half or the apex of one of the lower lobes, and usually undiagnosable at first because of the feeble or absent breath sounds, extreme engorgement and emphysema. During ordinary respiration subcrepitant rales may be absent but may be induced by cough or deep inspiration. These rales are easily overlooked because of their small volume and low pitch or may be masked by loud dry rales. Even when small areas of lobular pneumonia become larger, the phonendoscope reveals scarcely audible, low-pitched, bronchovesicular breathing, and percussion dulness may be absent if these areas are located in the central portion of the lung, or the surrounding tissue is emphysematous. When areas of lobular pneumonia coalesce and occupy the periphery or a considerable part or the whole of a lobe of a lung, the percussion note is dull, the breath sound bronchovesicular or bronchial and vocal resonance and fremitus are increased. Respiration is superficial in all forms of this disease, but in severe influenza the respiratory murmur is not only feeble but remains feeble even though one or both lower lobes of the lungs become congested or pneumonic. The unaffected showed no compensatory overaction, so uniformly observed in lobular pneumonia. Passive venous congestion of the base of the lungs is common. Occasionally dulness on percussion and feeble breathing leading to the diagnosis of bronchopneumonia will vanish over night, due to the disappearance of pulmonary congestion and collapse following the expulsion of a plug of tenacious mucopus blocking one of the larger bronchial tubes. The cough was frequent, paroxysmal and often interfered with sleep. The sputum was at first mucoid and later mucopurulent, moderate in amount, and frequently blood stained. The bloody sputum was usually at first bright red and later dark brown and occasionally salmon colored or rusty. When the sputum was thin and watery, resembling diluted red paint, the *Streptococcus hemolyticus* was usually present and death usually ensued.

In mild and moderate influenza the respiratory rate was ordinarily normal. Whenever the respirations exceeded 24 per minute, pneumonia was suspected and this suspicion was strengthened if the sputum was blood stained, excepting when pleuritis caused the increased respiratory rate. Polymorphonuclear leucocytosis usually accompanied bronchopeumonia. The combination of normal percussion resonance, vocal fremitus, and resonance with absence of breath sounds occurred so frequently that at first the author believed that his hearing was impaired or that the stethoscope or phonendoscope was defective, but repeated observations corroborated the first observation and in describing this frequently recurrent group of signs the term "silent lungs" was employed. In the beginning it was difficult to ascertain the causes of these "silent lungs," but soon the following were recognized:

(1) The lung failed to functionate because of adynamia and extreme weakness of the muscles of respiration.

(2) Extreme pulmonary engorgement.

(3) Obstruction of the lumen of the bronchial tubes by (*a*) inflammatory swelling of the mucosa; (*b*) tenacious and mucopurulent or hemorrhagic exudate.

(4) Collapse and congestion of an area of the lung, secondary to complete obstruction of the bronchus.

(5) Areas of lobular pneumonia surrounded by emphysema. Lobular pneumonia frequently exists unrecognized, or may later develop in condition described under 1, 2, 3, and 4.

Pleurisy almost always occurs as a complication of influenzal bronchopneumonia; it may be serous, serofibrinous, or purulent, frequently occurs in the absence of physical signs and symptoms, and may be general, interlobar, or diaphragmatic.

The characteristic superficial friction rub was usually inaudible because of feeble respiration or because the exudate was butter-like in consistency. A crumpling or subcrepitant-like sound occurring at intervals during the early part of the inspiratory phase of respiration, simulating the crepitant rale of pneumonia or the subcrepitant rale of capillary bronchitis, at times replaces the characteristic friction rub. Pleural friction sounds may be masked by loud bronchitic rales. Frequently pleural friction crepitant and subcrepitant rales were simultaneously present. Large serous effusion seldom occurred. In a few cases the quantity of soft gelatinous exudate was so large that the physical signs simulated that of a serous effusion, but the aspirating needle revealed no fluid. In many cases the pleuritis remained plastic throughout, but was usually accompanied by a serous exudate small in amount, light brown in color, of high specific gravity, markedly albuminous and occasionally contained the pneumococcus or streptococcus. Serous exudate usually occurred without recognizable symptoms, but if not too small in amount was easily diagnosed by physical examination. In many cases of pleurisy the severe pain caused diminished pulmonary expansion, feeble breath sounds, and an increased rate of respiration, and these same signs were occasionally observed in plastic pleurisy without pain, probably due to reflex action. Reflex pleuritic pains have been erroneously diagnosed as cholecystitis or ap-

pendicitis. Physical signs of a large serous effusion appeared over night in a few cases of bronchopneumonia without causing a marked increase in dysponea, polypnea, or displacement of the apex beat of the heart. This combination of signs and symptoms led to the inference that although the physical signs indicated a large effusion, the absence of pressure signs was best explained by assuming that the effusion was moderate in amount and was located between layers of the pleura, having a thickness of about two inches, held in position by a non-collapsible bronchopneunomic lung. This clinical interpretation was confirmed later by a case that came to autopsy. In one case 200 cc of serous exudate were removed and a small pyopneumothorax developed as the bronchopneumonic lung could not expand. As a rule pleural exudates were absorbed, and when respiration was embarrassed, paracentesis was not performed. At short intervals a small quantity of the liquid was removed to determine whether it remained serous or had become purulent. Extensive adhesions are common after pleurisy and frequently the *x*-ray reveals complete adhesion of the lung to the diaphragm. Usually interlobar and diaphragmatic seroplastic and purulent pleurisy are not diagnosed but the latter may be suspected when friction sounds are heard over the borders of the lung or when referred pain occurs in the upper abdominal, gall-bladder, or appendix regions, or when the fluoroscope shows adhesions. Circumscribed, interlobar, or diaphragmatic pleural effusions are usually overlooked but should be diagnosed by the aspirating needle, physical signs, pain in the upper abdominal appendix region, and the *x*-ray. Pyothorax was diagnosed with difficulty excepting when the amount of pus was large. Sacculated, interlobar, and diaphragmatic empyema sometimes evades diagnosis and may be revealed by the sudden discharge through the lung of a pint or more of pus. After spontaneous rupture of an empyema into the lung the signs of pyopneumothorax often developed and recovery usually followed, but occasional drainage through the chest wall became necessary. Circumscribed interlobar empyema is more apt to evacuate through the lung than any other variety. In one case, following a severe paroxysm of cough an emphysematous bleb over an area of bronchopneumonic lung ruptured into the pleural cavity, infected the pleura, and caused a pyopneumothorax. In one case two sacculated empyemas were observed in one pleural sac.

During the epidemic of pneumonia occurring in the U. S. Naval Hospitals of Philadelphia in the Winter of 1917 empyema occurred in 25 per cent. of the cases, consequently this complication was expected in this epidemic. Contrary to this expectation, however, empyema was of rare occurrence during the height of the epidemic and relatively few cases occurred later. When empyema appeared, the streptococcus or pneumococcus was usually present. Antistreptococcus serum was of unquestioned value in influenzal streptococcus empyema, and one case of influenza complicated by pneumonia followed by empyema, due to pneumococcus type I, was greatly benefited by antipneumococcus serum, injected subcutaneously and also into the empyema cavity which had been partially evacuated by paracentesis.

In severe influenza circulatory disorders were almost as common as pulmonary disorders. Weakness of the heart muscles was usually present in varying degrees, and in most cases the muscular element of the first sound was remarkably weak and at times valve-like. Frequently the apex beat could not be seen or felt. The cardiac neuromuscular mechanism was usually disturbed, as shown by the frequency of the alteration in the pulse temperature ratio, as for example, temperature 104 deg. F., pulse 80. As a rule the pulse was hypotensive and weak but regular in force and rhytnm. Occasionally the cardiac rhythm was transitorily disturbed during a paroxysm of cough or by exertion. Arrhythmia from neuromyocardial disease was rare, and in one case sudden and unexpected death occurred. The systolic and diastolic pressure was low, the pulse pressure large, and in a typical case the systolic pressure was 85 mm. and the diastolic 45 mm. The frequency of this blood-pressure picture in association with marked adynamia closely simulated that of advanced Addison's disease and suggests a diminution or loss of function of the adrenals. Although cardiac murmurs were usually absent, nevertheless it is possible that in certain cases, sufficient ventricular dilatation occurred to permit of tricuspid or mitral regurgitation, the absence of the murmur being due to myocardial weakness.

Pericarditis was conspicuous by its absence and hydropericardium was only occasionally observed. The superficial and deep veins were frequently overdistended, and the arteries seemed less full than normal, indicating a partial emptying of the arterial blood into the venous system.

Cyanosis was a frequent, striking, and serious complication of the epidemic. In mild cases the lips, ears, and finger-nails were slightly bluish; in ordinary cases the cyanosis of the lips and ears increased and also extended to the cheeks and hands; the color became more distinctly blue. In severe toxic influenza cyanosis may extend all over the entire body and include the mucous membrane of the mouth, and the color may deepen to a bluish black. All the factors concerned with the cause of cyanosis could not be fully determined, but it was evident that the chief and perhaps the sole cause was a toxemia acting upon various organs and tissues of the body. There was evidently a disturbance of the function of the vasomotor mechanism and a diminution or loss of the function of the adrenals due to inflammation.

Toxic myocarditis caused pulmonary and venous congestion which was increased by the partial emptying of the arterial blood into the venous system, which with toxic bronchopneumonia favors suboxidation of the blood. Digitalis, atropine, and alcohol usually failed to produce their physiologic effect and venesection was useless or harmful.

In the nervous form of severe influenza, the mind was usually dull, somnolence was common, and the patient slept most of the time but was easily awakened. When toxemia was more marked somnolency was replaced by slight, moderate, or marked stupor or coma. Delirium might occur similar to that seen in typhoid fever, or might become maniacal and require physical restraint. In a few cases delirium continued for days accompanied by photophobia and

slight retraction of the head, simulating meningitis, evidently due to a toxic irritation of the meninges and cerebral cortex as the spinal fluid showed no evidence of inflammation. Frequently lethargic or mildly stuporous patients with extensive bronchopneumonia, obviously critically ill and within 24 to 48 hours of death, nevertheless stated that they felt well and requested permission to leave the bed and return to duty. This strange inability to appreciate the seriousness of their condition was probably due to a marked disturbance of the perceptive centers. Marked mental depression was not uncommon and was sometimes associated with the fixed idea that recovery was impossible and that death must follow.

Delusional insanity of the mild, melancholic, or suicidal variety occasionally occurred. A convalescent from influenza while working about the hospital wards, apparently improving, was suddenly seized with a suicidal impulse, secured a razor and cut his throat, but fortunately recovered; a second patient was foiled in an attempt to commit suicide by jumping from a height, and a third patient had a series of epileptiform convulsions preceded and followed by melancholic or depressive delusions from which he ultimately recovered. Adynamia was marked and the decubitus indicated extreme muscular relaxation. Involuntary evacuation of the urine and feces was common, and the patient might unconsciously expectorate anywhere at any time.

In the gastrointestinal form of influenza the most common symptoms are a coated tongue, foul breath, aversion to foods and drinks, unwillingness to swallow, anorexia, nausea, and vomiting. The vomitus is usually free from blood, the abdomen may or may not be tympanitic and is not painful upon palpation. Blood appeared in the feces of three cases of influenza, one of which was complicated by typhoid fever. Diarrhea occasionally occurred when there was no evidence of gastroenteritis now ulceration and it was evident that toxemia was the chief factor. This form of influenza was frequently fatal.

The renal form occurred in three-fourths of the cases of severe influenza. The urine usually showed a trace or a moderate amount of albumin, a high specific gravity, granular and hyaline tube casts, and not infrequently a number of erythrocytes, interpreted as indicating acute toxic nephritis. The volume of urine excreted was usually diminished, and clinically it was impossible to recognize evidences of uremia which, if present were merged into the clinical picture of toxemia. In a few instances the phenolsulphonephthalein test for the functional activity of the kidneys was made, but the results were so contradictory that deductions were impossible. One would expect varying degrees of diminution of the renal function, and in severe toxemia the renal function should be almost abolished. Passive congestion of the kidneys was common.

Jaundice occurred infrequently and was due to toxic hepatitis and no case of catarrhal hepatitis or cholecystitis was observed. Several cases of severe pain referred to the gall-bladder region, due to pleurisy were diagnosed cholecystitis. In one case, a negro, the jaundice was so intense that the sputum was canary yellow in color due to bile. About half of the cases of jaundice terminated fatally. Primary sinusitis and otitis were rare, but occasionally latent sinusitis and otitis became acute during influenza. Paracentesis in acute otitis media usually yielded a bloody serum, but seldom pus. Epistaxis was very common and was usually associated with venous engorgement and passive swelling without evidence of inflammation. The blood seemed to ooze from the mucous membrane and usually no ulceration could be detected.

Hoarseness and aphonia occasionally occurred, and the laryngoscope showed passive congestion and swelling.

Commander W. A. Angwin, M. C., U. S. N. has made the following statistical study of nine hundred cases admitted and discharged from the U. S. Naval Hospital between September 12 and November 15, 1918. Group 1 consists of 352 cases admitted within 24 hours of onset. Group 2 consists of 197 cases admitted within 48 hours of onset. Group 3 consists of 116 cases admitted within 72 hours of onset. Group 4 consists of 235 cases admitted after 72 hours of onset.

The symptoms in the order of frequency were headache, cough, general muscular pains, chills, backache, weakness, sore throat, coryza, nausea, dyspnea, vertigo, vomiting, earache. The physical signs in the order of frequency in group were: rales 51.9 per cent., congestion of the throat, eyes, and nose, cyanosis, toxemia. enlargement of the superficial lymphatic glands, pleuritic friction, herpes, and erythema. Rales, toxemia, and delirium progressively and rapidly increased in frequency from group one to group four. Delirium occurred in 48.6 per cent. of all cases of pneumonia.

Groups	Bronchitis, Per Cent.	Pneumonia, Per Cent.	Epistaxia, Per Cent.
1	43.0	8.5	5.6
2	40.0	15.7	....
3	31.0	42.2	....
4	31.1	42.8	....

Sputum.

Groups	Mucopurulent, Per Cent.	Bloody, Per Cent.	Watery, Per Cent.
1	52.2	48.8	....
2	52.6	47.4	....
3	41.0	74.0	8.7
4	41.0	56.4	3.6
Average.....	46.7	56.6	....

Complications and Sequelæ: Toxemia dominates the clinical picture of influenza and is not only the chief complication but also the chief cause of death. Young men possessed of unusual strength and vitality succumb without resistance due to the virulency of the toxemia.

The usual pulmonary, circulatory, nervous, gastrointestinal, and renal complications and cyanosis have all been sufficiently discussed. Hypostasis with pulmonary edema is a frequently fatal terminal complication of pneumonia. Uncommon complications are phlebitis, thrombosis, neuritis, parotitis, sinusitis, aphonia, herpes, purpura, and subcutaneous emphysemo. Relapses are not uncommon but many so-called relapses occurring in convalescents are due to

the recrudescence of existing bronchitis, pneumonia, or pleurisy or the conversion of a serous into a purulent pleural effusion. Any preexisting disease, as for example, pulmonary tuberculosis or chronic Bright's disease, may become a serious or fatal complication or sequel by becoming active and progressive during an attack of influenza. Five cases of influenza were complicated by meningococcic cerebrospinal meningitis. One case of influenza developed diphtheria and bronchopneumonia involving the middle and lower lobe of the lung, and another typhoid fever, and it is probable that all were carriers. Many carriers of the pneumococcus, streptococcus, or staphylococcus became infected with the influenza bacillus. Influenza occurring in carriers of various microorganisms is the cause of many obvious or obscure complications.

The most common sequel of influenza is well marked weakness, continuing many weeks, due to the effect of the toxemia upon the nervous system or myocardium causing well marked symptoms of neurasthenia, circulatory weakness, anginoid pain, or angina pectoris, or the weakness may be circulatory and myocardial in origin.

Chronic bronchitis, chronic pleuritis, empyema (sacculated or general), pyopneumothorax, emphysema, chronic bronchopneumonia, chronic sinusitis, chronic otitis, may occur as complications or sequelæ.

A large number of influenza carriers may be expected as a sequel to this pandemic, as the sputum in 36 per cent. of the patients convalescent for two or three weeks still contained the influenza bacillus.

Pathology and Clinical Laboratory: I am indebted to Lieutenant R. S. Leopold, M. C., U. S. N. R. F., not only for the statistical tables, necropsy, pathological and clinical reports, but more especially for his enthusiastic cooperation during the epidemic.

The blood in influenza usually showed leukopenia and the white blood cells varied between 3,800 and 8,000 per c.mm. As soon as pneumonia occurred, a polymorphonuclear leucocytosis quickly developed, varying from 14,000 to 20,000 per c.mm. Leucocytosis usually antedated the clinical diagnosis by two or three days. When leucocytosis diminished during the active stage of influenzal bronchopneumonia the prognosis was generally unfavorable.

The following table has been constructed by selecting from 600 blood counts, 100 from uncomplicated pneumonia and 100 from influenzal bronchopneumonia:

	W.B.C.	Polys.	S.L.	L.L.	Mono.	Trans.	Eos.
Influenza	6.950	67.5	21.2	3.8	4.4	2.1	0.2
Influenzal broncho-pneumonia	17,680	82.8	8.3	2.1	2.6	3.8	0.1

The following table is based upon 200 examinations of sputum selected from 600 cases of influenza between Sept. 28 and Oct. 28, 1918:

	Per Cent
1. *B. influenzæ* (pure)	18
2. *B. influenzæ* and streptococci	14
3. *B. influenzæ* and pneumococci	12
4. *B. influenzæ*, streptococci and pneumococci	12
5. Pneumococci	10
6. Streptococci	10
7. Pneumococci and streptococci	18
8. Total *B. influenzæ* present	62

In the sputum of patients convalescent two or three weeks *B. influenzæ* was still present in appreciable numbers in 36 per cent. of the cases examined, thus demonstrating the probability of a high percentage of carriers.

The *B. influenzæ* was at first identified with difficulty and later with regularity and ease owing to improved technique. This organism was frequently associated with type III and IV pneumococcus, occasionally with type II and only rarely with type I. Streptococci of varying strain and virulency were associated with *B. influenzæ*, and occasionally the *Streptococcus hemolyticus* was identified and less frequently the *Micrococcus catarrhalis* and staphylococcus. In fifteen blood cultures twelve were negative, one showed a pneumococcus, and one a pneumococcus and streptococcus. When the influenza bacillus and the streptococcus or pneumococcus were simultaneously cultured on the same plate, the colonies grew larger and more rapidly than if each organism were grown upon a separate plate, this being evidently due to symbiosis.

Spirilla, not of the mouth variety, were frequently observed in the sputum, especially when bloody, from patients with influenza. The morphology of the organism was constant, it was relatively short, the ends curved, convolutions regular and about six or eight in number, and stained faintly with strong fuchsin. These organisms were imbedded in mucopus which had apparently come from the lower respiratory tract and were observed in 14 cases of influenza and 9 cases of bronchopneumonia. The giving of 0.2 to 0.4 grams of salvarsan caused the disappearance of the spirilla and apparently benefited the patient. Future research must determine the relation of this organism to influenza.

Dr. Leopold has made the important observation that from material obtained by an aspirating needle introduced into a bronchopneumonic area, a pure culture of the bacilli was obtained, and that other organisms might be secured from areas surrounding the consolidation or from the content of the bronchial tubes.

The relative frequency of the different types of pneumococci were as follows: Type I, 1.1 per cent.; Type II, 12.3 per cent.; Type II, *a*, 14.6 per cent.; Type III, 5.6 per cent.; Type IV, 25.6 per cent.; Negative, 40.6 per cent. In other parts of the United States the percentage of the different types varied.

A composite picture of nine autopsies would be about as follows: A robust, well-developed, muscular young male cadaver, presenting extreme cyanosis of the entire body, often of a deep purplish black and emitting a characteristic foul odor. The engorgement of the venous system was extreme and the subcutaneous and abdominal veins and cavæ were greatly overdistended, and the blood which flowed freely was black in color, watery in consistency, and produced a dark mahogany-colored stain. The right heart was enormously overdistended and filled with a blackish jelly-like clot.

The heart, pectoral, and abdominal recti muscles were all well developed and often presented a glazed and scalded appearance. The heart-muscle fiber stained faintly, and the individual cell was swollen and faintly granular, the nucleus clouded,

and the capsule indistinct. Between the bundles of the heart muscle fibres there was congestion, occasional minute hemorrhages, groups of infiltrated round cells, and small collections of leucocytes. The intima of certain of the cardiac arterioles showed marked proliferation sufficient partially to obstruct the lumen of the vessels.

An occasional serous pleural effusion and a few examples of seropurulent pleuritis were observed late in the epidemic.

The lungs presented constantly varying pictures of bronchopneumonia. The discreet areas of lobular pneumonia presented various stages of development and some were well defined, elevated, firm, varying in color from a reddish brown to bluish gray and surrounded by normal or collapsed lobules, giving a mosaic appearance. The areas of lobular pneumonia were often scattered throughout the middle and lower lobes and sometimes also appeared in the upper lobes, often involving from 25 to 50 per cent. of the lungs. In other cases these areas rapidly coalesced, became massive and simulated lobar pneumonia. These massive pneumonias often involved 75 per cent. of the lung and were of a bluish gray color, were occasionally associated with subpleural hemorrhages.

Bronchopneumonia invaded the lung in the following order of frequency: the right lower lobe, the left lower lobe, the middle lobe. In all types of pneumonia areas of extreme emphysema were observed, especially marked in the uninvolved lung. In one case of pyopneumothorax developed secondary to the rupture of an emphysematous bleb over an area of bronchopneumonia.

The trachea and bronchi contained a thin brownish tenacious exudate and numerous minute petechial hemorrhages were common in and apparently under the mucosa.

Frequently the interlobar capillaries were intensely congested with areas of hemorrhagic extravasations. The alveoli were filled with red cells, leucocytes, fixed cells, debris but no fibrin. Peribronchial and perivascular round-celled infiltration was especially pronounced in the broncho-pneumonic areas. Enlarged bronchial glands were often found about the roots of the lungs.

Only a few examples of aerofibrinous or purulent pleuritis were observed.

The Influenza Committee of the Advisory Board of the D. S. M. S., France, reports in the *British Medical Journal* of November 9, 1918, that one of the most striking features of the morbid anatomy of the epidemic was the constant occurrence of dilatation of the heart with myocardial changes. Twenty-nine out of thirty cases showed marked dilatation of the heart, chiefly of the right side, but very commonly of the left side as well, twenty-one cases showed myocarditis demonstrable to the naked eye. The myocardium was pallid and soft with mottling and frequently subpericardial and subendocardial hemorrhages similar to those seen beneath the pleura. These hemorrhages were also seen on the intraventricular septum and papillary muscles.

The pericardium usually showed no pathological change and only occasionally was a moderate serous effusion observed. In a typical rapidly fatal case of toxic influenza, with bronchopneumonia and extreme cyanosis, the venous system was engorged with blood, the lumen of the divided ascending and descending venæ-cavæ were distended to fully one-third larger than normal and filled with a currant jelly-like clot. When blood was removed from the pericardial sac, it quickly refilled with blood regurgitation from the over-full venæ-cavæ.

The gastrointestinal tract showed no pronounced pathological change.

The spleen was usually somewhat enlarged, congested, and of a deep purplish color. The liver was congested and sometimes showed marked biliary pigmentation.

The kidneys were congested, the cortex was usually deep brown in color and upon section showed a glazed and bulging surface. The microscope showed uniformly advanced inflammatory changes with extreme congestion; the capillaries seemed almost ready to burst and hemorrhages were frequently observed. In and around of the lobular and interlobular vessels there was advanced cloudy swelling, especially of the convoluted tubules, and in some cases inflammatory changes were taking place in the glomerotubular portion of the kidney.

The adrenals were of a deep bronze color, enlarged, very friable, and extremely congested.

Major O. L. Pothier, M. C., U. S. A., Camp Lee, Virginia, in a report upon thirty-seven autopsies, states that during the first week of the epidemic the adrenals were intensely congested with beginning change in the epithelial tissue; but after the second week the cellular element had disappeared leaving only a framework. He states that with the exception of the lungs no other internal organ suffered as much as did the adrenals.

If autopsies had been more numerous and research more exhaustive, doubtless evidence of toxic hepatitis, splenitis, and pancreatitis would have been observed and possibly similar changes in other organs.

Diagnosis: The diagnosis of influenza during an epidemic is based upon fever with a disproportionately slow pulse and respiration rate, pain in the head and extremities, flushed cheeks, bright eyes, injected conjunctivæ, cough, quickly accompanied by mucopurulent expectoration. As a rule sneezing is absent and when present is apt to be due to an associated *Micrococcus catarrhalis* infection. The pulse and the muscular element of the first sound of the heart quickly become weak. The temperature is usually about 103 deg. F., and the pulse only 100 per minute. Frequently bronchopneumonia exists with a respiratory rate of but 26 per minute.

A primary lobar pneumonia may be mistaken for a massive influenzal bronchopneumonia. The differential diagnosis is established by the character of the pulse and the first sound of the heart, the relative slow pulse and respirations and the association of bronchitis or lobular pneumonia in other lobes of the lungs. It is evident that in a few cases the pneumococcic infection was as great as, if not greater than the primary influenzal infection, because of the rapid consolidation of one or more lobes of the lung and a typical crisis at the usual time. The diagnosis of other pulmonary, pleural, and circulatory diseases in severe toxic influenza has already been discussed.

Leucopenia is diagnostic of uncomplicated in-

fluenza, and polymorphonuclear lucocytosis appears when pneumonia occurs and may antedate the clinical diagnosis by two or three days. Material for culture secured by introducing an aspirating needle into an area of bronchopneumonia makes an etiological diagnosis possible.

Prognosis: The estimated death rate at the U. S. Naval Hospital was 11.6 per cent. The actual mortality was lower, as patients recovering, while on leave, were not included.

About one-third of the cases of severe toxic influenzal bronchopneumonia and most of the cases of influenza with involvement of both lower lobes of the lung, succumb to the disease. When the sputum appears like diluted red ink, denoting infection by the *Streptococcus hemolyticus*, death usually occurs. Well-marked stupor or persistent vomiting is unfavorable prognostically. Sudden death may occasionally occur in influenza when arrhythmia is present. In a few instances the usual clinical evidences of severe toxemia make the prognosis unfavorable even though bronchopneumonia be absent.

Occasionally acute tonsillitis is erroneously diagnosed influenza, but inspection of the fauces and a study of the pulse, temperature, respiration and leucocyte count makes the differentiation. ,

Practically all toxic psychoses improved and eventually recovered. Acute parenchymatous nephritis usually disappeared but occasionally became chronic. When a patient with influenza continues at work the prognosis is unfavorable. Dr. J. J. Reilly, Chief Surgeon at Hog Island, states that two men with influenza, while at work, were accidentally killed and an autopsy showed bronchopneumonia.

Summary: This epidemic was introduced into the United States by ships from abroad; it differed markedly from preceding epidemics and was characterized by rapid and severe onset, extreme contagiousness, and high death rate.

The period of incubation was one to four days.

The epidemic disappeared because most of the nonimmunes had been infected.

Extreme susceptibility of the young adult and comparative insusceptibility of those past middle age were characteristic.

Non-resistance to the disease, even by those of unusual strength and vigor, were noted.

Toxemia was the dominant cause of symptoms, complications, and death by direct action upon the tissues and organs of the body.

Cyanosis occurred frequently, and if extensive, was serious prognostically.

The chief and perhaps the sole underlying cause of cyanosis is toxemia. Some of the secondary causes of cyanosis are disturbance of the vasomotor system, toxic myocarditis, bronchopneumonia and congestion, with over-full venous system, epinephritis, and suboxidation of the blood.

Hypoadrenalism was suggested because of the frequency of low systolic and diastolic and large pulse pressures with adynamia. In a series of thirty-seven autopsies many showed marked disease of the adrenals. This shows the importance of an exhaustive study of the adrenals in future epidemics of influenza.

Adynamia is probably due to the effects of the toxemia upon the nervous and muscular systems and the adrenals.

Deficient pulmonary expansion is often due to toxemia affecting the muscles and nerves concerned with respiration.

The most common location of a beginning bronchopneumonia is in the apex of the spinal half of the lower lobe of the lung.

Bronchopneumonia may exist in the absence of breath sounds, due to nonentrance of air, and percussion resonance may be normal due to associated emphysema.

The appearance of the *Streptococcus hemolyticus* in the sputum in influenza bronchopneumonia is usually followed by death.

Absence of compensatory overaction of the normal lung when massive bronchopneumonia exists is an indication of a disturbance of the neuromuscular mechanism due to toxemia.

Pleural friction frequently closely simulates the crepitant and subcrepitant rales of bronchopneumonia.

Empyema was infrequent during this epidemic but was common during the epidemic of pneumonia in Philadelphia in the Winter of 1917.

Referred pleuritic pain is often mistaken for cholecystitis or appendicitis.

Feeble or absent apex beat, weakened muscular element of the first sound, relatively slow pulse as compared with the fever are evidences of myocardial change or toxic myocarditis.

Frequency of toxic myocarditis at autopsy as observed by the Influenza Committee of the Advisory Board, D. S. M. S., France.

Meningismus was frequently mistaken for meningitis.

The prognosis was usually favorable in post-influenzal delirium and delusional insanity.

The prognosis was unfavorable when vomiting was persistent.

About three-fourths of the cases of severe toxic influenza developed catarrhal nephritis.

Leucopenia is diagnostic of uncomplicated influenza. Polymorphonuclear leucocytosis is diagnostic of bronchopneumonia and may antedate the clinical diagnosis by two or more days.

The prognosis is unfavorable when influenza occurs in a pneumococcus streptococcus, staphylococcus, meningococcus, tuberculosis, or typhoid carrier.

It is probable that this epidemic has created a large number of influenza carriers. The sputum of 36 per cent. of patients convalescent for two or three weeks contained the *B. influenzæ*.

B. Influenzæ alone or combined with other organisms occurred in 62 per cent. of the sputa examined.

The frequent occurrence of pure culture of *B. influenzæ* from the diagnostic puncture of the bronchopneumonic areas of the lung was noted.

The rarity of Type I pneumococcus and its greater frequency in other parts of the United States were noted.

There was an evident symbiotic relationship of *B. influenzæ* to the streptococcus or pneumococcus and perhaps other microorganisms.

Spirilla were frequently observed in influenzal bronchopneumonia, especially when the sputum was bloody.

This epidemic of influenza seems to have been primarily due to the *B. influenzæ* which may have

been of the pandemic strain possessing unusual virulency. This influenza bacillus not only lessens remarkably the resistance but also greatly increases the susceptibility of patients with influenza to infection by other microorganisms. Many patients with influenza were quickly invaded by varying strains of the pneumococcus and streptococcus of high virulency. When an infection of two or more microorganisms occurred it seemed as though each stimulated the other to more rapid growth and greater virulency. Perhaps the symbiotic relationship of the influenza bacillus to the pneumococcus or streptococcus seen in the laboratory may also occur in the human laboratory. Spirilla so frequently observed in this epidemic may possess an importance now unrecognized.

The epidemic of pneumonia in the winter of 1917 produced a large number of carriers, which may partly explain the frequency of pneumonia complicating influenza. The importance of carriers in explaining certain aspects of this epidemic is illustrated by the occurrence of influenza in five meningococcus carriers each of whom quickly developed the symptoms of epidemic cerebrospinal meningitis. Some authors believe that an unknown microorganism or virus caused this epidemic.

317 South Eighteenth Street.

THE DISPENSARY SITUATION IN NEW YORK CITY.*

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When the Radicals in the French Constituent Assembly of 1848 were attempting to put every possible safeguard into the Constitution and the document grew to be huge, the poet-statesman Lamartine, who presided over the Assembly, remarked "Gentlemen, let us leave something to Providence."

In attempting to condense the findings of a year's investigation of the dispensary conditions in this city and the recommendations of the Public Health Committee based on these findings, within the compass of a short paper, I had constantly to keep in mind Lamartine's injunction, lest the paper become a jejune catalogue of subjects.

On behalf of the Committee, I desire to express sincere appreciation of the courtesy and cooperation shown by the authorities of the 45 institutions included in the survey, to the many individuals who gave us their helpful assistance and advice in connection with the study, to the Bureau of Municipal Research, which contributed the valuable services of Dr. Carl E. McCombs for several months, to the members of our staff, particularly to Dr. Anna M. Richardson, Dr. Gertrude E. Sturges, Miss Mary R. Foley, Miss Grethe Kjoss, Miss Amelia Massapust and Mr. Richard Mackenzie, who most efficiently and devotedly gave their services to the work, and to the Rockefeller Foundation for the generous appropriation which made this study possible.

*A Report on the Results of a Year's Investigation and Study by the Public Health Committee of the New York Academy of Medicine, presented at a meeting of the New York Academy of Medicine on December 18, 1919.

I. Magnitude of the Dispensary Problem.—Aside from any other consideration, the very magnitude of the dispensary field in New York City justifies a thorough inquiry into the numerous medical, social and economic problems which it raises. We have in Greater New York 65 Out-Patient Departments of Hospitals, 34 Independent Dispensaries and 6 College Dispensaries. In addition, the Health Department maintains 21 tuberculosis clinics, 8 dental, 10 eye and 3 rabies clinics, and the Children's Aid Society maintains 6 school dental clinics, making a total of 153 licensed dispensaries in New York City. In this list are not included the 3 occupational clinics, the 12 venereal disease clinics of the Health Department (all but 2 of which are Advisory Clinics) and 60 baby health stations.

The total number of treatments given at the 153 licensed dispensaries for which statistics are published by the State Board of Charities reaches the stupendous figures of over 4 million annually.

The total number of persons treated is reported as one and a quarter million. This figure is admittedly in excess of the actual number of persons using the dispensaries, because in the course of a year a large number of those seeking dispensary aid register more than once in the same institution for different ailments and some apply to more than one dispensary for the same complaint, and no method has been worked out whereby the actual number of individuals seeking dispensary treatment can be ascertained.

The clinics hold 3680 sessions weekly and the total number of hours of actual operation is almost 8000, thus making an average of over two hours per session. Most of the dispensaries are open during the morning and afternoon hours. The number of dispensaries open in the late afternoon hours is relatively small and the total number of evening clinic hours amounts to 213½ or a little over 2.5 per cent. of the total number of clinic hours per week.

Of the aggregate number of almost 8000 physicians in this city, 2019 are connected with dispensary work. 68.6 per cent. of these are associated with out-patient departments of hospitals and 31.4 per cent. with independent dispensaries. 1580 or 78.3 per cent. of the physicians hold one dispensary service, 366 or 18.1 per cent. two dispensary services and 73 or 3.6 per cent. three dispensary services.

In the vast majority of instances the services of dispensary physicians are not compensated.

According to the available statistics one-fifth of the patients is taken care of in the department of internal medicine, one-eighth in the department of surgery, one-ninth in the department of pediatrics and the remainder is distributed among the several specialties.

In other words, 80 per cent. of the dispensary patients come with complaints which are being taken care of in departments other than that of internal medicine. This is equivalent to saying that by a process of evolution conditioned by economic, medical, and public health forces, the dispensary has become an institution to which a large part of the wage-earning class of our population resorts when in need of services of specialists or of

a special examination or treatment, which in the majority of instances they cannot obtain except at the dispensary.

The recognition of this condition calls for a reconsideration of the whole dispensary problem from the standpoints of economics, administrative policy, and the relation of the medical profession to the dispensary.

II. The Dispensary Law.—According to the Rules of the State Board of Charities, all persons applying for advice or treatment at a dispensary must be questioned as to their ability to pay a physician, and only those who are, in the opinion of the registrar, unable to pay physicians or dentists, shall be accorded treatment. Exceptions to the rule are permitted in emergency cases and cases of communicable disease (this refers chiefly to tuberculosis and venereal diseases), and in cases applying at dispensaries connected with medical schools which may be "selected for use in clinical instruction." It is a misdemeanor to obtain medical or surgical treatment on false representation. The questioning concerning the financial status of dispensary applicants required by the rule just mentioned is more or less perfunctorily performed and although the law has been on the Statute Books for 20 years, not a single case has been brought to court.

Studies made at various times in several cities, including New York, show that the amount of imposition upon the practically free services of dispensaries is not flagrant and does not constitute an important factor in the dispensary problem. The study conducted by a Special Committee of the New York County Medical Society in 1912[1] led to the conclusion that 10 per cent. of the patients seemed "able to pay for medical treatment under ordinary circumstances, but the margin over and above fixed expenditures seemed in most cases so slight that in illness demanding continued treatment or the services of a specialist, to pay a physician would mean for them serious deprivation or the incurring of debt from which afterwards it would be difficult to escape."

A study of 1,000 cases at the Presbyterian Hospital Dispensary in Philadelphia showed that in 2 per cent. of the cases the acceptance of free care offered by the dispensary amounted to abuse.[2]

The Illinois State Health Insurance Commission reported in May, 1919, that according to their study 4.5 per cent. of the dispensary patients "were recipients of medical charity which their economic status did not justify."[3]

Similar studies at the Boston Dispensary and at the Washington University Dispensary at St. Louis led to the conclusion that 2 per cent. of the cases were taking undue advantage of the free services of the dispensary physicians.[4]

Our own study, based on first hand information obtained from the patients who were visited in their homes, corroborates the findings of the other investigations. We found that 2.2 per cent. of the patients were palpably taking undue advantage of the dispensaries, that 79.4 per cent. were justified in the use of dispensaries because of low economic status, and the rest, or about 19 per cent., because they sought the services of specialists or the use of equipment and apparatus which could not be obtained anywhere, except in a dispensary, at a price which they could afford to pay.

In view of this, the dispensaries may be said to have ceased to be institutions for the destitute only and have come to occupy a prominent place in the treatment of disease among wage-earners. This leads to the consideration of the question of prevailing fees and points to the need of pay clinics.

III. Fees.—The prevailing charges for admission, drugs, dressings, apparatus, and so on, vary from institution to institution. No effort has been made to standardize charges. They are invariably very low, although in some institutions the registration fee is as high as one dollar. Municipal hospitals have thus far refrained from charging any fees in their out-patient departments, although payments are accepted in such hospitals for the maintenance of ward patients. During the last year the charges in very many institutions have been slightly increased. The increase in charges leads at times to a falling off of the number of patients, who seek treatment in institutions where the charges are lower. There is an evident need of an equalization policy in the matter of charges for treatment, as well as for medicines, dressings, and apparatus, and an attempt along these lines should be made jointly by all the institutions, including the municipal.

At least three considerations must be borne in mind when the problem of fixing dispensary charges is undertaken. First, all the institutions are in need of additional income for the purpose of improving the services; second, the majority of the wage-earners are able to pay part of the cost for skilled medical services, and third, there exists a class of patients—chronic invalids and the unemployed—who will be deprived of treatment altogether if the admission fee is demanded in every case. The fees should likewise be low or remitted to patients in tuberculosis and other similar clinics to which the patients are required to come for sanitary supervision. It is therefore necessary to adopt a system of carefully graded fees with a maximum not to exceed 50 cents and to make that system uniform in the dispensaries throughout the city. The wage-earner in a more or less steady employment could pay a fee of 50 cents per visit without hardship. Moreover, considering the fact that the majority of patients come to the dispensary to seek the advice of specialists, the suggested increased fee would not be considered prohibitory to most of them. They are at present compelled to resort to the practically free services of the dispensary because they cannot meet the customary charges of specialists. The adoption of a 50-cent maximum fee would materially increase the present dispensary income and would aid toward making possible the necessary improvements in dispensary service. It would help the institutions to pay salaries to physicians and to employ larger clerical, nursing, and social service staffs to carry on more adequately the manifold functions of the dispensary and to meet its responsibilities toward the patients and the community.

The institutions which are poorly equipped, and which would be unable to render a superior grade of service, would lose many of their patients who, upon paying a higher fee, would be more discriminating, and in this way the inferior institutions would be gradually eliminated.

IV. Dispensary Policy and Executive Direction.—There exists no standard method of dispensary organization, either from the administrative or medical point of view. The dispensary has too often been treated as a Cinderella in the hospital household—neither sufficient funds nor sufficient thought have been given to its organization and work.

The problems encountered in dispensary administration are probably more complex and difficult than are the problems arising in the management of a hospital, yet the majority of institutions lack a definite policy with regard to dispensary work, and the administrative supervision is in too many instances purely perfunctory. Likewise, with the exception of independent dispensaries, there seldom is an executive officer of training and ability attached to the dispensary whose duty it is to give undivided attention to the study of its problems and the development of adequate administrative procedure.

There is a need in most of the institutions of a clearly defined policy and responsibility to be formulated by the Board of Trustees and to be supervised by a joint committee representing the Board of Trustees, as well as the Medical Board. Provision should also be made, at least in the large institutions, for a full-time executive who would carry out the policies of the Board of Trustees and devote his undivided thought and attention to the administration problems of the dispensary. Many of the existing administrative deficiencies would be obviated by the existence of well defined policies and by the fixing of responsibility for their enforcement upon specially designated full time executives.

V. Responsibilities of Dispensaries.—On the basis of a conservative estimate, the expenditures of the New York dispensaries amount to at least two million dollars per annum. Institutions expending such considerable sums of public funds have definite responsibilities. These responsibilities are toward the community who supports the institutions, as well as toward the patients who should be assured efficient medical treatment, and toward the physicians and other workers in the dispensary, who should be afforded opportunity for training and for advancement in recognition of their service. The responsibilities of the dispensaries have in many instances not been fully realized nor have their opportunities that lie in the fields of preventive medicine, as well as in the amelioration of social conditions been appreciated, although the possibilities along these lines were pointed out half a century ago.

In May, 1868, the New York *Evening Post* published an account of the dispensaries in New York City, giving a brief history of their development, management, and economic value, and concluded in the following manner: "The dispensaries do their greatest service in the prevention of disease. The patients they care for form but a small part of their annual reports; those they assist in escaping a long and lingering sickness are by far the greater part of the whole number treated. The promptness with which aid reaches the sick poor is the crowning glory of the system. Disease is treated in its incipient stages, and death held at bay beyond the threshold of many a crowded tenement, by the immediate attention patients are able to get through this system. . . . The dispensaries are Boards of Health in miniature, averting thousands of physical ills, quietly and unostentatiously, that could never be reached in any other way. They were organized to benefit the poor, but, like all successful efforts to improve the condition of a single class, it has been found that their blessings fall, in a different form, upon all other classes."

At the time this was written, there were in New York City but few dispensaries and their work in the field of disease prevention lay chiefly in vaccinations against smallpox. With the increased opportunities at command at the present time in the field of both preventive and curative medicine the responsibilities of the dispensaries have increased manifoldly. They can become institutions for efficient medical diagnosis and treatment, public health centers in their respective neighborhoods, and can afford valuable training facilities to physicians, nurses, social service, and other workers.

Thus far they have failed to develop to the fullest extent their medical and educational opportunities.

In this brief summary are outlined only a few of the possibilities of organization which in the judgment of the Public Health Committee would enhance the efficiency of the dispensary as an important medical and social agency in the community.

VI. Reduction in Waiting Time.—To begin with, the long periods which patients are made to wait prior to admission to the clinic must be reduced. This can be accomplished either by a system of appointments, the feasibility of which has been demonstrated by the American Red Cross Clinic for Children at La Havre, or by the principle of limitation of numbers being more generally adopted. Either of these procedures not only reduces the patient's waiting time, but what is perhaps more important, prevents the swamping of the clinic physicians with numbers of patients which they cannot possibly take care of adequately.

VII. Diagnostic Clinic.—Another present day dispensary practice, that of assignment of patients to the several departments by lay registrars on the basis of the complaint of the patient, must likewise be remedied.

It is suggested that with the exception of conditions where the diagnosis is obvious, such as simple wounds or fractures, or where the disease or complaint is trivial or transient, such as common colds, all new patients in need of a general examination should be referred to a diagnostic division and, after an examination, assigned for treatment to the appropriate departments.

The physicians in the several departments would serve in the diagnostic division on a rotation basis. In this way the patients would receive the benefit that accrues from medical team work and the physicians would have a much better opportunity for a complete study of patients than exists under the present form of organization. Consultants of broad experience and recognized ability should be associated with and should actively participate in the work of both diagnostic and therapeutic departments.

VIII. Equipment.—In order to make the services in dispensaries as attractive as possible for physicians, and in order that the patients may derive

the greatest benefit from medical skill, it is imperative that the dispensaries be equipped with all the modern facilities for diagnosis and treatment of disease. Very many institutions have meager laboratory and *x*-ray or fluoroscopic facilities. The hospital laboratories on which many of the out-patient departments have to depend are too overcrowded with work for hospital patients to assume all the burden that proper medical work in the dispensaries would impose upon them. In addition to the lack of adequate laboratory equipment, the dispensaries are seldom equipped with therapeutic workshops and facilities for hydro-, mechano,-thermo-, and electrotherapy.

IX. Remuneration of Dispensary Physicians.—Even if all the necessary physical facilities were provided in the dispensary, it would not attract physicians for continued and sustained application if there were no other benefits to be derived from dispensary practice. Remuneration, even though nominal, affords a stimulus to a more conscientious performance of work, and makes possible a better discipline in the institutions. But what is even more important for the efficiency of the service is a medical organization correlating the dispensary service with that of the hospital, such as is already in vogue in the best institutions and should be adopted by the others. The essential features of a correlated dispensary and hospital service are herewith suggested.

X. Correlation of Dispensary and Hospital Service.—The medical organization of out-patient departments which are connected with hospitals should be divided into two main branches corresponding to that of the hospital, namely, medical and surgical. The medical division of the hospital and that of the dispensary should be under one director. Likewise, the two surgical departments should have common direction. The specialties in each branch should be differentiated in accordance with the policy of the responsible director and in accordance with the best interests of the medical and administrative organization of each institution. The out-patient service should be graded. The appointment to the lowest grade in the out-patient department should be made on a probationary basis of three or six months, and after a successful trial the probationer should, upon the recommendation of the Chief of Clinic and with the approval of the Board of Trustess, be appointed a member of the dispensary staff in the lowest grade. Upon the completion of a period of satisfactory service he should be promoted to a higher grade and whenever the conditions warrant, should be made a member of the lowest grade of the visiting staff of the hospital. A rotating service for the junior members of the visiting staff of the hospital, allowing a combined service in the dispensary and in the hospital is beneficial to hospital and dispensary alike.

Whenever such an arrangement exists, it affords physicians a stimulus to enter dispensary service; it adds to the experience of physicians, many of whom, on account of the limited facilities of hospitals, do not get the benefit of hospital association except during the one or two years of internship, and it gives to the hospitals a broader opportunity of choice of the visiting staff. A universal adoption of such a plan would be welcomed by the profession, and it would obviate to some degree, perhaps, the necessity for paying salaries to dispensary physicians. The opportunity for promotion to hospital rank counts for more than a salary reward for a routine day-to-day drudgery without hope for promotion.

In detached or independent dispensaries, where such a plan of organization could not be effected, arrangements with medical schools for organizing post-graduate instruction could perhaps be made, in order that the whole field of clinic work of this city should be permeated with the spirit of research and teaching, and in order that all existing facilities should be put to the most useful purpose.

The study of medical records has revealed the fact that the special institutions devoted to the treatment of particular conditions are almost invariably superior in their work to the corresponding branches of the general dispensaries. It seems therefore important that in making plans for the development of New York as a great medical teaching and research center, that the facilities and clinical material of the special institutions should be correlated and utilized to the fullest extent.

XI. Medical Records.—Adequate medical records prepared in a certain standard way and *legibly* written are one of the prime essentials of conscientious performance of work and of a scientific utilization of the clinic material. Under existing conditions, where the physicians in the majority of instances are required to write histories in the rush of clinic work, and where there is no supervision over the keeping of such histories, and no scientific or administrative stimulus for keeping them, the medical histories in very many instances are little more than worthless. Often the essential findings of the physical examination and the ancillary laboratory tests, or the character and method of treatment, are not recorded.

The analysis of the thousands of medical records obtained from a large number of institutions, although inadequate as an exact portrayal of medical work, indicates, however, that in very many instances dispensary work is of a slipshod character.

General physical examinations were found to be recorded for less than one-fifth of all the cases examined. For certain conditions such a procedure is probably unnecessary. In many others, however, the failure to make an adequate general physical examination is a serious omission and indicates to what extent the dispensaries could be improved if their responsibilities as agencies for the prevention of incipient disease and the discovery of remedial defects were fully realized. Then, again, the fact that the number of diagnoses recorded on the medical histories exceeds the number of physical or local examinations and the number of laboratory tests would indicate that the diagnoses are often forced without sufficient warrant. Even in cases diagnosed as nephritis, for example, records indicate that urinalysis was made in only 66.7 per cent. of instances. Among the cases of syphilis studied, in only 50 per cent. was an indication found that the patient had been given proper treatment.

For the efficient functioning of the clinics it is desirable that Clinic Staff conferences should be held regularly and cases reviewed. The members of the staff should be urged to study intensively certain series of records and make analyses of them for presentation, discussion and publication.

XII. Clinic Secretaries.—Another important factor in increasing the efficiency of the clinic is the despatch with which patients are prepared for examination. There are few institutions in this city at which clinic secretaries, as they are called, are employed. Wherever the experiment has been tried, whether with paid or volunteer workers, it has proved to be of great value. It is very important that clinic secretaries be generally employed as adjuncts in the discharge of clinic procedure. Many volunteers could be secured for the service from among those in the schools for social service, for whom such an experience would be of invaluable assistance in their future careers. A certain number of paid secretaries will, under any conditions, be necessary in the clinics in order to train volunteers and facilitate the work of the physicians, and to spare the patients a great deal of waste of time and effort and also their occasional disappointment and discouragement.

XIII. Follow-up Service.—One of the tests of a dispensary's efficiency is the hold it exercises over its patients, for unless patients return for treatment until discharged a great deal of the effort and money expended has been lost. As matters stand, the return visits in some of the departments of the clinics are very few. In certain departments, like the tuberculosis, venereal disease and children's, efforts are being made to bring the patients back through the follow-up system, which in the majority of institutions consists in notifying patients who fail to come on an appointed day that they should return to the clinic. Only in certain institutions are the patients visited by the agents of the dispensary and urged to come back. There are very many reasons for the failure of the patients to return. They sometimes get discouraged, very frequently again, the symptoms which in the first instance drove them to the dispensary disappear, and it is not evident to them that they should continue treatment. In this study it has been shown that the majority of the patients gave "pain" as the chief symptom which prompted them to seek medical advice. It is essential for an efficient clinic to have an adequate number of workers who would be able to impress the patients with the importance of continuing treatment, even when the distressing or annoying symptoms disappear.

The number of cases of syphilis or gonorrhea which remain under treatment until discharged by the clinic is almost negligible, and no systematic efforts have been made to examine the families of the infected patients. In this respect the experience of tuberculosis clinics, where efforts in that direction have become a part of the routine of procedure, may be pointed out as a possibility for larger prophylactic opportunities of the venereal disease clinics. It is imperative that these clinics have larger physical facilities, as well as more clerical, nursing, and social service assistance, in order that they may take a proper part in the campaign for the eradication of venereal disease.

XIV. The Nursing Organization.—The nursing personnel of dispensaries is generally inadequate. The nurses are chiefly found in the children's, gynecological, surgical, and tuberculosis departments. Other departments are handicapped by lack of nursing assistance. Moreover, the nurses are frequently called upon to do other than purely nursing duties, and their assignment to the dispensary is often contingent upon the needs of the hospital. The practice established in certain institutions where a part of the course in the training school for nurses is devoted to dispensary work should be generally adopted and arrangements made in such a way that each of the pupil nurses would have several months' experience in the dispensary, which would be of great value to her. The pupil nurses should remain under the direction of a head nurse designated by the training school for the direction and instruction of the pupils. If such an arrangement could be effected in all the outpatient departments connected with hospitals maintaining a training school, the nursing service in dispensaries could be made much more adequate and economical than it is now, as the number of graduate nurses should be reduced to a minimum of one in some of the departments.

XV. The Social Service Department.—One of the most important adjuncts in a proper dispensary organization is the Social Service Department which should exist in connection with every dispensary.

The social service department could best do its work if it were in close cooperation with the admitting and diagnostic departments of the institutions. The patient's first contact should be, either with the social service department. where, upon rapid questioning, certain facts required by law would be ascertained about his social history, before he proceeds to the diagnostic or other departments of the institution, or this function could be performed by a proper registrar who, when directing the patient to the diagnostic clinic, attaches to his history sheet a slip to be returned by the physician with a check mark indicating whether or not the services of the social service department are required in the case. Such a routine procedure would automatically call the physician's attention to the availability of social service. Likewise a method should be worked out whereby reports on cases referred by physicians would automatically be sent to them as soon as available.

The social service department has become recognized as an important part of the dispensary and hospital organization and should be administratively incorporated as an integral part of the institution. It should be responsible before the Board of Trustees just as the other departments are, and all funds that are collected for its maintenance, if there be any special need for soliciting funds for any special department of an institution, should be placed in the treasury of the institution and paid out to the workers in the same way as salaries in other departments. There is an advantage, however, in having advisory committees of interested persons to discuss cases and to bring all the outside points of view and facilities available to assist in the work. On such committees, however, there should be representatives of the Boards

of Trustees, the administrative heads, such as the superintendent, the head of the training school for nurses, and also a representation from the several departments of the medical organization.

The work of social service has as yet not reached a plane where it can be said to be standardized in its aims and methods. It is still in a formative state. There is need for a concentration of effort on the part of all those interested to secure a crystallization of function and procedure.

XVI. Districting the City for Clinic Purposes.—In order that the dispensaries may become what it is possible for them to be, namely, important medical, public health, and social centers in the community, in addition to a reform of the present point of view and of the present organization, there is need of a better public appreciation of the scope and function of the dispensary and of a regional division of the city with regard to dispensary service.

The first could be accomplished through proper publicity on the part of the dispensaries, and by reports more informing than those published by most of the institutions. In the reports the work could be presented and analyzed in an interesting and instructive way, and the costs per patient or per attendance figured in accordance with an accurate and uniformly applied system.

The districting of the city for dispensary purposes may be difficult, because of the uneven distribution of the institutions and because of the needs of teaching clinics which do not desire to be restricted. In addition, there are a number of special institutions which cannot easily be included in any plan for the division of territory; likewise, denominational institutions might find it difficult to join in a district arrangement.

The advantages which would, however, accrue from a regional distribution of responsibility make it desirable to try such an arrangement. At first perhaps certain departments could organize their work on a district basis, following the successful example of cooperation on the part of the tuberculosis clinics. The pediatric, venereal disease, obstetrical, social service, and preventive medicine departments might find it most advantageous to adopt the district division of the field. Other departments might follow later, if these experiments should prove satisfactory.

The successful experience of the Association of Tuberculosis Clinics in raising the standard of equipment and procedure is worth while considering, particularly in connection with the venereal disease clinics, in which the variations in standards and records are so great at present as to render comparisons of their work of limited value. With a pooling of interests, and a uniform system of reporting and of scoring, great improvement could be expected.

XVII. Educational Opportunities.—The dispensary is destined to play an important part in the movement for disease prevention and public health education. Its opportunities are very large. People applying for relief to the dispensary are more in a mood to accept and follow hygienic advice than is the average person when in good health. There is a large number of dispensary patients whose condition could be remedied by a proper hygienic regimen and sanitary supervision. There is a need for a department of preventive medicine in many of the dispensaries, a department which would be responsible for the educational literature given out to patients, for classes in corrective exercises, in dietetics and such other group activities as require sanitary direction and supervision, and which would also be responsible for health exhibits at the clinic, moving pictures, and lectures; in other words a department which will make the dispensary a Health Center of its neighborhood.

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THE BARBAROUS CUSTOM OF SMOKING.

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THE world war is responsible for many changes in our social and economic life and there is no doubt that, due to its stimulus, national prohibition became a fact. The tendency in this direction has long been manifest but it required the excitement incident to the great conflict to secure the necessary legislation and to reconcile the people themselves to accepting national prohibition as a necessity.

One hears on all sides now the query, Will tobacco be next to go? and it is but natural that tobacco should loom up on the horizon, assume a position of greater importance and command more attention than ever before. The war has served to bring tobacco into the limelight and it may be interesting for us to inquire regarding its place in a civilized community, and the reasons for its almost universal use, before arriving at any hasty conclusions.

During the war, the demand for "smokes" for men in the service was enormous. Tobacco funds, subscriptions and donations, were sought from one end of the country to the other. Newspaper and periodical waged active campaigns for funds and with much success. This demand was not felt in the United States alone, but in all the belligerent nations similar campaigns were carried on, and even in the few neutrals the need for the sedative and soothing effects of Lady Nicotine were quite manifest.

This unprecedented demand was recognized by the government and the entire output of factories in some cases was taken over and sent directly to men in the service.

However, all this activity was by no means unopposed. There was much active criticism and opposition to the campaign on the part of many individuals, societies, and organizations. The harmful effects of the promiscuous use of tobacco were pointed out as well as the danger of encouraging and spreading a habit which was variously characterized as wasteful, extravagant, and unnecessary.

The opposition, however good a case they had, nevertheless appeared to be in the minority and the longer the war lasted the feebler became their protestations.

The fact remains that large amounts of tobacco were sent across to men in the service and equally large amounts consumed in camps on this side; in fact so great was the demand from these men that civilians in many cases found the weed difficult to obtain.

Now that the war is over and the troops are returning to civil life, what has been the effect of catering to this demand? Have the opposition proved their contentions? Has the promiscuous distribution of tobacco had a harmful effect? Were men rendered unfit for service by over indulgence in tobacco?

To answer these questions, the best evidence obtainable no doubt comes directly from the officers and men themselves.

That tobacco filled a much felt want by the men, there is abundant evidence to prove. That this craving was greater than would have obtained had these men remained at their usual occupations, must be admitted.

Let us analyze this demand. Upon entering the service the average man is surrounded by greater restrictions than he was accustomed to in civil life. His entire existence is subject to regulations. He arises in the morning, and goes to bed at night at a set time. His meals, his hours of drill, of recreation, and of liberty are fixed and vary but little from day to day.

The service means a complete change in many cases of habits and environment, the breaking up of family ties, and finally the inculcation of that sometimes elusive but necessary quality, discipline. It requires a readjustment of the individual to an entirely new situation in life. The ease with which this adaptation to a new environment is made has an important bearing on the future course of the individual.

It is here that the solace obtained from tobacco has a beneficial effect. It provides an outlet for pent-up emotion; it soothes, reconciles, and satisfies. A little philosophy inspired by a friendly smoke serves to ease an intolerable situation and the harshness of life appears less harsh when viewed through the haze of a fragrant cloud of tobacco smoke. When an individual can bring himself to say, "after all it might be worse," it is not necessary to surround him with guards to prevent suicide or desertion. And there is abundant evidence to prove that tobacco helps greatly to inspire such an attitude and does it with the minimum of after-effect.

Again, take the situation of the man at the front and about to get his first taste of shell-fire; awaiting for the order to advance, held in reserve, but likely to be called up any minute, with shells dropping about and an occasional comrade picked off, but still waiting. Inaction, having the appearance of calmness and yet great turmoil within, repressing emotions which struggle for expression; under these circumstances the cigarette becomes priceless. He selects one with great care, concentrates his entire attention upon preparing it. He lights it carefully, inhales deeply, watching the glowing tip intently. He blows out a large cloud of smoke and feels easier. He is doing something, he has found an outlet and this activity lessens the tension.

Again, after a hard day's work, tired, with food prepared with difficulty, depressed and somewhat homesick, ask the doughboy or sailor what he wants and invariably the answer is, "a smoke.'

Tobacco is a means of diversion which far from interfering with a man's performance of duty, attaches him to it and renders it less burdensome. In a campaign where a man's resources are so limited, there is nothing so trifling as to be devoid of value. And the testimony of men who have seen service is overwhelmingly in favor of its use.

But granting that it produces a good mental effect under these conditions, what about its effects on the physical man?

Also, now that the war is over and the men are returning to their more or less peaceful pursuits, why continue its use, in fact why not actually prohibit its use?

The effects of the habitual use of tobacco have been discussed from every conceivable angle and with much minuteness from the time of its first introduction, some investigators contending that it is entirely harmless when moderately used, while others ascribe numerous evils to its use. One French writer has gone so far as to attribute the defeat of his nation in the war of 1870 to the prevalence of cigarette smoking.

The effects of tobacco smoke are described by most investigators as being due practically entirely to the nicotine contained in it. There are other toxic constituents, but their quantity is so small as to be practicable negligible. The effects of nicotine vary considerably in different individuals. Considerable tolerance is acquired by continued use so that moderate doses soon lose all their unpleasant acute effects. However, absolute tolerance is never reached.

Increased pulse rate, heightened blood-pressure, irritable heart, and toxic amblyopia are a few of the untoward symptoms ascribed to the use of tobacco. And yet considering the large number of smokers we must admit that it is very rare that an individual seeks relief for one of the above conditions.

Let us consider the reasons for the use of tobacco in civil life. Why do people smoke? What is the basis of this almost universal craving which tobacco seems to satisfy? Will the withdrawal of tobacco entirely lead to any untoward effects?

If we smoke entirely for the physiological effects of the active principles of tobacco, which are absorbed during the act of smoking, we could obtain these active principles in pill or tablet form and administer them much more cheaply, accurately, and efficiently than by the act of smoking.

Yet who would be satisfied with a tablet containing his usual dose of nicotine instead of his satisfying after-dinner cigar? What soldier awaiting the order to advance would be soothed and calmed by a nicotine pill instead of his friendly cigarette?

We must go back further than the physiological effect of the drug itself to explain its action. The pleasure derived from a smoke is dependent probably more on the act itself than on the physiological action of nicotine and its allied alkaloids.

The pleasurable effect begins even before the

cigar or cigarette is lighted. The smoker carefully selects and inspects his cigar and the preparation of the tobacco for smoking receives much attention. All these things reflect the state of mind of the individual. Then the sound of the lighting match, the sight of the curling smoke and the glowing tip, the aroma of the burning leaf, the familiar taste, the touch and feel of the cigar or cigarette; all of these factors combine to produce the pleasurable effect. The appeal is not to one sense but to all the senses, and the psychic effect resulting from this stimulation of the senses is far more important to the smoker than the physiological effect of the nicotine absorbed. Destroy or impair any of the special senses and the effect of tobacco becomes immediately interfered with. It is a matter of common knowledge and observation among smokers when suffering from a cold which impairs the senses of taste and smell, that they derive little enjoyment from smoking.

Smoking in the dark or when unable to see the smoke or the glowing tip is most unsatisfactory. In other words, while the action of nicotine and the associated active principles of tobacco is probably in some degree responsible for the effect of tobacco, it would appear to be nearer the truth to say that men smoke in spite of this action and not because of it.

The increased pulse rate and heightened blood pressure noted in some cases following the use of tobacco and ascribed by investigators along this line to nicotine absorbed, are not conducive to pleasurable sensations on the part of the individual concerned and we are safe in assuming that it is not for this effect that he indulges in tobacco.

The effects which appeal more to the smoker are soothing, sedative, tending toward relaxation, contentment, and mental rest. He appears less acutely aware of his own shortcomings and more tolerant of the shortcomings of his associates.

The history of tobacco, its discovery, and use in the New World, its introduction into the Old World, and the manner in which the habit is spread form an interesting chapter and one which is well worthy of investigation. Its use was unknown to Europeans before the discovery of the New World, but following its introduction the habit spread with great rapidity despite the most vigorous means taken to stamp it out. Among the aborigines of America the use of tobacco was widely prevalent.

The practice of smoking was observed by the companions of Columbus on their first voyage. It was first introduced into Spain by some of the followers of Columbus on his second voyage, who returned about 1512. Introduced into the British Isles about 1560 it was not until 1586 that the plant and its use were widely known and that Raleigh distinguished himself by growing tobacco on his estate and himself smoking publicly.

From Spain and England the use of tobacco spread by degrees over all the known world. In America the culture of tobacco began in Virginia with the earliest settlement of the colony. It is recorded that in 1615 the gardens, fields, and even the streets of Jamestown were planted with tobacco, which immediately became, not only the staple crop, but the principal currency of the colony. In 1619 "ninety agreeable persons, young and incorrupt," and in 1621 "sixty more maids, of virtuous education, young and handsome" were sent out from London to provide wives for the colonists. The first lot of these ladies was purchased by the colonists for 120 pounds of tobacco each; the second lot brought 150 pounds each.

Nevertheless, there is evidence to show that the early explorers of the New World regarded the custom of smoking as the extremity of barbarism. Nor have advocates of this view been lacking from that day to this. But, in spite of all objections, tobacco has extended its reign over the entire earth. It is an important source of revenue to the most enlightened of governments; its devotees include men of all ranks and all races from the Eskimo to the Central African savage.

However, this did not come about without vigorous objection by Church and State, and severe penalties and punishments were tried in many countries to stamp out the habit, but without success.

James I was particularly bitter in his denunciation of the use of tobacco. He raised the duty from twopence per pound to the enormous sum of two shillings and tenpence. In 1619 he commanded that no planter in Virginia should cultivate more than 100 pounds, and in 1624 he prohibited the planting of tobacco in England and Ireland. A portion of his famous "Counterblast against Tobacco" reads as follows: "A custom loathsome to the eye, harmful to the braine, dangerous to the lungs, and the fume thereof nearest resembling the horrible Stygian pit that is bottomless."

It is an historical fact that both James I, Charles I, and Charles II as well as Cromwell had the strongest dislike of the Indian weed and lost no opportunity to suppress its cultivation and use.

Pope Urban VIII excommunicated all who took snuff in church.

Christian IV of Denmark had all smokers and snuffers publicly whipped.

The Chinese and Japanese punished smokers by whippings and maimings.

The Russian rulers cut off noses and the Turks stuck pipes through the noses of smokers and exhibited the victims in public. Amurath IV of Turkey beheaded everyone found guilty of smoking.

In spite of such powerful foes, the custom increased to such an extent that when William ascended the throne, it was said to be almost universal.

Penalties are still imposed on the users of tobacco in the form of taxes which constitute an important source of revenue to the government.

Thus, this habit, learned from the savage, came gradually to be accepted as the natural order of affairs, and so the barbarous custom of smoking has become almost a universal habit of civilized nations and has created an ever increasing demand for the weed.

The average individual begins the use of tobacco in early adult life. The reasons for beginning its use vary with the individual, but when sifted down invariably fall into the same class. The individual smokes because he observes other people smoking and these people appear to derive enjoyment from it. His companions and associates use tobacco and it is apparent to him that they derive considerable satisfaction from its use. He goes to dinner and

following dinner he observes his host and fellow guests select and light their after-dinner cigars. They sit back in their chairs and blow fragrant clouds of smoke toward the ceiling. They relax and appear to be at ease and the observer, noting these phenomena, is tempted to avail himself of the weed. From constantly associating with smokers and with tobacco readily obtainable, it is but natural that he should acquire the habit.

The fact that the first few attempts may produce far from pleasurable sensations does not deter him. The habit once acquired in the great majority of cases continues through life.

In times of stress he resorts to it as well as in idle moments. For the tired business man the after-dinner cigar is often the prelude to an hour of relaxation, recuperation, and mental rest. For the laborer after a hard day's work the solace of the evening pipe tends to soothe the ache of tired muscles.

The tension under which we appear to live, the continual striving for gain, for advancement, in many cases for even the necessaries of life, the petty annoyances, grievances, and worries which enter our daily life; the restlessness, the lack of contentment which is everywhere manifest, all these factors create a demand which must be satisfied.

For some alcohol supplied the demand, for some drugs, for others the theatre, athletic sports, moving pictures, motoring, and hunting.

But the demand exists and there is abundant evidence to prove that tobacco answers this demand more universally than any of the other sedatives mentioned, that it reaches a larger mass of people, and that it accomplishes its purpose with the minimum of after effects.

We have made national prohibition a fact, and wisely so; we have surrounded habit-forming drugs with the most stringent laws that legislators have been able to enact. In our zeal for reform let us not allow the pendulum to swing too far and attempt to prohibit the use of tobacco without a careful analysis of the place it has come to occupy.

There are some individuals who cannot use tobacco, there are some who should not use it, there are some who use it to excess and who suffer in consequence. There is on the other hand a large army of moderate tobacco users, who indulge for years without appreciably bad physical effect and with good mental effect. Each individual must be his own judge as to whether he can use tobacco safely and also as to the amount he can tolerate.

There can be little doubt that tobacco helps to ease difficult situations in civil life as well as at the front. It provides an outlet for many individuals, readily available, a sort of safety valve.

You are held up by traffic congestion on the way to your office; you puff your cigarette faster while waiting for the line to move; your decision is necessary on some important undertaking; you think it over with the aid of a soothing smoke. Following dinner your host passes cigars, and under the influence of tobacco you feel less restraint, more at ease; you converse better and an atmosphere of well-being and good fellowship is inspired.

Consequently the almost universal character of the habit is not difficult to explain. That its use to excess leads to harmful effects there is no doubt. There is no general rule which can be laid down for all to follow. Each individual knows as a rule when he is exceeding the amount he may safely take. It would appear that it is the abuse of tobacco instead of its use which is responsible for the harm it may do.

Before attempting to legislate it out of existence let us analyze the origin of its enormous demand. Reduce the tension under which we live, relieve the fierce struggle for existence, the crowding, the jostling, the striving for advancement, for gain; provide a means of relaxation, of recreation, and we shall have gone far to supply a substitute.

The tobacco habit may be likened in many respects to the tea and coffee habit. Each may do harm in some cases; each may also be a source of comfort and solace in others. Under ideal surroundings and environment the demand for each would probably disappear. In themselves they cannot be classed as foods, or even as necessities. Many people would no doubt be better off without them. But for a large mass of people they have come to occupy an important place.

Tobacco is used by all races from the most savage to the most civilized, in the frozen arctic regions as well as in the tropics, and by the rulers of nations as well as the lowest subject.

If you class tobacco as a form of dissipation, at least you must grant that it is a mild form of dissipation. If you would deprive the individual of his tobacco he would be justified in making the same demand regarding your tea or coffee.

Before attempting to prohibit its use, take into consideration the social and economic conditions which are in great measure responsible for its demand. Correct these conditions, relieve this demand or provide substitutes and then advocate if you will the prohibition of tobacco.

SOME UNUSUAL SYMPTOMS AND SIGNS OBSERVED IN THE LAST INFLUENZA EPIDEMIC.

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In the recent epidemic of influenza, much was learned as to great variations in the clinical picture which this disease may assume. While the vast majority of cases were similar in their onset and clinical course, others were atypical in their onset and presented during their course many unlooked-for symptoms and complications, often throwing doubt on the original diagnosis until cleared up by further development or laboratory findings. It may be worth while, therefore, especially in view of the expected increase in the number of cases of influenza in the coming months and perhaps years, to record some of the less common manifestations observed in a comparatively small group of cases. This can best be done by reporting the cases in which these rarer symptoms occurred.

Case I.—*Influenza with Intestinal Hemorrhages.*—B. L., female child, aged 6 years. Brother had typhoid fever three years ago; influenza seven days ago. The

patient had measles at the age of two, several attacks of tonsillitis, the last one about one year prior to the present illness. She became ill on the afternoon of February 13, 1919, with headache, sore throat and fever; vomited twice. The child was seen on the evening of the same day and then had a temperature of 103.4°, throat and conjunctiva red, otherwise negative. On the next day the temperature was 101, slight cough and sneezing. Throat culture taken on previous day negative. Urine, faint trace of albumin. For the following two days the temperature was fluctuating between 100-103°, usually higher in the afternoon. The patient felt fairly comfortable except for a moderate cough and some sneezing.

On the morning of the fourth day of illness the temperature was 100.5°, but there were present a few coarse râles over both bases. In the afternoon the patient complained of some abdominal pain, and about two hours later passed a large bloody stool. The blood was bright red and mixed with feces. When the child was seen about one hour later the temperature was 97.6°, and she looked well. She had no air-hunger, no pallor, and the pulse was about 100 and of good quality. Within the following sixteen hours three more bloody stools were passed. The râles in the lungs were not heard at this time, but she had congestion of both ear drums. On the following day (fifth day of illness) temperature was 101°, there was present a small patch of consolidation over the left base, and evidence of congestion over the right base. The blood count at this time was: Red blood cells, 4,200,000; hemoglobin, 67 per cent.; white blood cells, 11,800; polymorphonuclears, 49 per cent.; lymphocytes, 41 per cent.; mononuclears and transitionals, 10 per cent. Spleen not palable nor enlarged on percussion; Widal negative. Two more bloody stools were passed on the next day (seventh day of illness). These were tarry and showed large quantities of blood, both microscopically and chemically.

The lung signs did not change for the next two days, dulness, bronchial breathing, and fine râles persisting. The temperature came down gradually (lysis) and there was no more blood in the stools. On the ninth day of illness there were signs of resolution. The blood count then was hemoglobin 75 per cent., red blood cells 4,400,000 and white blood cells 4,200, differential polymorphonuclears 42 per cent., lymphocytes 53 per cent., mononuclears 5 per cent. Sputum examination showed no blood, no tubercle bacilli, many staphylococci and streptococci, no influenza bacilli. Stool culture, urine culture and Widals negative.

Case II.—*Influenza with Onset of Hematemesis.*—B. S., male, aged 26 years. Became ill on morning of November 14, 1918, with slight headache. Was on his way home when he vomited a large quantity of coffee-ground material. After he had reached home and was put to bed I saw him and, while being examined, he again vomited coffee-ground material well mixed with milk curds. The temperature at that time was 102.4°, pulse 100, respiration 18. There was nothing in his previous history pointing to gastric or duodenal ulcer, no evidence of bleeding from nose or throat, no cough and no tenderness over abdomen. The rest of physical examination also negative. On November 15 passed a tarry stool which was positive for guiaic, and had a temperature of 103.6°, congested eyes and throat and complained of headache. Blood count at this time: Red blood cells 4,800,000, white blood cells 5,800, polymorphonuclears 51 per cent., lymphocytes 46 per cent., mononuclears 3 per cent. November 17, temperature 104.8°, pulse 104, respiration 30, looked fairly ill, moderate dulness and fine moist râles both bases, especially left. November 20 (sixth day of illness), signs and symptoms same. November 24 (tenth day of illness), left side clearing up, moderate dulness only. November 27, temperature normal, no signs. The sputum was examined daily, nothing found. The patient made an uneventful recovery.

Case III.—*Influenza Followed by Acidosis and Toxic Vomiting.*—Mrs. W., aged 26 years. Married three years. gave birth to twins two years ago. One child died twenty-four hours after birth; probable cause, premature birth (it weighed 4 lbs.), the other twin living and became ill two days after the onset of the mother's illness, developing influenzal bronchopneumonia and double otitis media. Menstruation regular every twenty-eight days; none for past three months on account of pregnancy.

The patient became ill on January 28, with sudden onset, sore throat, chilliness, and dry, irritating cough. The physical examination was negative except for temperature and markedly congested throat. The temperature was irregular for the next four days, ranging between 100° and 103.6°. On the fifth day of illness the temperature was 102.8°, pulse 78, respiration 26, cough less severe, but expectorated bloody mucus. Examination at this time disclosed a small patch of dulness, bronchovesicular breathing, and fine moist râles at about the level of the right angle of the scapula, extending totward the spine. Blood count on that day showed white blood cells 9,000, polymorphonuclears 60 per cent., lymphocytes 32 per cent., and mononuclears and transitionals 8 per cent. The urine showed the presence of albumin and a few hyaline and granular casts.

On the sixth day of illness the temperature was lower, 101.5.° The signs did not extend, but remained stationary for the next seven days, even after the temperature had come down to about normal, which occurred on the tenth day of illness.

On the eleventh day of illness the patient began to vomit and vomited continuously regardless of the nature of the food ingested. The vomiting became progressively worse within the next forty-eight hours, so that at the end of the second day, after vomiting began, she could not retain as much as a teaspoonful dose of water or bicarbonate solution. Introduction of water by rectum did not affect the rapid dehydration. Urine examination showed a heavy reaction for both acetone and diacetic acid, but no albumin or casts. It was decided, therefore, to take her to Lebanon Hospital, with a view of giving her alkalies and carbohydrates subcutaneously or intravenously. The introduction of 800 c.c. 5 per cent. bicarbonate solution had no effect on the vomiting and the patient began to sink rapidly. I then consulted the attending obstetrician. who, after seeing the patient with me, advised a rapid emptying of the uterus, which was done under a light anesthesia. Three hours after the interruption of the pregnancy the patient began to retain fluid and made an uneventful recovery.

Case IV.—*Influenza with Acute Nephritis and Suppression of Urine in a Patient Suffering from Pulmonary Stenosis and Paroxysmal Tachycardia (Auricular Fibrillation).*—N. H., male, aged 21 years. Mother and one brother died of tuberculosis, mother at the age of 43 years and brother at the age of 20 years. One brother ill with mitral disease, one sister with chronic pulmonary tuberculosis.

The patient has been under medical supervision since he was about 12 years of age. He was told that he has heart trouble. He came under my observation about four and one-half years ago, when he was suffering from slight dyspnea on exertion and general weakness. My examination at that time revealed the presence of a feminine type of development as regards general contour of body and distribution of hairs, and infantile genitalia. He also showed the presence of a moderately enlarged heart, especially to the right, a fairly diffused apex beat and slight pulsations in second and third interspace with each heart beat. On auscultation there was heard a loud rough systolic murmur over the base of the heart, with maximum intensity over pulmonary area and thrill in the same place. The murmur was transmitted to the large vessels of the neck. He did fairly well for a while, but developed, within the last two years, attacks of great weakness which are apt to come on almost any time. These attacks are associated with a very rapid, thready, and irregular pulse. The rate varies from 150 to 200 and lasts from two to four hours. The last attack occurred about three months prior to present illness and lasted five hours. During these attacks patient is pale and looks greatly distressed. He is perfectly conscious but very weak, and talks in a whisper. He is usually covered with cold perspiration and toward the end of an attack the pulse becomes more irregular, but of better quality, and usually returns to normal wtih a few deep inspirations.

Present Illness.—Acute onset with headache, very sore throat and high fever, 104.2°, epistaxis on the second day of illness. On the third day of illness he developed

complete anuria, which lasted about thirty-six hours. On the introduction of a catheter, after thirty hours of anuria, about 4 c.c. of bloody urine was obtained. During the period of suppression of urine he vomited three times and had slight edema of eyes and extremities, but had no twitching or convulsions, no diarrhea, and mind was perfectly clear. On the fifth day of illness he began to pass urine and passed 20 ounces of bloody urine, but continued to pass blood in his urine for about thirty days.

On the fourth day of illness, while in a warm pack, he developed an attack of tachycardia as heretofore mentioned, lasting about sixteen hours. He had a very rapid, thready, irregular pulse. The radial pulse was about 130, while the apex beat rate was almost 200.

On the fifth day of illness patient developed an extensive urticaria, which lasted for about ten days. The rash was especially marked on the extremities and was extremely itchy. I was inclined to attribute this to the quinine which he was getting early in the disease. This patient ultimately recovered, but he still has an occasional trace of albumin, while during the height of the disease he had casts, hyaline and granular, as well as pus cells in addition to the blood.

Comment.—In this small group of cases hemorrhage from the stomach, from the bowels, acute nephritis with suppression of urine, urticaria (which may or may not be a drug rash), acidosis with toxic vomiting, indicating the protean nature of this disease, were observed.

It is quite obvious how difficult it may at times be either to make a diagnosis of or to rule out influenza, in obscure cases. Until the etiology of this disease is established more firmly—as it is in the case of typhoid fever or tuberculosis, where, when in doubt, we may call on the laboratory worker to isolate the causative organism—we are in a very similar position regarding influenza as were our predecessors of some thirty years ago, when malaria was the most frequent diagnosis made, especially in acute febrile diseases.

1220 Grand Concourse.

A NEW METHOD OF TREATING REMOTE MANIFESTATIONS OF GONORRHEAL INFECTIONS.

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In July, 1919, our attention was called to the treatment of gonorrheal arthritis by means of a non-specific protein. Up to this date we had treated all such cases by means of vaccines, internal medications, and local measures.

Upon investigating the subject of non-specific protein therapy, it was found that the *Bacillus typhosus* was used by the majority of investigators in this field. All reported a reaction following the intravenous injection of the emulsion. The patients were very sick for from 24 to 48 hours, having severe chills, high temperatures, and increased leucocytic counts. This reaction was essential in effecting a relief or cure of the existing arthritis.

At the Broad Street Hospital, New York City, a ward has been set aside for the care of venereal patients. Here a number of cases of gonorrheal arthritis, epididymitis, orchitis, prostatitis, and chronic gonorrhea are treated regularly. Beginning in July, all cases of arthritis were given intravenous injections of 20 c.c. of a solution of sodium iodide, 2 gm. to the 20 c.c. This treatment was repeated every four days.

The first case treated responded so incredibly to the injections, that it was thought possible that the drug might not be wholly responsible for the prompt amelioration of the symptoms. It was therefore decided to proceed with a series of patients so afflicted.

After having treated ten arthritis cases, with extraordinary results, the use of the intravenous injection of sodium iodide in other conditions was determined upon. This seemed logical in acute orchitis, inasmuch as many of the joint cases which responded so quickly, were also in the acute stage. Again we were astonished to note the rapid subsidence of the acute symptoms.

Being thus encouraged by the way that the arthritis and orchitis cases yielded, we next proceeded with the treatment in a series of prostatic infections, which also behaved in a manner quite different from that which we had been accustomed to seeing.

By thus extending the field of application of this treatment, we have now records of 100 cases discharged germ free and apparently cured, though no follow-up system was possible in the class of cases treated, who were all seamen.

Before citing cases to illustrate the response to this form of treatment, it should be mentioned that all the usual therapeutic measures were employed in conjunction with intravenous medications.

Case I.—Mr. J., age 24, laborer, came to the Broad Street Hospital on July 10, complaining of pains in both ankles, right shoulder, and neck. He had had an acute gonorrhea two years previously, complicated with an orchitis. He was treated locally for six months, and was discharged as cured. One year ago he began to have trouble in walking, due to pain in his heels. He went to his physician who said he had gonorrheal rheumatism, and was treated with massage of the prostate and intramuscular injections of vaccine. He was slightly improved after six months' treatment and went back to work. Two weeks ago the pain in the heels returned, together with pain in the shoulder and neck. He has been in bed up to to-day, and was brought to the hospital in an ambulance.

July 12, he was given an intravenous injection of sodium iodide; forced fluids; massage of the seminal vesicles; and hot colonic irrigations twice a day. Twenty-four hours after the injection, the patient said he felt a little better; he could move his right shoulder without pain.

July 15, the patient was given his second injection; the local measures being continued. After the sixth injection the patient was able to get up and about, and showed marked signs of improvement.

Aug. 10, the patient was discharged from the hospital, able to walk without any pain.

Case II.—Mr. S., age 22, seaman, reported for treatment to the Genito-Urinary Clinic at the Broad Street Hospital. He had had a gonorrheal urethritis for two months, and had been treated locally by a physician.

On examination a very small external meatus was found completely filled with pus. A smear showed many gonococci both intra- and extra-cellular. The patient said he had been unable to irrigate himself, due to the small meatus. Further examination revealed a markedly swollen right testicle, very tender, which made walking very difficult.

A meatotomy was performed, the urethra was irrigated and sodium iodide was injected intravenously. He reported back the next day to the clinic and said he had no trouble walking; his testicle was not as

tender as it had been. A second injection was given in three days; eight days following which the orchitis had completely subsided.

CASE III.—Mr. T. H., age 20, English seaman, was admitted to the Broad Street Hospital with an acute prostatitis and orchitis, difficulty in voiding urine and defecating. Examination revealed a large fluctuating right lobe of the prostate which was very tender.

Aug. 30, he was given hot colonic irrigations, put on urotropin, with ice applied locally to the scrotum. An intravenous injection of the iodide was also given. At night the pain was so severe that morphine was necessary. The following day, patient still complained of some pain, but said he felt a little better.

Four days later, a second intravenous injection of sodium iodide was given. That night the patient slept without any narcotics. Two days later, rectal examination showed a much smaller prostate, no fluctuation and no tenderness. The orchitis had also cleared up. The patient was treated for the existing urethritis.

Comparative Rationale of the Action of the Intravenous Injections of Sodium Iodide to the Intravenous Injections of Non-Specific Protein.—In comparing the actions of the intravenous injections of the non-specific protein to that of the intravenous injection of sodium iodide, we arrived at the conclusion that there was much in favor of the latter, both in positive results and in absence of disagreeable features and dangers.

The temperature in patients treated with the intravenous administration of non-specific protein is reported as reaching 105° to 106° in all cases that respond to the treatment. This necessitates the patient remaining in bed or at the hospital for a few days after each injection. Following the intravenous administration of sodium iodide, no patients have had any noticeable rise in temperature. The patients were permitted to be up and about immediately following the injection. This makes office treatment possible without any dangers. The pulse rate is increased in proportion to the temperature in the non-specific protein treatment, whereas there is no change following the injection of sodium iodide.

Blood Pressure: We have at no time noticed any change in the blood pressure following the administration of sodium iodide. The non-specific protein therepy has shown a marked fall in blood pressure, following some injections.

Kidneys: No suppression of urine or any signs or symptoms of acute nephritis were present in any of the cases injected with sodium iodide, whereas cases of acute nephritis have been reported following non-specific protein treatment.

Leucocytosis: Blood counts were made 4 and 12 hours following the injection of sodium iodide without any noticeable change in the leucocytic count. The non-specific protein is said to give a very marked leucocytosis, in fact the cure seems to be dependent upon a rise in the leucocytic count.

Chills and General Malaise: These were never present following injection of sodium iodide.

Conclusions.—1. The intravenous injection of sodium iodide has produced no untoward effects upon the patients so treated and is therefore a good office as well as hospital procedure.

2. The results obtained in acute gonorrheal arthritis, orchitis, and prostatitis demonstrate its value in remote manifestations of gonorrheal infections.

3. An entire dose of the drug was injected into the tissues in one patient. He complained of a great deal of pain for about one hour. There was neither edema nor redness a short time following the injection. The drug therefore, even if not introduced entirely into the vein, will not cause any sloughing.

At this writing, a conclusion as to the manner in which the iodide produces its results has not as yet been determined upon; but in three classes of gonorrheal infection, herein alluded to, the behavior of the patients while thus treated, was in general quite different from that to be expected without it, and reduced their hospital days about one-third.

219 WEST EIGHTY-FIRST STREET.

Medicolegal Notes.

Basis of Physician's Opinion—Medical Works In Evidence.—In an action for injury to the plaintiff's eyes from an explosion of electric light lamps in a street car, due to contact with defective trolley wires, the plaintiff claimed that he was permanently blind in both eyes. A physician was called as an expert witness by the plaintiff, whom he had examined since the action was begun, but had never treated, and he was allowed by the trial court to give an opinion that the plaintiff was totally blind in his left eye, basing such opinion in part upon his examination and in part upon subjective symptoms, or upon what the plaintiff had told him. The Wisconsin Supreme Court holds that this was error, and that a physician who treats a patient may give an expert opinion, based upon the result of his examination and statements made to him by the patient, but not one who does not treat the patient. The reason for the application of different rules to the two cases is stated thus: When a patient submits himself to treatment, he does so for the purpose of curing himself of the malady afflicting him, and he is desirous to do so, and the presumption is that he will tell the truth to the doctor. If he does not, he knows that not only may a cure not be affected, but he may seriously jeopardize his health by giving false information or withholding important information. But when he goes to a doctor for examination for the purpose of having him testify, but not treat him, he runs no risk in giving false information, and the inducement may be to hide rather than to reveal the truth.

Another medical witness was called as an expert by the defendant, and the plaintiff admitted his qualifications to testify as such. On cross-examination he was asked by the plaintiff's counsel if he considered Oppenheim an authority on optic atrophy. On receiving a qualified negative answer, and the statement that the witness had read a part of Oppenheim's works, he was asked if he remembered having read a passage from one of Oppenheim's works, which was read to him. He stated that he could not recall having read it, and that he could not deny that it was a correct statement of what is generally taken to be the effect of dazzling on the human eyes by men skilled in the medical profession. It was held that under the decisions of the Wisconsin Supreme Court the admission of this evidence was erroneous. The reason given is that if under the guise of finding out a witness' familiarity with the contents of medical works you can read extracts therefrom to him and inquire if he is familiar with them, then you can get the contents of every medical book before the jury. This the Wisconsin court has declared cannot be done. In Zoldoske v. State, 82 Wis. 605, 52 N. W. 786, it said: "Text-books or scientific works cannot be read in evidence to the jury, and the rule cannot be defeated or evaded by getting their contents before the jury by having a witness testify to what they contain." The court added that it cannot be done by asking him if he is familiar with such and and such a passage, reading it; for that places the contents of a medical book just as effectively before the jury as though the book itself were introduced.—Bell v. Milwaukee Electric Ry. & Light Co. (Wis.) 172 N. W. 791.

Expert Evidence.—Experiments as to Gunshot Wounds.—In a homicide case, where the defense was suicide of the deceased, the Maryland Court of Appeals held that it was proper to allow a physician to use the pistol with which the wound was inflicted, to which he attached a stick to explain his testimony as to the course of the bullet. The postmortem examination had shown that the deceased, a woman, had died from a gunshot wound of the right chest, the ball entering two inches above and three inches to the left of the right nipple, and that the ball went from right to left and from below slightly upwards. There were powder marks on the palm surface of her right hand, and powder grains burned in the wrist of the right hand from explosion, and the white shirt waist which she wore was burned, but to what extent was not shown. It was held proper for the physician, who has qualified by evidence that he had examined other gunshot wounds and had made experiments, to testify regarding the effect of experiments made by him with the same revolver and ammunition which caused the deceased's death in order to show the distance between the deceased and the pistol with which she was killed. These experiments were held admissible as tending to refute the testimony of the accused that the wound was self-inflicted under the rule, based upon the authority of many cases in different states, that experiments tending to show that an occurrence could not have happened in the manner in which it is alleged to have happened are competent evidence in both civil and criminal cases. It must, however, be shown that such experiments were conducted under similar or substantially similar conditions as those existing at the time of the occurrence in question.—Newkirk v. State (Md.), 103 Atl. 604.

Signature of Death Certificates.—In answer to a request for their opinion from the Governor of the State of Rhode Island on the point, the justices of the supreme court of that state are of opinion that persons who have received from the state board of health certificates to practice osteopathy, under R. I. Pub. Laws 1914, chapter 1058, and who have registered under Gen. Laws 1909, chapter 193, in the town clerk's office their authority so to practice, are entitled to sign death certificates, where last in attendance on the deceased, as "physicians registered to practice," within Gen. Laws 1909, chapter 121, section 7, as amended by Pub Laws 1910, chapter 575, section 2.—*In re* Opinion of the Justices, 107 Atl. 102.

Dying Declarations as Evidence.—To render a dying declaration admissible in evidence, in a homicide case, it should be made to appear clearly that it was made under a sense of impending death, and that all hope of recovery was gone. This may be made to appear from what the injured person said, or where, from the nature and extent of his injuries, it is evident that he must have known that he could not survive. It is sufficient if it satisfactorily appears that the declaration was made under a sense of impending death, whether it be directly proven by the express language of the declarant or be inferred from his evident danger, or the opinions of the medical attendants, stated to him, or from other circumstances of the case, such as the length of time elapsing between the making of the declaration and his death. It is for the court to consider from the evidence whether a declaration was made under circumstances rendering it admissible as a dying declaration, and the credibility to be attached to a dying declaration is a matter for the jury.—Allen v. State (Okla.), 180 Pac. 564.

Impairment of Vision—Expert Examination.—In a personal injury case, where the plaintiff had voluntarily exhibited an injury to his head to the jury for inspection, and the defendant moved the court to compel the plaintiff to submit to a physical examination of his head by physicians named by the defendant, it was held error to deny the defendant's request. The courts have uniformly held that, where a plaintiff in a personal injury case voluntarily exhibits the injured part of his body to the jury for inspection, the portion of his body so exhibited becomes an exhibit in the case, like any other object or thing introduced in evidence, and the opposite party has the right to make such inspection of it as will enable him to explain, criticize, or impeach its value as evidence, and to that end have it examined by experts, and these may be of the defendant's own selection. The plaintiff claimed that the sight of one of his eyes had been affected by the wound in his head. The court said that it is a matter of common knowledge, of which courts will take judicial notice, that the question of the impairment of vision is capable of exact demonstration by expert examination, and in the present case, when the plaintiff put his head in evidence and permitted the jury to examine it, unless the eye which he complained of was put out, the jury could in no manner determine the extent of the injury to it, if any, but with the aid of experts the matter was capable of exact determination.—Holton v. James (New Mex.), 183 Pac. 395.

Cross-Examination of Expert Witnesses.—The Missouri courts hold that expert witnesses may be cross-examined, and their opinions obtained, based upon other states of fact, assumed by the party examining them to have been proven upon a hypothetical case, and they may be cross-examined on purely imaginary and abstract questions. Such questions are not only permissible in order to get the opinion of the expert witness upon all the possible theories of the case, but they are allowable, also, to test the value and accuracy of the opinion of the witness himself. Sparks v. Harvey (Mo.), 214 S. W. 249.

Liability Not Determined by Possible Results of Operation.—In an action against a surgeon for personal injuries it appeared that the plaintiff, as the result of a collision, sustained a broken collar bone and a severe injury to the brachial plexus, which caused paralysis of his arm. The defendant treated him for six weeks, after which he went to a hospital and was there unsuccessfully operated upon, the arm being useless at the time of the trial. The plaintiff's claim was "that the defendant carelessly and negligently failed to operate upon the injured parts of the plaintiff's body seasonably, and that he failed to exercise that judgment which he professed to possess in the treatment of the plaintiff's injuries." The Supreme Judicial Court of Massachusetts sustained exceptions to the trial court's refusal to direct a verdict for the defendant. It held to be prejudicial error a charge permitting the jury to consider whether or not "there was a possibility not of entirely remedying the condition of the nerves, but mitigating the consequences in some degree by an operation." The appellate court holds that the defendant's liability was not to be determined by the jury upon consideration of contingent, speculative, and possible results of an operation which might be performed upon the plaintiff to remedy or mitigate the consequence of the injury to the nerves, but upon proof by a fair preponderance of evidence that it was reasonably possible that such a result would follow an operation, performed by the defendant with the ordinary skill and ability of surgeons practicing in towns similar to the one where the defendant undertook to practice his profession.—Tucker v. Stetson (Mass.), 123 N. E. 239.

False Answers in Insurance Application.—In an application for life insurance, the applicant answered that he had had none of the diseases indicated or specified in a certain question, and that, save in a single instance —of temporary malaria—he had not consulted any physician for any ailment or illness not included in that question. It was shown, in an action on the policy issued on that application, that, within the two or three years preceding the application the applicant had, on several occasions, consulted physicians, had been told that he had a bad heart and had been treated for it, and though not informed, in so many words, that he had Bright's disease, had, within a few weeks prior to the making of his application, three times called upon and consulted his physician, by whom, on each occasion, a certain familiar test was made to determine the question of the existence or progress of that disease. It was held that the statement in the application was untrue to the knowledge of the applicant; that the defendant would not have issued the policy if informed of the tests, without knowing the results; that the statement therefore operated to deceive it and induce it to issue the policy; that the deception related to a material fact of which the defendant was entitled to be informed; and that, whether the statement was regarded as a representation or as a warranty, there could be no recovery on the policy.—Lee v. New York Life Ins. Co., Louisiana Supreme Court, 80 So. 652.

MEDICAL RECORD.

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THE SYMPTOMATOLOGY OF THE SWEATING SICKNESS.

THE first appearance of the sweating sickness occurred in England in 1445 and epidemics recurred off and on until 1486. Then in 1507 and in 1518, the disease was described under the names of pestis britannica, ephemera britannica, sudor anglicanus, hydropyretosis, hydronosis, etc. It appeared in France for the first time at Montbéliard, in 1712, if we can rely upon Allioni's statement in his work, "Tractato de miliarum origine, progressu, natura et curatione," published in 1758. The disease has reappeared a number of times in France since its first epidemic, the last being in Les Charentes, from May to July, 1906. From 1821 to 1906, there were eleven epidemics of the sweating sickness in different parts of France, the mortality being respectively 5, 9, 7.4, 1.7, 10, 5.5, 12, 10, 10, 6 and in the last, that of 1906, 1.8 per cent. These figures show the great difference in the virulence of the disease in the various epidemics. It is to be remarked that the epidemics are confined to the country and that large or small cities remain free. Women are somewhat more prone to develop the disease than men, while children generally escape.

The onset of the affection is usually very sudden and ordinarily occurs in the middle of the night, with an extremely profuse sudation, pain in the epigastric region, headache, palpitation, excessive thirst, chills, and precordial distress, which awaken the patient who had retired feeling perfectly well. Some observers have maintained that the patient did not feel well for several days before the onset of the disease, but it is doubtful if this is correct, and the many competent physicians who followed the epidemic of 1906 do not hesitate to maintain that the onset is sudden, without prodromes. Sweating is severe, to such an extent that cases have been met with which necessitated a change of bed-linen twenty times in a single day. In two or three days the sudation ceases, when the eruption appears, this usually being on the fourth day of the disease. The subject of the temperature which accompanies the onset of the disease has given rise to considerable discussion. Haury found an average temperature of from 38° to 38.5° C. (100.5° to 101.3° F.) only during the period of the eruption, while Dartigolles found it to be in some cases as high as 41° to 42° C. (105.8° to 107.6° F.) and even 43° C. (109.4° F.) in a few. The charts showed a sudden rise.

The second symptom of the affection is the eruption, which usually develops on the fourth day, sometimes on the third, although it has been known to appear as late as the end of the first week. It is preceeded by a disagreeable constant pruritus preventing sleep, or the patient may complain of tingling or severe pricking sensations. The pruritus is located over the areas on which the eruption will develop. This represents the dangerous phase of the disease. The eruption begins on the sides of the neck, the flanks, the anterior aspect of the forearm and wrist—which are sometimes swollen—and over the front of the thorax. The skin is rough to the feel on account of the numerous very fine papules which cover the exanthematic areas; these are at first very indistinct, especially on the hands, but are not long in becoming characteristic on the other portions of the body. The face is usually congested, sometimes highly so, but it would seem that the eruption, when it does develop, is never very pronounced. It is occasionally found behind the ears and on the chin and forehead, but only in a discrete way. The eyes are brilliant, the lids red. The eruption next extends to the back, shoulders, chest, and lastly, but in a lesser degree, to the lower limbs, when it becomes generalized, as is sometimes the case. The papules soon project, become conical in shape, are red on an exanthematic background, which may be, according to the case, morbiliform or scarlatiniform, that is to say, composed of red areas of variable number scattered over the cutaneous surface, or having a rather dark red color. In some cases the exanthem may offer different characters on various parts of the body. The miliary papule is conical and its apex soon becomes white before collapsing. Between the papules or at other parts of the body small pearly pimples or tiny round vesicles appear; the latter contain a limpid serum. Desquamation commences in eight or ten days, first on the neck, then on the flanks—in other words, in the same order in which the eruption appeared. It usually takes place in large pieces, especially on the hands and feet. The period of convalescence is excessively long, and this is so even when there are no pulmonary or cardiac complications, which are indeed uncommon. The minimum duration of convalescence may be safely put at at least five to eight weeks, and it is accompanied by a very marked asthenia.

DIAGNOSIS AND PROGNOSIS OF THE AMNESIC ICTUS IN GENERAL PARESIS.

ALTHOUGH the diagnosis of an amnesic ictus is ordinarily easy when the loss of memory appears to be the only sign, this cannot be said to be true when it is accompanied by a certain degree of obtrusion of the other faculties. In these circum-

stances the amnesic ictus must be differentiated from the apoplectic, epileptic, or aphasic ictus, or even vertigo and stupor common in general paresis. In fact, all these phenomena bring about a sudden more or less profound intellectual obnubilation and this state might be thought to be the result of an important loss of memory. They differ, however, from the amnesic ictus in that all the faculties and not alone the memory are involved; there is even an absolute loss of consciousness in some cases. Likewise, the somatic signs—tinnitus aurium, visual disturbances, convulsions, paralyses, etc.—which accompany them, are not found in pure amnesic ictus. The vertigo, for example, offers sensorial disturbances. Usually the subject will present quite accentuated vasomotor disturbances of the face which sometimes becomes pale but more often red—even flushed. If the patient is standing he falls or avoids this by holding on to some object. There is no loss of consciousness, but for an instant, sometimes hardly perceptible, there is a diminution of the psychic activity which is made evident by a state of temporary bewilderment or intellectual confusion.

In amnesic ictus none of the foregoing signs are met with; the appearance of the patient does not change and only the bewilderment or curious questions suddenly put reveal the intellectual disorder. Amnesic ictus will hardly be mistaken for apoplectic ictus, as this state offers characteristic signs at the onset: the subject falls, there is absolute loss of consciousness, with absence of reflexes and sensibility, and occasionally convulsions. This state is sometimes accompanied by a rise of temperature which may last for several hours. It may happen that the apoplexy disappears quite rapidly, leaving the subject more or less amnesic, but this is not a true amnesic ictus because the amnesia here occupies only a secondary place, being merely an epiphenomenon in the evolution of a frank apoplexy. Epileptic ictus may also appear during the evolution of general paresis, rendering an appreciation of the intellectual state of the patient difficult to make. However, the aura and the involuntary automatic movements will lead to the correct diagnosis. Aphasic ictus may sometimes lend confusion, for besides being frequently accompanied by a certain amount of intellectual obnubilation, the few words the patient is still capable of uttering may lead the practitioner to suppose that there is quite complete loss of memory. After a manner, aphasic ictus might be regarded as a variety of the amnesic form because in reality there is a sudden loss of memory, either auditory, visual, or verbal, but more often it is motor aphasia with dysarthria which has a slow evolution and may even be permanent.

All these apoplectic, epileptic, aphasic, and vertiginous attacks were described by the older writers under the general heading of congestive attacks and in reality they are often accompanied by congestion of the face and ears. There is no doubt that amnesic ictus may be the consequence of more or less profound circulatory disturbances, and although the term ictus has not the merit of explaining the pathogenic mechanism which is still uncertain, it at least has the advantage of recalling the most important clinical character of the phenomenon—the suddenness of its appearance. Amnesic ictus appears to be much less frequent than other forms in the evolution of general paresis, perhaps because it is easily overlooked on account of the almost complete absence of physical signs. However, this may be, the types of general paresis with amnesic ictus appear to progress more rapidly and therefore have a darker prognosis than the forms without ictus.

ACUTE SYPHILITIC MENINGITIS.

THE term acute syphilitic meningitis should be applied especially to the acute meningeal accidents of the secondary phase of the infection, sometimes preceding, but more frequently accompanying the cutaneous lesions of this period. Meningeal accidents which merit the name of acute syphilitic meningitis, may be met with in hereditary syphilis. The acute meningitides of the tertiary period do not appear to have a distinctly syphilitic nature; they seem to be rather meningeal accidents due to some very ordinary cause, grafted upon a chronic meningitis.

The pathology of the acute type is essentially a meningoangiitis with hypersecretion of the cerebrospinal fluid. The treponema has been found only occasionally in the cerebrospinal fluid excepting in cases of hereditary syphilis. Lumbar puncture is absolutely necessary to confirm the diagnosis, because it will show a considerable hypertension, the presence of a large amount of albumin, and a marked lymphocytosis with plasma cells. The meninges are permeable to potassium iodide and the cerebrospinal fluid will also give a positive Wassermann, although the reaction of the blood serum may be negative. The lymphocytosis persists for a long time after the disappearance of the meningeal symptoms.

The onset of the meningeal symptoms may be sudden without prodromes, but generally insomnia and headache will be complained of long before the meningitis develops. When fully developed, acute syphilitic meningitis offers a clinical picture recalling that of tuberculous meningitis, but it differs from the latter by the fact that the symptoms are less distinct, by the absence of evident disturbance of the pulse and respiration, by its irregular evolution in successive outbursts and remissions, and finally and more particularly by the data given by the Wassermann reaction. A comatose form has been observed, likewise localized types, at the convexity with convulsions and epilepsy, or basal with paralyses of the ocular muscles.

The immediate outcome is rarely fatal, but the ultimate prognosis must be reserved. In the first place, after the symptoms of meningitis have passed

off, sequelæ are frequently met with—absence of the reflexes, the beginnings of the Argyll-Robertson symptom, and lymphocytosis of the cerebrospinal fluid. Secondly, quite frequently an acute meningitis may pass into the chronic type and it is now generally believed that chronic syphilitic meningitis is the causal factor of parasyphilitic accidents—tabes and general paresis—which considerably darkens the prognosis.

A prophylactic treatment, even when energetic, does not completely protect the syphilitic from meningeal accidents, whether mercury or one of the modern arsenical products is employed. Nevertheless, a prophylactic treatment should be carried out and systematically followed in every syphilitic subject whose cerebrospinal fluid presents a persistent lymphocytosis, even in the absence of any meningeal symptoms. The curative treatment of acute syphilitic meningitis requires in the first place free and repeated withdrawal of the cerebrospinal fluid; secondly, an energetic mercurial treatment. The arsenical products have a much more rapid action, but not a few observers advise against their use in nervous accidents on account of neurotropism, although Ehrlich attributed the untoward symptoms in these cases to the syphilis itself and not to 606.

The Myth of the Symbiotes.

Portier's description of his "symbiotes" or microorganisms which are indispensable for metabolism represents them as introduced originally from without but inhabiting the body cells and presiding over all biological synthesis. They are analogous histologically to mitochondria and chemically are identical with the vitamines of Funk. The theory is based on the study of certain phenomena which takes place visibly in low forms of life. The doctrine of symbiotes which was sketched briefly in the Medical Record about two years ago has called forth a volume by Lumière (reviewed in the *Gazette hebdomadaire des sciences médicales de Bordeaux*, December 14, 1919, xi, 36) which seeks to demolish it. The phenomena on which Portier was led to develop his theory are disputed and the symbiotes are apparently only highly resistent spores of saprophytes which lie latent but living in the midst of the tissues. They exist purely for themselves, are saprophytic and in no sense symbiotic. Lumière only rarely was able to cultivate these from the tissues and on various occasions he succeeded in cultivating some one of several familiar saprophytes from one or another organ of the frog or rat or other small animal. Evidently the tissues had been penetrated in some manner by the spores. From this standpoint the tissues are not always sterile, but unless there is cell death it is impossible to conceive how the spores can proliferate. In regard to mitochondria these have been known in vegetable histology since 1858, when Trecul described them, and forty years later they were rediscovered by Benda. These are known now to be albuminolipoid colloids and are radically different from the symbiotes which have a structure. In regard to the identity of symbiotes and vitamines both are destroyed by a heat of 120° C., while the melting point is much higher. But this dissociation of melting point and thermostability is found in a number of substances. If the symbiotes are vitamines then cultures of these saprophytes should be of value in avitaminoses; if they are of value it must be remembered that so is orange juice.

Treatment of Sea Sickness.

The resumption on a large scale of the ocean passenger traffic makes this subject rather timely. Dr. Cazamian discusses it in the *Bulletin générale de thérapeutique* for November, 1919, clxx, 17. He has devoted the past two years to the subject as visualized in the latest developments of science. Quite inevitably seasickness must be restudied in the light of endocrinology and the pathology of the sympathetic. The author has studied over 50 seasick people and finds that in the fully developed *status naupathicus* the arterial tension is increased. However, the tension drops while the illness is still present. The oculocardiac reflex was inverted in most patients, but pressure in the pit of the stomach usually accelerated the pulse. The spinal fluid obtained by puncture showed no constancy while the blood counts were within normal limits. The author found a prevalence of sympathicotonia attributable to hyperadrenia, although Naame had reported the exact converse—vagotonia from hypoadrenia. This disparity probably means that initial sympathicotonia passes eventually into the opposite condition or, more accurately, that stimulation of the adrenal cortex leads in time to exhaustion of the same. Certainly seasickness is largely a matter of adrenal-autonomous pathology. Crises of vomiting are vagotonic—paroxysmal vagotonia. But the sympathicotonic is naturally predisposed to seasickness, just as the vagotonic enjoys some immunity. The young child, being naturally vagotonic, is immune. From this angle treatment is simple. The vagotonic paroxysms of vomiting and other critical manifestations are relieved by hypodermics of atropine, 1 or 2 mgm., and the other vagotonic standby—adrenalin—is a valuable synergist whenever there is a condition of hypoadrenia. If the tension is up adrenalin aggravates. It is better to give suprarenal extract by the mouth in these cases than to inject adrenalin.

Eczema as a Defence Reaction.

Eczema appears to be largely a reactive phenomenon and the reaction is placed by Gougerot (*La Médecine*, November, 1919, i, 2) under defence reactions. It appears to make no vital difference whether the irritant which causes the reaction acts internally or externally, save that in the former case some predisposition which we call diathesis is at work. If the irritant is from within, it is a toxic substance which the organism is trying to be rid of and thus we may use the expression defence reaction. All of the emunctories of the body may show irritation accompanying eczema and there is also evidence that the toxic substances seek escape through unaccustomed channels. The skin lesions appear to be due to attempts at escape through the integument. At times the sole manifestation is

pruritus, at other times there may be fugacious eruptions like urticaria, and finally there is a well marked sterile dermatitis which we call eczema. The author explains the frequent association between eczema and obesity as follows: certain foreign toxic material is not eliminated, but is magazined in the subcutaneous tissues. It may here give rise, as in eczema, to edema, while, in other cases, it stimulates the fatty cells of the same area to store up fat. This view is analogous to an old doctrine of Bunge's that all fat is of toxic origin and akin to the fatty metamorphosis of the liver cells in poisoning by phosphorus, arsenic, and antimony.

News of the Week.

Government Needs Physicians. — The United States Civil Service Commission announces that a large number of physicians are needed for employment in the Indian Service, the Public Health Service, the Coast and Geodetic Survey, and the Panama Canal Service. Both men and women will be admitted to examinations, but appointing officers have the legal right to specify the sex desired when requesting the certification of eligibles. Entrance salaries as high as $200 a month are offered, with prospect of promotion in some branches to $250, $300, and higher rates for special positions. Further information and application blanks may be obtained from the Secretary of the U. S. Civil Service Board at Boston, New York, Philadelphia, Atlanta, Cincinnati, Chicago, St. Paul, St. Louis, New Orleans, Seattle or San Francisco, or from the U. S. Civil Service Commission at Washington, D. C.

Red Cross Aids in Influenza Epidemic. — Red Cross chapters throughout the country are cooperating with the local boards of health, and in communities where no regular health organization exists the Red Cross has taken charge of the situation independently, where influenza conditions warrant. Women are busily engaged in the workrooms making masks, hospital garments, and other articles needed by the doctors and nurses in fighting the epidemic. The Red Cross Motor Corps are working on a war-time basis, moving pneumonia, influenza, and whooping cough cases to and from hospitals. Some chapters have installed diet kitchens. In New York City more than 12,600 articles were supplied within three days. At the request of Health Commissioner Copeland the Red Cross opened a bureau for the registration of nurses in the Health Department's offices, where nurses were interviewed and assigned to cases. The New York County chapter placed at the disposal of the Board of Health its file of nurses, attendants, and trained and volunteer aids. Volunteer investigators were also furnished for the different health zones. In Chicago, 14,000 women, trained by the Red Cross during the war, were called to service to aid in checking the epidemic. These and many other activities on the part of the Red Cross have been of incalculable aid to the local health authorities whose normal resources were generally inadequate to meet the emergency.

A French Treatment of Influenza.—A dispatch to the *Sun* from Paris gives details of a remedy for influenza advised by Dr. de Gerin of that city. It consists of the injection into the gluteal muscles once a day for five or six days of a solution of guaiacol, 0.1, eucalyptol, 0.5, and camphor, 0.5, in 3 c.c. of sterilized olive oil. If pulmonary complications appear, he gives a tablespoonful every two hours day and night of a mixture of tincture of opium and tincture of belladonna, of each 35 drops, and ammonium chloride, 4 grams, in 250 c.c. of distilled water, flavored with simple syrup, 75 c.c., and syrup of orange flowers, 25 c.c.

French Medical Society Resumes Meetings.—La Société Française d'Histoire de la Médecine has resumed its monthly meetings at the Faculté de Médecine, Paris, the first meeting of the season having been held on October 4. The society is planning the establishment of a museum of the history of medicine, and appeals to its members for constributions. The *Bulletin* of the society will be issued early this year. Communications and manuscripts may be addressed to M. Fosseyeux, No. 3, Avenue Victoria, Paris.

Mobile Hospital Sent to Roumania.—A mobile hospital, known as the "Auto-Chir," purchased by the American Red Cross for the American Expeditionary Forces at a cost of $400,000, has been sent to Roumania. The Auto-Chir consists of an *x*-ray truck, an electrogenic group with accessory parts, a heating plant, an operating room with plate glass cabinets equipped with surgical instruments, ambulance trucks containing beds for twenty patients, tent hospital trucks, an acetylene truck for lighting the hospital, and storeroom trucks with all manner of supplies. There is also a large truck containing sleeping rooms for doctors, nurses, and internes. This unit is now functioning near the Roumanian Army.

Influenza Rages in Poland.—According to American Red Cross reports the medical authorities are baffled by the virulent form of influenza which now scourges Poland. The suddenness of the attack and the high percentage of fatalities are the distinctive features of the epidemic. Hundreds of deaths occur daily in Warsaw, while three-fourths of the hospital attendants have been stricken.

Influenza on Spanish Liner.—Thirty-five cases of influenza among passengers and crew of the Spanish steamship *De Satrustegui* were reported when she arrived at New York recently. The boat was held in quarantine and the serious cases were sent to Swinburne Island.

Dr. Abr. L. Wolbarst has resumed his genitourinary clinics, on Thursday evenings, at 8:30 o'clock, at the West Side Dispensary and Hospital, 328 West 42nd Street, New York City.

American Scholarships for Foreign Students.—Under the fellowships offered by the Rockefeller Foundation students from the following countries are now attending American medical institutions: Czecho-Slovakia, 4 physicians; China, 8 physicians, 8 undergraduate medical students, 4 nurses, and 11 medical missionaries on furlough; Brazil, 4 physicians; San Salvador, 1 physician.

Hospitals for the Insane Overcrowded.—According to a report made to Governor Smith of New York by State Commissioner of Health Her-

man M. Biggs and Dr. Pearce Bailey, chairman of the Commission for Mental Defectives, overcrowding exists in Central Islip, Brooklyn, and Manhattan State Hospitals for the Insane. In one ward at Central Islip with a normal capacity of 187 patients, the actual number found in the ward was 400. At the Brooklyn State Hospital there were 1,177 patients, although the normal capacity is only 637. The report also called attention to the shortage of help because of the small pay received by the attendants. As a result of the investigation covered in this report the Governor has appealed to the Legislature to extend the hospital facilities and to give proper increases in pay to the hospital help.

Diseases Under Investigation.—The Hospital of the Rockefeller Institute for Medical Research announces that a limited number of patients suffering from measles will be admitted to the isolation wards, and that it will receive patients suffering from acute lobar pneumonia and other acute respiratory infections, cardiac disease, acute rheumatic fever and nephritis.

Medical Society of the State of New York.—The annual meeting of the Medical Society of the State of New York will be held in New York City, March 23-25. The House of Delegates will meet on Monday afternoon, March 22, in Hosack Hall, New York Academy of Medicine, 17 West 43rd Street. The scientific sessions, which will begin on Tuesday afternoon, will be held at the Waldorf-Astoria and the Hotel McAlpin.

Georgia Medical Society Honors Service Men.—The Fulton County Medical Society held a banquet January 9 in honor of its members who were in service during the world war. More than 200 members attended.

Government Positions in Occupational Therapy.—The United States Civil Service Commission, Washington, D. C., has announced examinations for field supervisor of reconstruction aides in occupational therapy; superintendent of aides in occupational therapy; special instructor in occupational therapy; and reconstruction aide. Both men and women are eligible. Examinations for field supervisor and superintendent will be held on February 24; the dates of other examinations will be announced later.

Medical Department of American Legion.—The Medical Department Post of New York of the American Legion was organized at a meeting held at the New York Academy of Medicine, January 12. A constitution and by-laws were adopted. It is proposed to gather into this post all medical officers and enlisted men now residing in New York county who served in the medical department during the World War.

Liquor Stations Favored.—Dr. Royal S. Copeland of the Department of Health of New York City, following a suggestion made by the Bronx Pharmaceutical Association, announced that he would endeavor to ascertain whether the Treasury Department would not take steps toward the immediate establishment of Government stations about the city for the dispensation of whiskey and brandy for medicinal purposes. Only ten per cent. of the druggists of the city, according to the Commissioner's statement, have taken out licenses which will allow them to dispense medicinal whiskey and brandy on the presentation of prescriptions from doctors.

To Standardize Hospitals.—A meeting of the Greenville County (S. C.) Medical Society was recently called for the purpose of formulating plans for the standardization, in accordance with the rules and regulations of the American Medical Association, of all the hospitals in and around Greenville. Representatives of the hospitals, nurses, city officials, and representative citizens cooperated with the medical society in the plan.

Medical Society Advocates Committing Drug Addicts.—The Shawnee County (Kan.) Medical Society at a recent meeting held in Topeka adopted a resolution endorsing special legislative provisions for the committal of drug addicts in Kansas to the State hospital for treatment.

Leprosy in Boston.—A case of leprosy was discovered in Boston recently in an unmarried male, 23 years of age, who was a chocolate factory worker. He will be sent to the State leper colony on Penikege Island.

Death From "Sleeping Sickness."—A young man of nineteen, who was recently sent to St. John's Riverside Hospital, Yonkers, N. Y., after having consulted a physician on account of headache, lapsed into a sleep from which he did not awake. The death certificate gave encephalitis lethargica as the cause of death.

Osteopaths Cannot Vaccinate in Pennsylvania.—Deputy Attorney General D. J. Myers of Pennsylvania, recently rendered the decision that "osteopaths have no right to vaccinate nor issue certificates therefor, nor have they the right to issue certificates setting forth that a child has been properly vaccinated or vaccinated in accordance with the regulations of the Department of Health."

New Totals of War Deaths.—In a supplementary report to the Budget Committee, Louis Marin, member of the French Chamber of Deputies, has compiled from official sources the losses of human life caused by the war. The French Army had lost at the date of the armistice 1,334,400 men. Since the armistice 600 officers and 28,000 soldiers have died in French hospitals as the result of wounds and diseases. This represents 16.44 per cent. of the effective mobilized forces. From start to finish, 4,988,213 such wounded were treated in hospitals. The French naval forces lost 10,525 men. M. Marin also gives the losses in the Allied armies in killed, missing, and traced among prisoners, as follows: Belgium, 44,000; United States, 114,000; Great Britain, 869,000, of whom 682,000 were from the United Kingdom; Greece, 12,000; Italy, 490,000; Rumania, about 400,000, including prisoners alive; Russia, 1,290,000 (the statistics from October, 1917, are untrustworthy), and Serbia, 297,000. Germany's killed and missing total 2,041,000; Austria-Hungary, 1,542,817; Bulgaria, 101,224, and Turks, 325,000 killed.

Economic Loss from Tuberculosis.—According to a statement by Dr. Herman M. Biggs, Health Commissioner of New York State, the economic loss in 1918 from tuberculosis in New York was $81,576,000, a greater loss than from any other disease. There were 10,197 deaths from tuber-

culosis in various forms in the State last year. Most of the victims die between the ages of 15 and 50, or at an average of 35 years, thus losing seventeen years which would ordinarily be employed in productive work. The death rate from pulmonary tuberculosis, according to Dr. Biggs, has been decreased from 236 per 100,000 in 1898 to 150 per 100,000, the figure for 1918. The Red Cross Christmas sale campaign cooperated with other agencies this winter in the sale of Christmas seals to lessen this drain on New York's resources.

Dr. Richard Clarke Cabot, Professor of Clinical Medicine at Harvard Medical School and chief of the West Medical Service of the Massachusetts General Hospital, has been appointed Professor of Social Ethics at Harvard College. Dr. Cabot enters at once upon his new duties, at the same time continuing his present connections.

Dr. Mary E. Mosher, of Roxbury, Mass., was recently elected president of the Massachusetts Surgical and Gynecological Society. She was one of the first women to be admitted to membership in the society and is the first to hold the office of president.

Dr. J. M. T. Finney, Associate Professor of Surgery, Johns Hopkins University Medical School, has declined an invitation to fill the chair of surgery in the Harvard Medical School.

Dr. Burton Peter Thom has been appointed assistant visiting physician to the Workhouse and Penitentiary Hospitals, Blackwell's Island, New York City.

Dr. Abraham Jablons of Brooklyn, N. Y., formerly Lieutenant Medical Corps, U. S. Navy, having been released from duty at the Navy Yard, New York, has been appointed Medical Inspector, Bureau of Child Hygiene, Department of Health, City of New York.

Medical Society Elections.—The HENNEPIN COUNTY (MINN.) MEDICAL SOCIETY, at its annual meeting held January 5, elected the following officers for the ensuing year: *President,* Dr. J. Frank Corbett; *First Vice-President,* Dr. Angus Morrison; *Second Vice-President,* Dr. F. L. Adair; *Secretary-Treasurer,* Dr. C. W. Petit (re-elected).

Obituary Notes.—Dr. JOHN BOSLEY, Lieutenant-Colonel, U. S. Army Medical Corps, retired, died January 8 at his home in New York City. He was a graduate of Johns Hopkins in 1901.

Dr. NEIDHARD H. HOUGHTON, of Boston, Mass., died at the Homeopathic Hospital in that city, December 26, as the result of being struck by a street car on the day of his death. He was 58 years of age. He was graduated from the New York Homeopathic Medical College in 1887. He had practised for many years in Boston, and was a lecturer in the Boston University School of Medicine.

Dr. CHARLES RUSSELL CAVANAGH, of Boston, Mass., died December 25. He was graduated from the Medical School of Harvard University in 1892, and received his hospital experience at the City and Carney hospitals, in Boston.

Dr. FRANKLIN BENNETT, of Brooklyn, N. Y., died from pneumonia December 21, in his seventy-first year. He was graduated from New York University Medical College in 1875, and had practised in Brooklyn for forty-two years.

Correspondence.

THE TREATMENT OF INFLUENZA.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the MEDICAL RECORD of January 10, 1920, received to-day, I find an article entitled "Treatment of Influenza by an Apparently Specific Method" by Dr. Francis E. Park of Stoneham, Mass. I have found nothing better than the mixture I have previously recommended, consisting of ammonium salicylate, gr. lxxii; caffeine, gr. vi; essence of pepsin, ℥i; water, ℥vi. Of this I at present give a tablespoonful every hour for three or four hours, and thereafter a desertspoonful. For convenience sake in many cases I give the remedy in capsules instead of solution, and I then omit the pepsin. At bed-time I give aromatic spirit of ammonia and sweet spirit of nitre. I then stop the salicylate mixture. If there is cough and fever I start warm creosote inhalations from a croup kettle, with or without compound tincture of benzoin. I use the benzoin only when objection is made to the smell of creosote.

There is no specific against influenzal pneumonia, but what I have outlined will help prevent it in a measure and will greatly modify its seriousness many times. Good whiskey, black coffee, and strophanthus in small repeated doses will save life, if any treatment will.

Fear of contagion is a bugbear which should not be tolerated. It is lack of knowledge which makes it prevail. Personal immunity is something the wisest physicians do not as yet understand; I mean the why and wherefore.

I hope you will find space for this letter at the present time when a dependable treatment for influenza is so much needed.

BEVERLEY ROBINSON, M.D.
42 WEST THIRTY-SEVENTH STREET, NEW YORK.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, Jan. 16, 1919.

Radium and Cancer.—At the Middlesex Hospital in London cancer research work has been going on for many years and the investigations have been productive of much useful knowledge in this direction and particularly so far as treatment is concerned. During the war and ever since the armistice cancer research work at the Middlesex Hospital has been greatly handicapped by lack of funds. However, research with regard to the effects of the *x*-rays and radium has been continued. Recently a magnificent loan has been made by the British Government to the Middlesex Hospital Laboratories. This loan consists of five grams of radium bromide and a feature of this acquisition is that although the quantity is less than one-fifth of an ounce, it is the largest that has ever been available for use in bulk in the work of research. It may be said that its value is in the neighborhood of £100,000, and the loan is made subject to termination at ten days' notice in case the Government should need it. The radium at the time of the armistice was in the hands of the Ministry of Munitions and because it

was no longer required for the manufacture of gun-sights and other articles of which luminosity at night is an essential feature, Mr. Cecil Lyster of the Middlesex Hospital Cancer Research Department, was consulted as to its disposal. Mr. Lyster fully recognizing the great therapeutic potentialities of so large an amount of radium, suggested that if it were lent to the Middlesex Hospital in one parcel it would render possible developments hitherto hardly dreamed of by the most enthusiastic investigator. The authorities fell in with Mr. Lyster's suggestion, and it seems likely that in the future the Middlesex Hospital Cancer Department will make marked progress in cancer research and treatment.

The Ministry of Health and Its Consultative Medical Committees.—There are four consultative medical committees, or councils as they are termed in the act, in connection with the Ministry of Health. It is hoped and intended that they will discharge the function of reconciling medical and public views on health administration. In short, it is meant that they should insure that the existing State medical service, acting under permanent officials shall cooperate for the prevention, control, and abolition of disease with medical practitioners, consultant or general and whether engaged or not in panel practice. Three councils have been instituted for England and Wales, one on medical and allied services, one on national health insurance, and one on local health administration. The fourth council is for Wales. The English Consultative Council on Medical and Allied Services is the one whose particular province is to deal with the immediate problems of medical practice and it has been constructed with this object in view. Already I have drawn attention to the ingenious way in which its members have been selected, but will briefly run over the list again. Among its twenty members it includes consultants of high rank as physicians, surgeons and obstetricians; two distinguished medical women; two well-known medical officers of health and a prominent anatomist, a skilful and learned chemist, and a biochemist of no mean repute. In addition to these are the secretary of the largest metropolitan hospital; the Registrar of the Pharmaceutical Society of Great Britain; four medical men of weight with insurance and panel committees; and the chairman of Council and the Treasurer of the British Medical Association. To this body will be referred all the problems which arise in the working of the Ministry of Health, when the national development and extension of medical, nursing, and midwifery work are taken into consideration. Moreover, this Council possesses the power, especially when the nursing and midwifery arrangements are in question, to form committees by the cooptation of persons outside the Council. The scheme appears to be designed admirably, but of course it is not known as yet what the real influence of the Council may be. After all, it is only an advisory council, of which the Minister, if he thinks fit, may not seek advice and he may seek it and yet may not take it. Politics and expediency may prove stronger than the best interests of the people or the Minister may deem that he is the best judge of what is good for the nation.

Panel Practice.—The members of the British medical profession are at the present time considerably exercised in mind with regard to the position of panel practice. Certain new regulations have been brought forward and considered and have been received with very mixed feelings by the profession. Some medical men are whole heartedly in favor of the regulations, others are unalterably opposed to them, while yet others are in a state of almost indifference. The matter of national insurance legislation will be discussed fully in a subsequent letter, but this much may be said, that although the Consultative Medical Council will not necessarily be asked to advise directly concerning the situation, the views of its members will undoubtedly be presented to Dr. Addison and his lieutenants, Sir Robert Morant and Sir George Newman. In considering the probable outcome of the deliberations regarding panel practice, it must always be borne in mind that the final decision by no means rests with the Medical Consultative Council, or rather the advice of the Council is not the only advice which will be tendered to the Ministry of Health. The Council on National Health consists of the Friendly Societies, which powerful bodies are as interested as the medical profession in securing the good care of the public health. But the Friendly Societies do not see eye to eye with medical men and, in fact, in the past there has been a certain amount of antagonism between them. They have not the same reasons as the doctors for disliking or mistrusting the panel regulations. The Friendly Socities wield an immense political influence and their wishes will consequently be treated with every consideration by the powers that be.

Medical Degree Proposed for a Bone-Setter.—A petition in favor of a medical degree honoris causa being granted to Mr. H. A. Barker has been signed by over 300 members of the present and former House of Commons. The memorial states that during the war "Mr. Barker was the means of removing the disabilities of many men whose services would otherwise have been lost to the nation" and that "the case is eminentiy one for favorable consideration, in view of the unique and distinguished services Mr. Barker has rendered to suffering humanity and the cause of science through a long period of opposition, contumely, and persecution." Mr. Barker is of course the well-known "bone-setter" and is one of those men who have a remarkable, almost instinctive, manipulative skill. His reputation is international. A few years ago he paid a visit to America.

Memorial to Lord Lister.—In order to perpetuate the memory of Lord Lister it is proposed to establish in Edinburgh an institute in which the scientific investigation of disease can be undertaken. Such would be a fitting memorial to the man whose discoveries were the results of research, and it is to research and the teachings of its results that this memorial is to be dedicated. In a statement recently made by the University of Edinburgh and the Royal College of Physicians and Surgeons of Edinburgh it was announced the need for such an institute was pressing. It is further stated that a site has been secured close to the Edin-

burgh Royal Infirmary and the medical school of the University, at a cost of over £50,000. To pay for the site and to erect, equip, and maintain the necessary buildings £200,000 will be required. The University and the Royal College of Physicians and Surgeons have agreed to contribute £25,000 and a committee has been formed to launch a public appeal. Mr. Balfour, Chancellor of the University, has consented to act as honorary president and the honorary vice-presidents are the Duke of Atholl, Lord Roseberry, Lord Beatty, Lord Glenconner, Lord Leverhulme, and Sir J. Lorne McLeod.

An American Surgeon for an East London Hospital.—Mr. Philip Franklin, F.R.C.S., has recently been appointed surgeon in charge of the throat and ear department of the East London Hospital for Children. Mr. Franklin, who is of American parentage, has been especially energetic in initiating and promoting the "Fellowship of Medicine" of which he is an honorary secretary. He is also organizing the new American Hospital and Club in London.

Obituary.—Sir Thomas Richard Fraser, M.D., F.R.C.P., Emeritus Professor of Materia Medica and Clinical Medicine in the University of Edinburgh, and Physician in Ordinary to the King in Scotland, died in Edinburgh on Jan. 4 in the seventy-ninth year of his age. Thomas Fraser early exhibited his scientific bent by obtaining at the age of 21 the gold medal for his graduation thesis "On the Characters, Actions, and Therapeutic Uses of the Ordeal or Calabar Bean." He became assistant to Sir Robert Christison, the most famous Professor of Materia Medica Edinburgh University ever had. In 1877 he was appointed Professor of Materia Medica in succession to Christison. Fraser was one of the leading pharmacologists of the world, and his work in cooperation with his colleagues has gone a long way toward establishing the drug treatment of disease upon a scientific basis.

Perhaps, the particular direction of Fraser's work with which his name will be most closely associated is that having to do with his investigations into snake poisoning. He and Calmette were the pioneers in the discovery of a serum treatment for snake poisoning. In 1894 Calmette published an account of extended researches into the production of immunity against snake venom among animals subjected to experimental infection and in 1895 Fraser published a description of the antidotal properties of the blood serum of immunized animals and of venomous serpents and in 1896 he published an account in the *British Medical Journal* in which he directed attention to the limitations of the antidotal powers of antitoxin as illustrated in the antagonism between antivenene and snake venom. Fraser enjoyed an international reputation and was the recipient of numerous academic honors. Although in failing health he carried on his work as professor up to the summer of 1918 when Professor A. R. Cushny succeeded him in the chair of Materia Medica of the University of Edinburgh. One of his sons is a physician in New York, and at the present time is serving with the American Army on the Rhine.

OUR LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, Jan. 15, 1920.

Infant Feeding in Vienna.—Since Austria has been making frantic appeals for food, particularly for Vienna, it may be interesting to note the results of infant feeding obtained by some Austrian physicians, among others Müller and Czerny, during the last two years of the war and still more recently. It is quite certain that they have had the opportunity of observing infant feeding reduced to its simplest expression, but they point out that the reduction of alimentation of infants has not resulted in such bad conditions as might be supposed, because in time of peace too much milk was given. A daily ration of from 250 to 500 c.c. of milk in children over one year of age has given excellent results. Milk is wanting in certain necessary substances, and it was for this reason that Heubner long since advised adding green vegetables to the diet of children in the second year, since they are rich in iron and lime salts. The Austrian physicians do not think that there is any valid reason for giving extra rations of milk because such an addition does not compensate the deficit of meat and fat. Many pale infants are not necessarily anemic. Their blood is normal, their paleness being due to other causes—pseudoanemia. In these subjects there is a decreased percentage of hemoglobin. The total quantity of blood as well as the relative amount in play with each cardiac contraction, are not diminished; therefore, there is no oligemia.

Pseudoanemia.—Müller describes three types of pseudoanemia. First, neuropathic infants with disturbances of the equilibrium of the vegetative nervous system due partly to the vagus, partly to the sympathetic. In pathological cases the sympathetic is the most important, since it gives rise to exaggerated contractions of the smaller vessels, hence the pale skin. These subjects often have very brilliant eyes with dilated pupils, reacting sharply to all pathogenic influences. Such subjects may become really anemic so that caution in diagnosis must be exercised. Second, there is a class of children whose blood is irregularly distributed throughout the body in diseases which produce congestion of the various viscera, the liver and intestines in particular, and so withdraw the blood from the surface, hence pseudoanemia of alimentary origin. The third category comprises pseudoanemias due to the texture of the skin in highly pigmented subjects or when the capillaries of the dermis are undeveloped, or to infiltration of the skin in lymphatic or hydropic children. The pathogenesis of the so-called "school anemias" is not quite clear, and they probably belong to the first category or else they are true anemias due to tuberculosis, influenza, or post-diphtheritic—otherwise anemia from toxi-infection. The methods for surely recognizing true anemia, such as the estimate of the total mass of blood, total hemoglobin, size of the heart, and relative amount of blood, are technically difficult to carry out. Paleness of the integuments and mucosæ, and the percentage of hemoglobin are the best off-hand diagnostic signs. In cases with pale mucosæ and normal percentage of hemoglobin the diagnosis

of oligemia should be made. Too little blood passes through the arteries. What is still more important are functional cardiac murmurs and anemic souffles. The former denote the attempt made by the heart to compensate extreme dilatation which may reach even insufficiency of the volume of blood of the ventricular systole. The estimate of the hemoglobin and the red blood cell count will give the globular value. Of the three techniques of hemoglobin fixation due to Tallquist, Plesch, and Sahli, the latter is the best. The normal percentage for a child is 75 per cent.

Alimentary Anemia, long known, has been regarded until recently from the viewpoint of etiology as the result of too little iron in the food. When cow's milk forms the principal part of the child's diet, it is likely that the amount of iron contained in the rest of the food ingested is insufficient. Czerny has given a broader conception to alimentary anemia, since with it he includes anemia with enlarged spleen—pseudcleucemic anemia and the splenomegaly of rickets—on account of the therapeutic success obtained by removing milk from the diet. This fact eliminates the special nosographic character of splenic anemia. A marked reduction of hemoglobin, as low as 20 per cent., is observed, and often small diminution of the red corpuscles and a globular value below 1. Often the staining and shape of the red cells have changed, and even nucleated red cells are occasionally found. The neutrophile leucocytes drop to 16 per cent., hence a relative lymphocytosis. Most of these subjects are fat with a yellowish skin. Occasionally, but rarely, some are met with who are emaciated. Czerny does not attribute this type of anemia to a want of iron but to the fat in milk and to the fatty acids which do not split up in the organism. If milk is replaced by some other diet—green vegetables—a favorable turn will be seen by the aspect of the child.

Toxic Anemias.—The second group of cases has been studied by Müller. Their etiology is toxi-infection—tuberculosis, syphilis, influenza. Syphilitic anemia is encountered in children with luetic visceral lesions, with bone involvement, especially in infants. In older syphilitics the anemia is due to intoxication and offers a relative lymphocytosis. Tuberculous anemia is met with when the lymphatic system is involved and is peculiar to children, and "school anemia" is decidedly in this class. A relative polynucleosis is a symptom of great value for the differential diagnosis. Post-influenzal anemia and its sequelæ—empyema, pyelonephritis—gives rise to a decrease of hemoglobin and a large number of polynuclears. All children improperly fed, as well as syphilitic and tuberculous subjects, do not necessarily become anemic, as these conditions merely represent predisposing factors to anemia. Chlorosis affects the female sex; the hemoglobin is greatly diminished, the red cells not so much so, consequently the globular value is low. According to Schmidt and Plesch, the total quantity of blood in these cases usually increases to twice or thrice its bulk, while the clinical symptoms are those of a relative increase in the quantity of blood. The treatment is above all to be directed to the pathogenesis—syphilis, tuberculosis, influenza, etc.

A mixed diet is indicated for pseudoanemia without exaggerating the amount of albumin ingested. Iron does no good, as it is in normal amount in the organism. The treatment of infantile tuberculosis needs no comment, likewise that of the convalescence from influenza, etc. In alimentary anemia the ration of milk should be decreased and the amount of ferruginous foods increased. Often, according to the Vienna physicians, one-half liter of milk daily is too much and 100 c.c. with a mixed diet has been found satisfactory. At the beginning of the second year meat and sausage are given. Whether the Anglo-Saxon infantile intestine would proclaim a strike with such a diet is a question that has not been—and probably never will be solved.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 15, 1920, clxxxii, 3.

1. The Origin of the Intrapelvic Treatment of the Stump After Supravaginal Hysterectomy for Fibroid Tumor of the Uterus. J. Riddle Goffe.
2. Results of Treatment of Neurosyphilis (General Paresis and Cerebrospinal Syphilis). Report of Patient's Condition Four Years or More After Leaving Hospital. H. C. Solomon.
3. The Potency of Some French Digitalis Preparations. Samuel A. Levine.
4. Hysteria. David Nathan.
5. Acute Nephritis by Absorption of Household Disinfectants. Henry A. Jones.

1. The Origin of the Intrapelvic Treatment of the Stump after Supravaginal Hysterectomy for Fibroid Tumor of the Uterus.—J. Riddle Goffe traces the history of the operation in question, which was first performed by him on May 26, 1888. The history of the patient upon whom it was performed is reviewed and the technique of the operation described. The method was then entirely novel and original, embracing new untried features and meeting all the requirements of a perfected surgical procedure. First and foremost, it solved the problem of dropping the pedicle and closing the abdominal incision without drainage. Secondly, it covered all raw surfaces. Third, it fastened the infundibulopelvic and round ligaments to the stump, thus giving support to the pelvic diaphragm. And lastly, it restored the pelvic organs to their normal positions and relations in the pelvis, disposing of the traumatic tissue with the nicety of a plastic operation. All this the writer pointed out in his first paper describing the operation, which was presented before the Obstetrical Section of the New York Academy of Medicine in March, 1890, and published the following month in the *American Journal of Obstetrics and Diseases of Women and Children.* Four cases were reported in this paper. In September, 1892, Dr. Baer, of Philadelphia, read a paper before the American Gynecological Society in which he reported ten cases of fibroid tumors, with one death, operated upon by him by what he claimed was an entirely new and original operation. On careful analysis the operation, in its essential features, was the Goffe operation, modified by systematically transferring the main ligature from the cervix to the uterine vessels in the broad ligaments—a refinement of technique but not essential to the procedure. The operation has come to be known as the Baer operation, believed by many to have been invented by him, despite the fact that in addition to the writer's original communication, other papers antedated that of Baer. In the discussion of Baer's paper Dudley claimed to have been "talking of this method two years before Dr. Goffe read his paper," and to have performed the same operation in 1884, in California, with the exception "that the double ligature which was put around the stump was not covered by the peritoneum." No report was made of this operation, and consequently the writer holds that it has no bearing on the priority of the procedure. After reviewing the work of European surgeons he was convinced that the operation is purely American—the product of American ingenuity, courage, forethought, prudence, patience, and persever-

ance. It has superseded all other operations in every country, and stands to-day without a peer as the *operation par excellence.*

Journal of the American Medical Association.

January 17, 1920, lxxiv, 3.

1. Selective Bacteriostasis in the Treatment of Infections With Gentian Violet. John W. Churchman.
2. Vas Puncture in Acute Gonorrhea. William T. Belfield.
3. Modern Treatment of the Weak Foot. Armitage Whitman.
4. Malignant Endocarditis With Perforation of Both Mitral and Aortic Valves: Report of a Case. John E. Conboy and Herman L. Kretschmer.
5. Operative Technic in Spina Bifida. Joseph Rilus Eastman.
6. Surgical Drainage From a Biologic Point of View. J. Shelton Horsley.
7. Late Results in the Radium Treatment of Cancer of the Uterus. J. Louis Ransohoff.
8. Metastatic Abscesses of the Thyroid Associated With Hyperthyroidism: Report of a Case Following Repeated Attacks of Sore Throat. David Greenberg.
9. Workmen's Compensation, With Especial Reference to Loss of Vision. Frank Allport.
10. Endothelioma of the Pleura: Report of a Case. P. J. McDonnell and E. S. Maxwell.
11. The Production of Acute Respiratory Disease in Monkeys by Inoculation With *Bacillus Influenzæ:* A Preliminary Report. Francis G. Blake and Russell L. Cecil.
12. Simplified Treatment of the Ordinary Varicose Ulcer. L. M. Stearns.
13. Gall-bladder Disease: Summary of Four Hundred and Twenty-five Cases Treated at the Hartford Hospital From 1914 to 1918. A. W. Branon.

7. Late Results in the Radium Treatment of Cancer of the Uterus.—J. Louis Ransohoff reports that in a series of 32 cases treated 19 per cent were free from recurrence for from two and one-half to five and one-half years; one patient for five and one-half years; two patients for over four years; one patient for three years, and one for two and one-half years. This percentage of cure may seem small, but it compares favorably with that following operation. Deducting eight cases in which the treatment was incomplete raises the percentage to 25. The remaining twenty-six patients are either known to have died of the disease, or have at present a recurrence, or can not be traced. From his observation it would seem that the results were the same whether the radium treatment was or was not preceded by curettage or the cautery, therefore he had given up both curettage and cauterization as preliminary to radium treatment, depending entirely upon the radium. If the cases for radium treatment were chosen with the same degree of care that they are chosen for operation, the percentage of cures, in the writer's opinion would be very large. There is scarcely any case so far advanced that some improvement may not be obtained from radium treatment. In this work it should be the province of all observers not to work for statistics, but to give every patient a chance, if not for a cure, at least for an amelioration of symptoms. He expresses the view that radium treatment should entirely supplant operation, not only in the treatment of inoperable cases, but also in the treatment of operable cases of cancer of the cervix.

The Lancet.

December 27, 1919, ii, 26.

1. The Savill Memorial Lecture on Mental Personality: Its Integration and Disintegration. Harry Campbell.
2. A Case of Primary Hydatid Disease of the Brain With Interesting Eye Symptoms. N. B. B. Fleming and G. W. Bury.
3. A Study of Epidemic Influenza in Australia. Founded on Two Hundred and Fourteen Cases Seen at Their Homes in General Private Practice. H. Leighton Kesteven.
4. Boiled Vegetables for the Use of Diabetics. P. J. Cammidge.
5. A Clinical Study of the Treatment of Tuberculous Abscess by Aspiration. Z. P. Fernandez.
6. On the Removal of Large Cervical Tumours Occupying the Vagina. J. F. Peart.

6. On the Removal of Large Cervical Tumors, Occupying the Vagina.—J. F. Peart reports the removal, by laparotomy, of an intravaginal fibroid which, when depleted of blood, measured 5 in. by 3½ in. and weighed 10 oz. He considers that he was justified in performing laparotomy, and that the abdominal route is to be preferred in such cases. The following essential factors seem to be often overlooked: 1. The frequency of associated pathological conditions of the corpus uteri and adnexa, which can be dealt with only by laparotomy; 2. the possibility of malignant degeneration in an intra-abdominal associated growth; 3. the practical impossibility of diagnosing the presence of such conditions in most of these cases, for a bimanual examination cannot be carried out. The objection that may be urged will no doubt be the relatively greater danger to the patient of the abdominal operation, but in the present days of aseptic surgery there is little to be feared if the operator is accustomed to abdominal work.

British Medical Journal.

December 27, 1919, ii, 3078.

1. An Address on Some War Diseases. Sir Henry Davy.
2. Observations on Mitral Stenosis in Soldiers. Thomas F. Cotton.
3. Apparent Spontaneous Rupture of a Normal Spleen. W. Wood Shorten.
4. The Relation of Pfeiffer's Bacillus to Influenza. Stanley Wyard.
5. Pregnancy Complicated by Volvulus of the Pelvic Colon. Victor Bonney.

4. The Relation of Pfeiffer's Bacillus to Influenza.—Stanley Wyard gives his conclusions regarding the etiology of influenza based upon a study made during the 1918 epidemic. Attempts were made to obtain cultures from the circulating blood in three cases, and from the heart's blood *post mortem* in two. Of the former, two were sterile and one yielded streptococci; of the latter, one was sterile and one gave streptococci. In no case was Pfeiffer's bacillus discovered, and of three swabs taken from the nasopharynx none showed this organism. Cultures were made from the sputum in seventy-three cases, the specimens in all cases being purulent or mucopurulent in character. The *Bacillus influenzæ* was recovered seventeen times (24 per cent). From his studies Wyard holds that influenza is not produced by Pfeiffer's bacillus, but by some other virus at present unknown, since—1. The *B. influenzæ* is found in only a proportion of the cases. Other workers have, however, recovered it in more than 90 per cent, but streptococci can be found in quite as many. 2. In certain epidemics of influenza it has been found extremely rarely, while in others it has been found entirely absent. 3. It is found in cases other than influenza. 4. No specific immunity has been demonstrated to follow infection with this organism. Here again, however, others have arrived at a different result, and have found agglutinins to the bacillus in certain cases of influenza, but their presence has been found by no means constant, and they appear more frequently in the first week of the disease than in the later stages. The observation that the bacillus is pathogenic to animals after intracerebral injections is held to be no proof of an etiological relationship with influenza, since in the human disease infection can never be effected by that path; while equally invalid in this respect is the fact that it has been recovered from pleural, arthritic, and meningeal exudates. It is well established that certain organisms—for example *B. coli communis*—though normally harmless saprophytes, may in certain circumstances become pathogenic; and it is probable, or even certain, that the *B. influenzæ* Pfeiffer is one of these.

The Clinical Journal.

November, 1919, xlviii, 11.

1. Remarks on Appendicitis. James Sherren.
2. An Analysis of Cases of Uterine Fibroids Treated by Abdominal Subtotal Hysterectomy. Raoul Seheult.
3. Active Treatment of Uremia. J. Rupert Collins.
4. Two Cases of Intestinal Growth Associated With Ulceration. James Phillips.

2. An Analysis of Cases of Uterine Fibroids Treated by Abdominal Subtotal Hysterectomy.—Raoul Seheult, Resident Surgeon, Colonial Hospital, Trinidad, says the records of the Colonial Hospital, which provides accommodation for 320 beds, show that 7,141 female patients (excluding those treated in the maternity and tuberculosis wards) were admitted during the five years ended March 31, 1916, and of these 113, or 1.5 per cent., were subjects of uterine cancer, and 241, or 3.2 per cent., of fibroids of the uterus. The admissions to the

female wards were practically confined to black, colored, and East Indian women. In view of the frequency of uterine fibroids in the colony and the apparent proneness of the negro race to this affection, an analysis of 130 consecutive cases treated under his care by abdominal hysterectomy from February, 1911, to April, 1917, were reviewed. The cases fall into three groups: (1) hysterectomy with conservation of the ovaries; (2) hysterectomy with removal of one ovary; (3) hysterectomy with removal of both ovaries. In the 93 cases that he was able to trace, with an observation period ranging from two to seven years, the after-results are reviewed with regard to general health, continuation or cessation of menstruation, artificial menopause, effects on sex instincts, and condition of the cervical stump. Seventy-one of the patients expressed themselves as being in excellent health; 16 reported that they were in moderately or fairly good health, but felt better than before the operation, and were able to resume their work without discomfort; 6 stated that their health was poor and no better than before the operation. Some patients showed a tendency to obesity, others lost flesh, while the majority exhibited no apparent change. Three patients got married after the operation. Of the 93 cases followed up, 2 had reached the menopause at the time of operation. Excluding these two, menstruation had ceased in 64 cases, and in the remaining 27 there was a periodic sanguineous discharge. The continuation of menstruation was doubtless due to a portion of the corporeal endometrium having been left behind. This seemed to produce a beneficial mental effect, while the cessation of menstruation exercised in some cases a depressing influence. Menopausal symptoms were observed in 52 patients. In 55 cases no difference in sexual appetite was observed by the patient after operation; in 8 it was increased; in 20 it was diminished; in 3 it disappeared; and in 7 it had never been present. A more minute analysis shows that the proportion of cases in which there was no alteration of sexual instincts was more or less the same whether the ovaries were conserved or not, and that while there was no increase or total abrogation of the sexual proclivities among those on whom double oöphorectomy was performed, the number of cases in which there was a diminution of sex instincts was proportionately much larger among those in whom both ovaries were removed than among those in whom one or both ovaries were spared. Examination of the cervix in the 93 cases traced showed nothing abnormal. An important feature disclosed by the examination of these cases was the complete absence of malignancy of the cervical stump. Leucorrhea was noticed in 18 patients, and atrophy of the vagina occurred in some instances.

Gazette des Hôpitaux.

December 13, 1919, xcii, 78.

Gas Cysts of the Abdomen.—Chastenet de Géry gives a brief monographic account of these formations which have been known since 1754, when two cases were mentioned by Combalusier, although these hardly measure up to the requirements of our present knowledge. Nothing further is heard until 1825 when the condition was reported in a pig by Mayer. The first completely authenticated case in mankind was not reported until 1876 by Bang, who found the gas cyst at an autopsy. Other autopsy cases were then recorded and in 1899 Hahn reported the first case in a living human subject. During the past score of years numerous other cases have been reported mostly from autopsies, and the total number is now about 66. Five or six monographic studies have been published without counting two recent Paris theses. The bibliography appended by the authors comprises 66 references. The authors prefer the name intestinal pneumatosis, the condition bearing a close resemblance to hydatidiform mole, being constituted of multiple cystic formations suggesting a bunch of grapes, these varying in size from millet seed to pigeon's egg, while the number may be incalculable. The contents are essentially inodorous gas or gases. The site is the ileum, mesentery, colon, peritoneum—often more than one locality although 18 are mentioned as limited to the ileum; exceptionally they have also been seen in the jejunum, duodenum, appendix, etc. Nearly always the gas cyst lies between the serosa and muscularis and is essentially subserous. Concerning the etiology we are in the dark but there usually coexists some lesion of the digestive tube. Thus in 50 cases analyzed there coexisted 28 cases of pyloric ulcer and much less frequently cancer of the stomach, typhoid fever, intestinal occlusion, appendicitis, etc. There is nothing absolutely known of pathogeny but veterinaries uphold the traumatic theory which makes the condition akin to emphysema. Aerogenic bacteria however have been suspected and apparently isolated by some writers. Diagnosis *in vivo* is seldom made, the symptoms most frequently suggesting tuberculosis of the peritoneum. The percussion sound could readily be confounded with that of meteorism. The presence of an underlying condition like gastric ulcer confuses prognosis while the knife which is often necessary for the latter is hardly indicated for the treatment of the cysts.

Gazette des Hôpitaux.

December 9-11, 1919, xcii, 77.

Ovarian Autointoxication. — Pamboukis regards the ovary as an eliminative organ through its determination of the menstrual flow. This is but one of its three functions, the others being respectively the genesis of the ovum and the production of an internal secretion of use to the general economy. In ovarian insufficiency these functions may all be compromised and hence after castration they should be in evidence. However, it is quite possible for a partial insufficiency to develop and in the clinic this may be seen in the form of amenorrhea without autotoxic phenomena—for the latter develop when the internal secretion of the organ is in abeyance. In pregnancy we may see amenorrhea plus ovarian autotoxicosis. In the nongravid, absence of internal secretion is expressed by increased adiposity and by the hot flushing and other symptoms so evident in the climacteric. These women menstruate as usual. In another type we see absence of the menses but evidence of an internal secretion. The women are chlorotic and may have epimenstrual bleeding. In a third type we see absence of internal secretion and amenorrhea combined. Of interest is the fact that ovulation goes ahead as usual so that conception is possible. A still higher type exists in which ovulation ceases. It is not quite clear whether the author ascribes the toxemia of pregnancy to ovarian insufficiency beyond the occurrence of the usual symptoms of the climacteric which are more or less in evidence in some women after conception. He does not mention any severe symptoms of pregnancy toxemia in this connection.

Correspondenz-Blatt für Schweizer Aerzte.

November 27, 1919, xlix, 48.

Rhinogenic Headache.—Gallusser refers to the difficulty of diagnosticating headaches in office practice. Symptomatic headache, despite the enormous variety, is not so burdensome because with time we can find the basic condition, but the essential or primary headache must necessarily be difficult to diagnosticate. These headaches must ultimately be shown to be symptomatic of some other ailment. When eyestrain was recognized as a cause of "essential" headache a great step was taken in advance and the author believes that he has relegated another form of socalled primary headache to a secondary source, to wit, frontal sinus empyema. It goes without saying that the author does not refer to manifest nasal lesions, for the preliminary examination of these patients shows healthy nasal chambers without deviated septum or spurs. Hence in routine work it would be overlooked that the frontal sinus for example was the seat of an empyema. In a case cited the headache was so severe that patient made an attempt at suicide. Something had to be done in so desperate a case, and the author who had become suspicious as to the possibility of a frontal sinus empyema used a trephine with happy results. He would in these unmotivated headaches attended by intense suffering trephine these sinuses purely as an exploratory puncture. If he struck pus he would keep on and do a radical operation. The trial operation is done intranasally, and of course the operator must be a rhinologist.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held December 18, 1919.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

The Dispensary Situation in New York City.—A Report on a Year's Investigation and Study by the Public Health Committee.—E. H. LEWINSKI-CORWIN, Ph.D., submitted this report. (See p. 180.)

Dr. S. S. GOLDWATER said that he supposed the Public Health Committee might be regarded as the representative of the city; at any rate the dispensaries had welcomed its investigation. He could not help thinking that there was a very striking and delightful contrast between the dispensaries in their being willing to wash their dirty linen in public, so to speak, and the behavior of a portion of the medical profession. Some of the members of the latter, when it was suggested at a recent conference on health insurance that the medical service rendered the poor was not what it should be, urged that nothing of that sort be admitted, because the medical profession already stood too poorly, and if they confessed that their work was not up to the standard it would stand still lower in the public estimation. The medical administrators of dispensaries were frank in confessing that they had not accomplished what they should have done. Dr. Lewinski-Corwin's report might lead one to feel rather discouraged, but if they recalled all the improvements which had taken place during the past twenty years they would be able to record considerable progress. In fact, the report showed progress in a number of lines, and particularly in regard to the employment of social workers and follow-up work. The report insisted that a dispensary should have a definite and unequivocal policy and that it should be entrusted to a competent executive for enforcement. What should be the definite policy of a dispensary? In connection with this question the other questions were what were the dispensaries trying to do, whom did they expect to serve, and what financial support was required? A striking feature of the report which the brief summary to which they had listened did not bring out sufficiently was that a large proportion of those who went to dispensaries were not the very poor, but those who were able to pay their way and ordinarily did pay their way. This suggested that it might be advisable to make two classifications, one of which should be a pay dispensary, and the other a free dispensary. If this division were made it would relieve many who came to a dispensary much against their will, and who did not wish to be objects of charity and who ought to be relieved of the feeling that they were dependent upon public charity. There were those who claimed that all clinics should be diagnostic clinics. Nevertheless, it would have to be conceded that 50 per cent. of the patients who came to the dispensaries did not need a thorough physical examination with all the elaborate machinery of a full-fledged diagnostic clinic. It was fortunate that this was so, for if such a complete examination were necessary in every case the cost would be on the average four or five dollars per patient. If these two classes of cases were recognized the simple cases that did not require complete physical examination and the more complicated cases that did require such thorough examination, the organization of the dispensary could be modified to meet these requirements. It would be necessary to regulate the administrative machinery so that each patient would be placed in the class to which he belonged. This would mean a competent registration clerk. He had in his mind a clear idea of how this could be carried out. It took courage to even mention health insurance in an audience of physicians, but he felt that health insurance had a very vital relationship to the dispensary problem. Under a well-planned scheme of health insurance the patient with a trivial ailment would be cared for in his home by the district practitioner, and the dispensary might become a clinical center for everybody able to pay his or her way. As a matter of fact the dispensaries were being used somewhat in this way now, for many patients came with a slip of paper from their family physicians calling upon the dispensary to perform some special work for which they were equipped and which the private practitioner was not so well prepared to do. He had been quite thoroughly convinced that the suggestion of the report urging a satisfactory correlation between hospitals and dispensaries was imperative in order that the dispensaries might have the benefit of the services of the best diagnosticians in the city. If the dispensary was an integral part of the hospital service both physicians and the people would turn to it. While some were loath to acknowledge the fact, others freely admitted that the medical service given to a large mass of the people was inadequate, and the question was how to remedy the situation. His idea was that the hospital and dispensary should be correlated, and that there should be a medical executive in control. The staff should be graded so that the new man should enter the lowest grade in the dispensary and, after serving a probationary period, become a member of the staff. As he progressed he might work his way up through the various grades of the dispensary and then be admitted to the hospital staff. Under present conditions it was not the doctor who was on probation, but the dispensary, and as a rule it did not come up to the mark and the doctor did not remain long. The dispensary should be a post-graduate school of instruction. The investigation had shown that as a rule the special dispensaries were better than the special departments of general dispensaries. The special dispensaries had, he thought, been started in most instances, because the general dispensary had not made adequate provision for them. He thought the special dispensary should be correlated to the general dispensary, as in this way it would offer advantages to both the medical men and the people who came to it for treatment. The dispensary was a potential health center and some dispensaries at the present time were engaged in public health education and were equipped with every sort of educational contrivance that was of aid in this work. To those who were advocating a department of preventive medicine in connection with dispensaries this was a happy sign. The report did not sufficiently emphasize the educational value of the dispensary to the physician and to the community at large. A very striking development in connection with the dispensary was the social service department. He knew of one instance in which a social service department had developed to such an extent that it had asked that a physician be attached to it. If this request were granted he supposed the physician would soon want a social service department for his work and this process might continue indefinitely. While recognizing the importance of the social service work, he did not think such a department should be expanded indefinitely. The suggestion had been made that the social service worker should not undertake the duties of a nurse, but if nursing services were required should refer the work to the district nursing organization. Surely since nine-tenths of the social workers were trained in nursing he felt that this would be an unnecessary duplication of effort. The inauguration of follow-up work had been a step in the progress of the dispensary, and it had shown that there were often good reasons why people did not come back to the dispensary to continue treatment, and usually the reasons were not to the credit of the dispensary. In discussing the question of making appointments for patients to obviate the necessity for long waits, Dr. Goldwater said they had a system at the Mayo clinic under which they made appointments, but nevertheless the patients frequently had to wait a long time. A dispensary in England conducted a lunch counter so that patients would not starve to death while waiting. He did not see how the waiting could be avoided, so long as there were a great many patients who persisted in coming a couple of hours before the time set for their visit. Districting the city had been suggested, but this they were not likely to have so long as the Board of Charities continued in its *laissez faire* attitude. They might, however, have a volunteer association of dispensaries which would bring about a districting of the city without compulsion, but he felt that the most hopeful suggestion from the standpoint of preventing overcrowding was that under a well worked out system

of health insurance many of the patients who now went to the dispensaries would be cared for in a doctor's office. The clinics should then be improved and become diagnostic centers where doctors could send patients for special reasons. More could be done in the making over of the dispensaries by continuous than by intermittent effort. The first essential was a fit place in which to do the work so that the dispensary could render the public the service it was its duty to give.

Dr. WALTER I. NILES stated that it was obvious that a successful dispensary depended upon a competent, enthusiastic, well-informed physician attached to it. As a rule a physician attached himself to a dispensary more for the opportunities it offered for instruction than for anything else, and an important question was how these facilities might be increased. It seemed to him that the best way was to have a number of consultants who should visit the dispensary occasionally as consultants in special cases. In a dispensary where the group system was carried out the consultant would not have to come oftener than once in two or three weeks, or once a month to a particular group. The educational facilities of the dispensary should be cultivated to a greater degree for both graduate and undergraduate students. It might be said that in general we knew more about the results of disease than about its beginnings; it was in the dispensary that one saw and could study the beginnings of disease. In connection with the study of the beginnings of disease there should be a study of the surroundings of the patient, both in his home and in the industry in which he was engaged, so that they might learn more of the conditions that conduced to disease. At the present time the graduate students were going into the hospitals more than into the dispensaries. In order to change this it was only necessary to organize groups in the dispensaries that would provide good teaching material, then the students would come back. There was a very good demand for such groups, yet their number was less than formerly. In the plans of the newly organized Association for Medical Education, which was aiming to develop New York as a medical center, the possibilities of the dispensary should be taken into consideration, especially in reference to those dispensaries correlated with hospitals connected with teaching institutions. In order to economize the time of physicians there should be a greater employment of clinical helpers and volunteers. Many of these women were perfectly competent to do many things which formerly were done by the doctors, and they could be trained to do many more things. It was perfectly possible for a trained secretary to take the clinical part of all histories. In addition to clerical duties, such assistants often brought into the dispensary a critical spirit which tended to elevate the character of the work done in the dispensary. An effort should be made to think of more ways of minimizing the drudgery of dispensary for the doctor and of giving the greatest opportunities for instruction. Another point considered in the report was the advantage of limiting the number of patients admitted. It was obvious that no more patients should be admitted than could be cared for properly. It would take only a little development to attract a larger number of competent men to the dispensaries than they were now getting.

Dr. JOHN A. HARTWELL asserted that this report was for the purpose of emphasizing by the presentation of actual facts the trouble known to those associated with the dispensaries, namely, the finding that the dispensary system in New York had broken down. Dr. Lewinski-Corwin had not emphasized that fact as the full report did. The summary they had listened to gave no idea that the situation was as bad as it actually was. Good suggestions were offered, but the question was how they were to be put into effect, and why some of these things had not been done before. In order to arrive at an answer to these questions the question came up as to how the dispensaries had arrived at the state they were in. He did not agree with Dr. Goldwater that the dispensaries had made any such marked progress as he had indicated during the past twenty years. The reason the dispensary situation was serious was because of the general change in hospital administration. Twenty years ago a physician took care of a hospital himself, and he did not want anyone else to help. There was little laboratory work at that time, and the result was that the young man had little to do in the hospital and turned to the dispensary to get his education and opportunities. The young men worked hard to get into the dispensaries, and it was not uncommon to have long waiting lists. Now the opportunities for in-service had increased and consequently the young doctors dropped into hospital work, and the dispensaries were gradually more and more neglected until it had finally come about that the doctors put the dispensary on trial, as Dr. Goldwater had said. Who had neglected the out-patient department, and why? It had been neglected because other work had become more and more important, and consequently the dispensary was cut adrift. It had been only recently, within three or four years, that the situation was recognized, and the cure in some instances had been reached. Where this had been done it had been brought about by some one man of ability, energy, and perception who took up the work and through whom the problem was solved. He thought the answer to the entire problem was that boards of trustees of hospitals should definitely recognize that their dispensaries were not anywhere near on a par with the in-service in most of the hospitals, and the next thing was a demand that the dispensaries be raised to a better standard. A dispensary should take the attitude that it would treat only as many patients as it could care for properly without overcrowding. Each institution should study the situation as it was, and work out its own problem as it existed in that institution. A solution had been arrived at in several dispensaries. In some dispensaries the facilities were very poor as regarded architecture, and there was also the question of the difficulty of obtaining aid in the keeping of records in both hospitals and dispensaries. The records of the dispensary should form a part of those of the hospital. Whenever a dispensary had been run successfully one man, or possibly two, had been responsible for it. In closing, Dr. Hartwell said that if his criticism of the dispensaries seemed severe he wished it understood that what he said applied to himself as well as to others, for he, too, had neglected the dispensary. At Bellevue, he said, the conditions in the dispensary were desperate. The dispensary there was built when the demands made upon it were only about one one-hundredth of what they were to-day. The children's and tuberculosis dispensaries, however, could not be beaten.

Dr. CHARLES E. NAMMACK said his only justification for accepting the invitation to discuss this complete, comprehensive, and painstaking report was on the basis of his experience. He therefore apologized for the introduction of his personal experience. He agreed with Dr. Hartwell that conditions at the present time were deplorable. They had a dispensary law, but it was a dead letter. A law to be effective must be founded on the customs and sanctions of the people, and any law that did not have this foundation became a dead letter. For this reason the latest constitutional amendment he believed would not be enforced. As to the dispensaries, one and one-half million, or 20 per cent., of the population of New York availed themselves of the medical service the dispensaries offered. It necessarily followed that there was a great abuse of the dispensary. He did not agree with the report that the abuse of the dispensary service was limited to 2 per cent. of the population, nor did he agree with the report of the investigation made by the Medical Society of the County of New York, in 1912, that the abuse was limited to 10 per cent. of those treated in dispensaries. In the early years of his professional life he had employed his spare time in making an investigation of this question, using the best methods he could think of. Much of the statistical evidence that had been accepted for these reports was based upon the statements made by the patients themselves as to their ability to pay. It had been his experience of human nature that an unworthy person would be sufficiently unworthy to tell an untruth in reference to his ability to pay a doctor's fee. Hence, in making his investigation he had based his judgment of the patient's ability to pay upon the style in which he lived and

the amount of rent he was paying. Judged by this standard he found that 23 per cent. of the people accepting free treatment at dispensaries were able to pay a moderate fee to a physician. Forty years ago people were somewhat more justified in going to a dispensary than they were to-day, because adequate medical advice was not as easily obtainable then as now. In commenting upon conditions at that time, Dr. Abraham Jacobi said that all that was necessary to secure success in the medical profession was a carriage, a diploma, and plenty of assurance; conditions were entirely changed to-day, when there was not a square block in the city where one could not find one or more capable doctors willing to give advice for a moderate fee. Coming to the question of dispensary administration, a dispensary should have at its head a man of many parts; he should be a competent physician, a capable executive, and should know human nature. For the services of such a man the dispensary was willing to pay $1,200 a year. Of course, it was impossible to keep a man of that type on such a meager salary to-day. With reference to the question of the dispensary charging fees, he felt that when they began to talk of charging fees they were losing sight of the primary function of the dispensary, which was for the treatment of the poor, and medical service should be as free as anything else was to the poor. The laborer who could pay a dispensary fifty cents for a visit should be sent to some physician, and that fee would answer for the specialist, too, where the patient could pay no more. He had sent many a patient who was unable to pay a specialist's fee to a specialist with an explanation of the circumstances, and he had never known such a patient to be refused treatment, and often the specialist had refused to take any fee whatsoever, even though he might have spent hours on an obscure case. As to the question of diagnostic clinics, that question had been discussed at Bellevue and the conclusion reached was that a diagnostic clinic would take too much time and would distract attention from the patients who urgently required treatment. When a case was so obscure that it required the service of a number of consultants and a number of special examinations, it was not a case for the dispensary. A qualified man in a dispensary should be able to make a fairly accurate diagnosis in most cases without the complicated machinery of a diagnostic clinic. A health center in connection with a dispensary might well be established, but its activities should be conducted in the evening when working people could take advantage of the facilities it offered. Another point was with reference to the pay of the staff. He felt that the laborer was worthy of his hire, and that every dispensary physician should have a small salary (the wages of a plumber would do). Many young men were willing to give their services for a dollar an hour. In Bellevue the doctors in the tuberculosis dispensary were paid by the city. By paying a small salary the dispensaries would attract men not attached to hospitals. As to appointments, they should be made as suggested in the report, and the men could be promoted as they showed progress. The keeping of records was a problem not only in dispensaries but in hospitals. They had taken young women at Bellevue and trained them as filers and indexers, and when they were trained they commanded so much larger salaries in business houses that they could not keep them in the hospital. Such labor was not available to the dispensary at present. It was regrettable that when so many large gifts were being made by philanthropists that no one had thought of endowing clinics, so that doctors, clinical secretaries, and social workers could be paid and the poor properly cared for. He felt that the follow-up system was the hope of the future. It was the one thing that was going to raise the standard of living. The one great advance that had been made by the dispensaries was the establishment of social service departments. By this means they reached the people; and even though their appeal could not break through the ignorance, vice, sloth, and religious prejudice of the older people, the children could be reached. As regards districting the city, he was very much in favor of that, but the suggestion had been made before and had met with opposition because some institutions wanted to draw their clientèle from all over the city and from other localities as well. They said their contributors would not agree to the limitations that would be imposed by a districting plan. The districting of the city would probably never be brought about, though such a plan had great advantages, as demonstrated by the tuberculosis clinics maintained by the city. His idea briefly was: (1) To abolish all fee charges. (2) Pay every member of the staff. (3) Increase equipment. (4) Expand service. (5) District the city.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting Held November 25, 1919.

DR. SOLOMON WIENER IN THE CHAIR.

Carcinoma of the Vulva. No Recurrence for Three Years.—Dr. THOMAS H. CHERRY presented this patient, a woman, 71 years of age, unmarried, and a virgin. Her previous history was negative except for pneumonia twenty years ago. The menopause occurred at the age of 38 years. Two weeks before she came under his observation she began to notice a swollen and tender area upon her external genitals. This began to increase in size and became very painful to the touch. On voiding there was considerable irritation and burning. There was no leucorrheal discharge. Physical examination showed a red growth situated on the left labium majus near the clitoris, similar in character to exuberant granulation tissue. This had a conical base and was raised from the skin about three-quarters of an inch. The left vulva was slightly edematous. On the external aspect of the left labium majus a slight superficial excoriation was present. The growth was exquisitely tender. No inguinal glands were palpable. A diagnosis of epithelioma of the vulva was made and operation advised. A month later the patient was seen again when the growth appeared to be about the same, but upon the opposite labium majus there was a small superficial ulcerated area with indurated base. The operation was delayed somewhat as the patient's blood pressure was 190 mm. systolic. After rest in bed for a week the blood pressure was reduced to 160 mm. Operation was then performed under chloroform ether anesthesia, the typical operation as described in Crossen's Operative Gynecology being employed. The incision was made in the left inguinal region and extended across the abdomen and over the pubis, well above the mons veneris, to the inguinal region of the left side. At the outer extremities of this incision another incision was made curving downward and inward, completely encircling the vulva. An additional incision was made around the external meatus of the urethra, encircling it for three-quarters of the way. This was extended down laterally to the vestibule, meeting the first incision. These incisions were deepened so that the entire vulva, Bartholin glands, vestibule, clitoris and mons veneris were freed from the underlying structures. This block of tissue, including the lymphatic vessels that drained into the groin, were dissected upward to each inguinal origin, and the vessels exposed in such a manner that the macroscopic glands were removed *en masse*. All the bleeding areas were clamped and ligated, the edges of the wound were approximated by interrupted silk worm gut sutures; continuous catgut sutures were placed in the skin after placing superficial relaxing incisions on the thighs to allow the wound to close without tension. Drains were placed in the center of the wound and in each groin. The patient left the operating table in good condition after two hours and ten minutes, and was discharged from the hospital on the thirty-fifth day following the operation. On examining this patient six weeks later a complete prolapse of the uterus was found. Since that time she had been treated at the General Memorial Hospital by *x*-rays with the hope of preventing the formation of metastases and recurrences. The pathological examination of the tissues showed typical epithelioma. Section made of the inguinal glands showed no metastatic growth.

The Therapeutic Value of Radium.—Dr. G. S. WILLIS read this paper in which he said that exposure of the tissues, normal and abnormal, to the rays of radium caused certain cell changes, the results of which were shown by the swelling of the whole cell, enlargement

of the nucleus, and later the cell became a colloidal mass capable of being absorbed into the general circulation. Upon our ability to bring about this change depended the therapeutic value of radium. The value of radium treatment depended upon the accessibility of the growth and the physical condition of the patient who must withstand the constitutional effects of the action of radium. The prognosis and the therapeutic value of radium depended upon the ability of the patient to eliminate the toxemia which presented to a greater or lesser degree in all cases under radium treatment. As to the cause of this toxemia, he did not know whether it was the introduction into the general circulation of these disintegrated cells, or whether it was the result of some unknown effect of radium. The symptoms of this toxemia were prostration which might continue for a week or more, a marked diminution in blood pressure, a rise in temerature, and not infrequently nausea and vomiting—in fact a general asthenia might develop which it was impossible to combat. He had seen certain cases under treatment, and although the growth might have disintegrated to a marked degree, the general condition of the patient became hopeless. The major gynecological conditions in which radium therapy was indicated were malignancies, hemorrhage, and fibroma. In the treatment of malignancies radium occupied a similar position in therapy to that of salvarsan in the treatment of syphilis. Like salvarsan, it rarely alone cured, and, like salvarsan, it was necessary in the treatment of all malignancies. It was indicated in two classes of cases, in the operable as a pre-operative measure, and in the inoperable in which one might expect to cure at least one or more of the three cardinal symptoms—pain, hemorrhage, and fetid discharge. As a preoperative measure, he believed all cases should be treated with radium before surgical means were instituted. If this were done one might expect that metastases would not take place. In the inoperable conditions the success of radium treatment would depend upon our ability to combat the resultant radium toxemia. The suitability of an inoperable case for radium treatment was ascertained by making a general physical examination and by determining the functionating ability of the kidney. If the specific gravity was low and casts and albumen were present, a chemical blood examination was made to determine the already present retention products, and a phthalein test was made. Lastly, a complete blood examination was made. The contraindications to the use of radium would be in the presence of a growth which was inaccessible to the action of the rays of radium, and evidence of a kidney whose functioning power was less than 50 per cent. In this class of cases very little benefit was to be expected from the use of radium. As to the dosage in malignancies, it was his experience that not more than 50 milligrams should be used at a time, and the treatments should be as prolonged as possible. If it was possible to cross fire with a tube of 100 or 200 milligrams applied to the abdomen the results would be better. Daily blood counts should be taken and the frequency of the treatment should depend entirely upon these. In the treatment of hemorrhagic conditions a tube of radium of 25 to 50 milligrams inserted into the uterus for five or ten hours, according to the severity of the symptoms, would control most of the bleeding. This application was attended with but little danger, and in the opinion of the speaker was indicated in any and all such conditions. In the treatment of fibroma with radium each case must be considered from the individual standpoint. If hemorrhage was present radium should be used at once, and after a sufficient length of time the growth might have diminished in size sufficiently to make surgical interference possible.

Roentgen Therapy in Gynecology.—Dr. W. H. MEYER read this paper in which he said that through the agency of roentgen rays stimulation, inhibition, or destruction were applicable at will to certain living tissues. However, because of marked differences in radio sensibility of various cellular structures, three effects might occur in the same exposed area. Since the vulva, vagina and cervix might be classed as superficial structures, in so far that the direct application of the rays was a possibility, a classification need be no different than that of diseases of the skin and the tangible mucous membranes in other parts of the body. Superficial lesions naturally fell into three groups: (1) Those to be benefited by stimulation; (2) those in which an inhibitory action was desired, and (3) those conditions in which total destruction was the aim. Since employing the absorption rate as a basis for their dose measurement they had passed their fiftieth consecutive case of superficial malignancy with satisfactory results. Some of these cases were now in their third year following the first treatment and to all appearances remained perfectly well. Differences in penetration and filtration were employed to suit the individual case; the estimated absorption, however, was the dose factor in each instance, and the result had been uniform whether the lesion was purely cutaneous or at the muco-cutaneous junction, whether prickle cell or squamous cell in type. They were now producing this result at a single sitting, the full treatment to a single area not requiring more than fifteen minutes. With careful blocking for the protection of normal structures, a somewhat less severe application would suffice for most superficial benign growths; berrucæ, moles, and superficial nævæ fell into this group. With those malignant conditions involving up to the first centimeter in depth, where a total absorption could be brought to bear, similar good results were to be expected. However, with those lesions situated below the second or third centimeter in depth and in inaccessible regions, the difficulty of satisfactory treatment became greater and speedily diminished with increasing depth. In malignancy, superficial or deep, the desired results would have to be obtained under the following conditions: 1. Destruction of the malignant cells; (b) inhibition to neighboring healthy tissue; (c) stimulation to the surrounding healthy tissue. With more or less superficial tissues this combination was obtainable. In deep-seated and more widespread malignancy, usually the best one could hope for was an inhibitory action on the malignant cells and stimulation of the surrounding normal tissue. This was the minimum dose that one should attempt to administer. The least desirable reaction, one which still had its advocates, was dependent, according to one's theory, upon (*a*) stimulative dosage to the normal metabolic processes (by direct high transmission rate); (*b*) electronic disturbance and rearrangement (by secondary ray effects); (*c*) the formation of enzymes or antibodies (indirect radiation). This was the status of the treatment by radiant energy as it appeared to-day. The writer's comment here was "Know that your radiologist knows his roentgen rays and prohibit the promiscuous use of this agent by unskilled and untrained incompetents. On the other hand, strict co-operation should exist between the surgeon and the radiologist for both pre-and post-operative radiation." In discussing the treatment of uterine hemorrhage, menorrhagia, metrorrhagia, symptoms of the menopause, and uterine fibroids, the writer said that in a single treatment of from forty to ninety minutes' duration, depending upon the type of the patient, a permanent cessation of the menstrual function and of hemorrhages could be produced. In their last series of 20 consecutive cases in which dosage based on absorption percentage administered at a single sitting was employed, the ages ranging from seventeen to forty-five years of age, they had not a single failure. The symptoms of the menopause was materially diminished and the period of suffering shortened by one or two applications. When more than one treatment was to be given, from four to six weeks should elapse between applications. The fibroids best suited to radiation were the intramural type. The subperitoneal, and particularly the pedunculated, variety had best be operatively removed. The sunmucous or polypoid variety of fibroids were practically contraindications to the use of radiography. The writer had based his dosage measurement on the rather materialistic assumption that work done required the expenditure of energy which must be transformed or consumed at the proper site to produce results. As to the logic of dosimetry by the estimation of absorption, attention was directed to the following points: (1) The amount and pressure of current energizing the roentgen tube could be metered; (2) the quality and quantity of *x*-ray generated were measurable; (3) various methods of surface dosimetry had been devised. The

more penetrative the rays and the greater the filtration, the less the possibility of reaction with the same full measured incident dose. This might be explained on the basis that high penetration with strong filtration meant a high transmission rate, and since the difference between the incident dose and the transmitted dose in any given area might be assumed to indicate the absorption rate, this absorption must of necessity be low under the conditions of high penetration and strong filtration.

Dr. WILLIAM P. HEALY said he was not familiar with roentgen therapeutics but they had used radium in cases of menorrhagia during the child-bearing period and in cases of metrorrhagia not associated with any neoplasm or change in the size or form of the uterus but in which the patient was bleeding profusely. In young women under thirty years of age with this symptom he had used 25 mgs. for a limited number of hours, eight at the most, and none had as yet become pregnant, though the periods had been adjusted to four or five days, and the question was whether the Graafian follicles had been damaged. He asked Dr. Willis if he had followed cases long enough to know whether pregnancy occurred, whether the children born were normal, and whether pregnancy occurred as frequently as in women not thus treated.

Dr. LEROY BROUN, in speaking of fibroids and the use of radium, expressed the belief that radium unquestionably had a field, and under certain conditions a field in the treatment of fibroids, but he said this advisedly. In their study of fibroids at the Woman's Hospital the operative death rate was 1.5 to 1.8 per cent. This was based on almost 2,000 consecutive operations, including the difficult and simpler ones, together with those who were poor surgical risks. They could not ask for better than this. One might have tubo-ovarian conditions which might need operation of themselves and which in the presence of large fibroids could not be diagnosed. These constituted about 10 per cent. of all cases and radium or the *x*-ray would not be used in the treatment of such cases. Fibroids underwent necrotic changes which in the majority of cases were not diagnosed before operation and which would contraindicate the use of radium. Ninety out of 1760 consecutive cases, or five per cent., had this necrotic condition. Carcinoma of the body of the uterus, a condition at times discovered and at other times not, existed in 15 per cent. of cases. For such a condition, while radium miyht be used it was by no means the best treatment, since complete removal gave such excellent results. Added to all this there was the uncertainty of making a clear differentiation between an edematous fibroid and a tense ovarian cyst. Errors of this character had been made and would continue to be made. One would certainly not intentionally use radium or *x*-ray for ovarian cysts. Radium had a field, however, in young women with clearly defined and uncomplicated myomatous uteri that were giving symptoms. In such cases he would prefer to use radium to save the patients from the complete removal of the uterus. If such a fibroid, however, could be removed by myomectomy this was a different matter and he would choose the operative course. These cases, however, were generally those of diffuse adenomyoma and not of removable fibroids. The general practitioner saw laudatory reports of the treatment of fibroids by radium and *x*-ray and was anxious to give his patient the benefit of this new treatment and to avoid operation if possible. He had not been trained to recognize and possibly had not been informed of the coincident existence of pathological conditions. He sent his patient to the *x*-ray specialist who was less trained to recognize such complications and who treated the patient on the diagnosis of the family physician. He thought that in not always being able to map out clearly the abdominal condition before the abdomen was opened was where the error was made in advocating under such conditions a line of treatment (*x*-ray or radium) which was untenable in certain conditions.

Dr. GEORGE GRAY WARD said that at the Woman's Hospital they had been using radium quite extensively during the past years and he could add his testimony to its great value as a palliative measure in inoperable carcinoma of the uterus. They had also had satisfactory results in the treatment of menorrhagia without demonstrable pathological changes of the uterus by means of radium. He was entirely in accord with the remarks of Dr. Broun, namely, that a careful diagnosis was needed before *x*-ray or radium could be advised. There were many cases in which the use of the *x*-ray was inadvisable. He cited an instance of a woman who was treated for a fibroid by the *x*-ray and had suffered ever since with marked pelvic pain; several men who saw her thought the pain was due to the *x*-ray treatment. In that case they had used radium and there had been no hemorrhage since the application was made, but it was too soon to say that the condition had been cured. Where one found involvement of the adnexa, pedunculated growths and adhesions of the intestines, such patients were not suitable for radium treatment and should be operated upon. In other words, a careful diagnosis was essential, whether one used *x*-rays, radium, or operated.

Dr. JOSEPH BRETTAUER said he had not heard the papers and so his discussion would not be on the paper but would be germane to the remarks of the speakers who had discussed the papers. As far as treatment of fibroids of the uterus with *x*-rays was concerned, he had learned to carefully select his cases for this specific form of treatment. The more experience he gained, the better and more satisfactory his results were. This was mainly the reason he had never resorted to radium for the treatment of fibroids. He recently had occasion to remove a rather large fibroid where radium had been used. All the symptoms complained of previous to its use had grown rapidly worse, and removal was necessary one year after its application. Radium as a palliative measure in the treatment of advanced cases of carcinoma of the cervix was a valuable addition to their therapy. The results were marvellous at times. The application of a small amount (60 milligrams) for from twelve to eighteen hours was followed by the disappearance of hemorrhage, foul discharge, and excruciating pain, and the general condition improved in a remarkably short time. Of course there were, as a rule, metastatic foci in some other organ to which the patient eventually succumbed.

Dr. HAROLD BAILEY said he knew of one case (mentioned by Dr. Williamson) in which pregnancy followed after radium had been used. He had never treated any woman with radium who after the treatment became pregnant. He had treated only one young woman for bleeding. He agreed with Dr. Brettauer in regard to the palliative effects of radium for uterine carcinoma. He uttered a word of warning, however, namely, that part of the cancer within one or two centimeters of the point at which the application was made might be caused to disappear and there might be entire local healing and yet the cancer was still growing and would eventually kill the patient. Local healing within a year did not mean that the patient was cured. Dr. Bailey said he had seen patients shown as cured and in whom there was absolutely no growth by sight or touch, and still they were not cured as later developments proved.

Dr. JAMES T. CORSCADEN said he had treated some 200 cases of metrorrhagia and fibroids and about 40 cases of epithelioma. In epithelioma it must be remembered that the disappearance of the superficial growth gave no indications of the metastases or extensions into the broad ligaments. One could easily fall into error in attempting to remove such a uterus. He thought no better indications had been laid down than those of Dr. Clark of Philadelphia, who divided his cases into clearly operable, inoperable, and doubtful. The two latter were treated with radium. Time enough had not elapsed for them to tell whether a delay of three or more weeks was deterimental to the patient or whether 800 or 900 milligram hours had any destructive effect on the cancer cells distant from the uterus. He thought it would be safe for the majority of them to either operate or use radium in full destructive doses. In regard to metrorrhagia in the grossly normal uterus and in fibromyoma, he felt that we had a much wider and more useful field for radium and the *x*-ray. However, before applying radium to what appeared to be a pathological uterus, one must consider the effect of these agents on the normal animal. They saw then that next to the lymphocyte and spermatozon the

Graafian follicle was the most susceptible to the *x*-ray and radium, while the blood vessels and smooth muscles were affected only by much larger doses, so that when one treated a fibroid with *x*-ray or radium in order to get any direct action on the muscle he must give a dosage many times as large as that necessary to destroy a Graafian follicle. In the young woman who wished to bear children the *x*-ray and radium should be used with the greatest caution. Dr. Brettauer laid his finger on the key to the situation when he emphasized the necessity of careful selection of cases. It was important that greater diagnostic effort be employed in the future than in the past. It was his experience that fibroids had very few symptoms except bleeding, a sense of weight in the pelvis, and frequent micturition. When other symtoms occurred it was important to rule out pathological condition of the tubes, ovaries, and appendix. One case, a tuberculous kidney, required four cystoscopies before a diagnosis could be made. On the other hand, one could not operate on these various diseases merely because of a coincident fibroid. They should be handled according to their individual indications.

Dr. WILLIAM H. MEYER said the one phenomenal thing in this discussion was the rather confusing impression of the effect of radiation, namely, that in one case the *x*-ray was found to relieve pain and that in the next case the patient was made worse by the treatment; in another case amenorrhea was produced while in the next hemorrhage grew worse. Assuming a correct diagnosis he did not believe they would find this difference in result if the correct number of areas were employed and the proper dosage applied. Mention was made by one of the speakers of conserving the menstrual function. In women over forty it did not make much difference whether they continued to menstruate a few years longer or not and besides the symptoms of the menopause were materially lessened (from a point of time at least) when roentgen therapy was properly applied.

Dr. WILLIS, in closing, emphasized the necessity of standardization as regards radium. He said we knew that radium had a place therapeutically, but he did not think it had been established just what place. There was no question but that radium would control hemorrhage and that it was a good treatment applied to certain growths before operation. The whole question depended upon the accessibility of the rays of radium to the growth one is endeavoring to affect. The Mayos spoke of this process as "sickening the cell" and operated within three weeks after the application of radium. They gave a certain dosage which was comparatively small, and within three weeks they operated with excellent results. During the past two months he had treated two cases of carcinoma of the uterus with radium and hysterectomy and in each case without the slightest trouble. These cases were at the present time in good condition, but it was too soon to say what the final result would be.

Dr. WARD asked if he treated those cases with radium postoperatively.

Dr. WILLIS replied one they did and the other they did not because they did not think it necessary. If there was an ulcerative nodule they used the radium postoperatively, but not on general principles.

Dr. BRETTAUER said that in a few borderline cases he had used 40 milligrams of radium for twelve hours before operation. At the time of operation it was noticed that the peritoneum of the pelvis could not be stripped off bluntly anywhere. It was closely attached to the underlying tissues, preperitoneal fat was absent, and isolation of the ureters could only be accomplished by the use of a sharp instrument, never by the finger alone. He asked Dr. Willis whether such observations had been made by him.

Dr. WILLIS replied that the adhesion of the peritoneum was probably due to overradiation and he thought that accounted for what was found in those cases. It was impossible in radium therapy to treat the exact situation that one wished to treat and to limit the action of the radium to that region.

Dr. BROUN asked Dr. Willis if it was not his experience that after the use of radium operation was made more difficult as Dr. Brettauer had brought out.

Dr. WILLIS said that had been their experience and that was why the Mayos operated within three weeks after the application of radium. Their idea was to "sicken the cell" by the use of radium so as to prevent metastases. If one waited more than a few weeks after the application of radium operation was made more difficult.

Dr. HAROLD BAILEY verified what Dr. Brettauer said with reference to the increased difficulty of operation following the employment of large doses of radium. They had used large doses of radium in the treatment of cancer and four weeks afterward the difficulties referred to were present.

A Roentgenographic Study of Abdominal Organs After Intraperitoneal Inflation with Oxygen. — Dr. ARTHUR STEIN and Dr. WILLIAM H. STEWART made this presentation. (See Report of Medical Society of the County of New York, MEDICAL RECORD, Oct. 27, 1919.)

Dr. ALFRED MEYER said he had come, though not a member of this Section, because he was interested in this subject, and had had an extensive practice in artificial pneumothorax and a limited one in pneumopericardium. He had stated before the American Medical Association, in 1917, that it was his belief that there was a greater field than had been supposed for the introduction of gas into the various serous cavities of the body, both for diagnostic and therapeutic purposes, and he strongly urged that such injections be made into the abdominal cavity after the aspiration of ascitic fluid due to a variety of causes. He stated that though this had not been of value in a few cases of cirrhosis of the liver at Mount Sinai Hospital the work should be repeated on a larger scale. He felt that if medical men kept on studying along this line they might steal a march on the surgeons and cure some cases of tuberculous peritonitis by the injection of atmospheric air or of oxygen. He saw a great deal of pulmonary tuberculosis, but he had not seen a case since then that had justified the treatment, although he had seen cases of hemorrhagic pericardial effusion of obscure origin in which he repeatedly made a pneumopericardium—the first on record in the United States. But he was delighted at the value established for these injections from the diagnostic point of view by Dr. Stein and Dr. Stewart. He would like to ask, however, if these patients who had had oxygen injections into the abdominal cavity complained of pain, why should not nitrogen be substituted for oxygen, and if nitrogen were not available why should not air that had been filtered through cotton to sterilize it be used? It might be that the injection of atmospheric air would eliminate the pain because it was more bland, though open to the objection possibly that it was absorbed more slowly than oxygen. They had spoken of using large amounts of oxygen; he could see a close analogy between the use of large amounts of oxygen in the abdominal cavity and the use of large amounts of nitrogen in the thoracic cavity. Just as large amounts of nitrogen with high positive intrapleural pressure might cause rupture of a pulmonary cavity situated near the surface with consequent infection of the pleura and the death of the patient, so, too, large amounts of oxygen injected into the abdominal cavity might lead to similar accidents through the rupture of adhesions. These fifty-one cases had run along without disaster thus far, but it was a very wise precaution to reduce the total quantity injected.

Dr. ARTHUR STEIN said it would, of course, be quite possible to substitute air for oxygen in the application of this method. The sterility of the air, however, was of no particular importance. Whenever a laparotomy was done air which was not sterile entered the abdominal cavity and with no untoward effects. Oxygen possessed the advantage of more ready absorption, the rate of absorption varying from case to case. In some instances absorption had proceeded so rapidly that at the end of an hour and a half they could not take the picture; in other cases it took from twenty-four to forty-eight hours. They were not using a large quantity of oxygen; in most cases about 2 liters. The point was that they individualized. They recommended careful observation of the patient during inflation with palpation of the abdomen, etc., and when pain was elicited by the pressure from the gas it was time to discontinue the injection. As a rule, however, the patient experienced no pain whatsoever. A large quantity

of oxygen in the abdomen was liable to break up adhesions and, where the presence of the latter was suspected, as in a case of subdiaphragmatic abscess, they were especially careful not to inject too much. The point he wished to emphasize was that they individualized and had no hard and fast rules as to the quantity of the gas injected. Since their first experiments with this method they had made a number of changes in the technique, and they felt that had increased its safety and efficiency.

Pelvic Lavage for Pyelitis.—Dr. H. DAWSON FURNISS presented this contribution. He stated that the majority of acute cases of pyelitis coming under his observation were those following operation, and which were due to acute hematogenous infection. Usually the pyelitis was unilateral and followed six to ten or more days after operation. In the beginning the infection was located in the parenchyma of the kidney and the pyelitis and cystitis were secondary. Rest, local heat, and water copiously by mouth and rectum was the treatment first instituted. Lavage was not advocated until a week or ten days had elapsed, not because of any fear of harm, but because it was usually of no benefit in the early stage. However, he did not believe it advisable to wait too long in the topical treatment. Some had claimed that in lavage the chief benefit followed the dilatation, by the catheter, of some obstructed part of the ureter. In many instances, both acute and chronic, he had found dilatation of the kidney pelvis and ureter often, he believed, due to the obstruction caused by inflammatory swelling of the ureteral mucosa. The medicaments used in the lavage caused a subsidence of this and consequently less obstruction and better drainage. The results of lavage had been most encouraging. As a rule, the temperature became lowered within two or three days after the first one or two injections, and remained so; the cystitis improved and the urine promptly cleared. Often the cystitis was apparently worse than the pyelitis, yet dependent upon it. The time required to effect a cure depended upon the severity of the infection and the amount of ureteral and pelvic dilatation that had occurred. A case was not regarded as cured when there was more than the normal amount of urine in the ureter and pelvis, even though it was free of pus and bacteria. The greatest number of cases were the chronics, many of whom complained only of vesical symptoms. Before instillating treatment, stone and tuberculosis must be eliminated and it must be determined if there was a stricture of the ureter—a very common condition in women. If such a stricture were present its dilatation must precede or be done at the same time as the treatment of the pyelitis. The stricture cases must be followed up and dilated from time to time. Where movable kidney was a factor in bad drainage it must receive attention either by operation or corsetting. The results in the chronic cases had been equally as satisfactory as in the acute cases. The technique was as follows: The ureter was catheterized to the kidney pelvis. If there were obstruction it might be necessary to first pass a series of dilating bougies before it was possible to pass a catheter. The pelvis was drained of all urine either by allowing it to run or by aspirating with a syringe. The pelvis was then irrigated with boracic acid solution or sterile water and when clean all fluid was withdrawn. Then 1 to 5 c.c. of one-half per cent. silver nitrate was injected. In sensitive bladders it was better to fill them with saline solution for cystoscopy, as the silver nitrate that passed down the ureter was immediately rendered insoluble and nonirritating by becoming the chloride. It was an advantage to use a large catheter for its dilating effect and because the washing could be done so much more rapidly. Also it was better not to withdraw the cystoscope after the catheter had entered the pelvis, but to have a nurse hold it or immobilize it in a suitable holder. This prevented the catheter from slipping below the pelvis.

Dr. HAROLD BAILEY asked when it was practical to institute lavage. In the acute infections in pregnancy and in the early postpartum period to use lavage was rather dangerous and until the case became subacute, or chronic, other measures should be used, he believed.

Dr. FURNISS said that in the paper he had brought out the point that when one was dealing with an acute hematogenous infection he should wait a week or ten days, because the infection in the beginning was not in the pelvis of the kidney, but in the parenchyma. They did not regard lavage of the kidney for pyelitis as a dangerous procedure.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NORTH CAROLINA BOARD OF MEDICAL EXAMINERS.

Raleigh, 1919.

(*Concluded from page* 130)

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

1. What is meant by the science and art of obstetrics?
2. Give the boundaries of the true pelvis, mentioning the obstetrical landmarks found therein and state the diameters of its outlet.
3. Discuss the toxemia of pregnancy and outline its treatment.
4. What types of labor would indicate the employment of: (*a*) pituitrin, (*b*) forceps, (*c*) version, (*d*) "watchful waiting"?
5. What would be your management and method of treatment of: (*a*) placenta prævia, (*b*) retained placenta, (*c*) eclamptic seizures, (*d*) mastitis?
6. What is subinvolution, its principal causes and its treatment?
7. Mention the chief causes of painful menstruation and suggest the means of relief.
8. State the principal causes of convulsions in childhood and give the treatment for the same.
9. Outline the general treatment of enterocolitis in a child one year old, and write one prescription for the same.
10. What is spina bifida and what is its prognosis?

SURGERY.

1. Give the indications for and describe the methods of blood transfusion.
2. What are the causes of stricture of the esophagus? How would you manage a case?
3. Discuss the surgical diseases of the spleen.
4. (*a*) Give the treatment of a fractured patella; (*b*) the pathology and treatment of a sprained ankle.
5. Give the diagnosis and treatment of rupture of the bladder.
6. Name the neoplasms of the testis and treatment for each.
7. (*a*) How would you treat varicose veins of the lower extremity? (*b*) Give the etiology and treatment of thrombophlebitis of the femoral vein.
8. Outline your procedure in a pistol-shot wound of the abdomen.
9. (*a*) Mention the varieties and signs of cataract and the indications for operation; (*b*) name the nasal accessory sinuses and conditions due to their infection.
10. Define: diaphysis, leucoplakia, hypospadias, skiagraph, bronchoscopy, glossitis, osteomalacia, galactocele, sequestrotomy, pyelography.

ANSWERS.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

1. The *science of obstetrics* traces the physiological and pathological processes arising directly and indirectly from reproduction; the *art of obstetrics* is concerned with the necessary care and treatment of the woman and child in these various conditions.—(Berry Hart.)

2. The *true pelvis* is bounded *above* by a plane passing through iliopectineal line; in *front* by the pubic bones and the obturator membrane; *behind* by the concavity of the sacrum; *laterally* by the obturator membrane, the sacrosciatic ligaments and the internal surface of the acetabulum.

The *obstetrical landmarks* are: The iliopectineal line, symphysis pubis, and promontory of the sacrum.

The *diameters of the outlet* are: Antero-posterior, about five inches; oblique, about four and a half inches; transverse, about four inches.

3. *Toxemia of pregnancy* may be due to: "Uremia,

albuminuria, imperfect elimination of carbon dioxide by the lungs, medicinal poisons, septic infection; predisposing causes are renal disease and imperfect elimination by the skin, bowels, and kidneys.

"*Symptoms:* Headache, nausea, and vomiting, epigastric pain, vertigo, ringing in the ears, flashes of light or darkness, double vision, blindness, deafness, mental disturbance, defective memory, somnolence; symptoms easily explained by the circulation of toxic blood through the nerve centers. These may be preceded by lassitude, and accompanied by constipation or by diarrhea. Headache is perhaps the most significant and common warning symptom. In bad cases the urine is reduced in quantity (almost suppressed), very dark in color, its albumin greatly increased, so that it becomes solid on boiling. Next comes the final catastrophe of convulsions. The convulsive fit begins with twitching of the facial muscles, rolling and fixation of the eyeballs, puckering of the lips, fixation of the jaws, protrusion of the tongue, etc., soon followed by violent spasms of the muscles of the trunk and limbs, including those of respiration; hence lividity of the face and stertorous breathing, biting of the tongue, opisthotonus, etc. The fit lasts fifteen or twenty seconds, ending in partial or complete coma, possibly death; or consciousness may return, to be followed by other convulsions."—(King.)

Prophylactic treatment consists in the proper care and examination of the woman during pregnancy; metabolism must be kept as perfect as possible; the eliminative organs must be working; constant examination of the urine (for nitrogen output and presence of albumin) must be made; the diet must be regulated; headache, disturbed vision, nausea, edema must be investigated.

Active treatment consists in reducing the blood pressure; administration of purgatives, diuretics, and diaphoretics; administration of chloral, veratrum, or chloroform; and sometimes it is necessary to empty the uterus.

4. *Pituitrin* is indicated in cases of uterine inertia when the cervix is dilated or dilatable and there is no obstruction to delivery.

Indications for the use of forceps are: "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother and child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing, 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 3. *Passenger at fault:* A.—Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B.—Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). 4. Accidental complications: Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both."

Indications for version are: (1) In transverse presentations; (2) in placenta prævia; (3) in malpresentations of the head; (4) in simple flattened pelvis, and in minor degrees of pelvic contraction; (5) in prolapsed funis; (6) in sudden death of the mother, and (7) in any case where speedy delivery is imperative.

Watchful waiting is indicated in all cases not calling for active interference.

Treatment of placenta prævia: (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation turn the child and make the breech engage in the os; or, if the head presents forceps may be used if speedy delivery is necessary. Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version and immediate extraction of the child. The strength of the woman is then the main point to be cared for, and if in a reasonable time the uterus seems to be incompetent, the child may be delivered by art. In some cases of central placenta prævia, where rapid delivery is required, cesarean section may give good results for mother and child.

Delivery of retained placenta: "A finger—one or two—must be insinuated between the uterus and placenta at some point already partially separated, or, if no partial separation exists, at a point where the placental border is thick, and then passed to and fro, transversely, through the uteroplacental junction, acting like a sort of blunt paper knife, until separation be complete. Another mode is to find or make a margin of separation as before, and then peel up the placenta with the finger-ends, rolling the separated portion toward the palm of the hand upon the surface of the still adherent part. Great care is necessary to avoid peeling up an oblique layer of uterine muscular fiber, which might split deeper and deeper until leading the finger-ends through the uterine wall into the peritoneal cavity. Should such a splitting begin, leave it alone and recommence the separation at some other point on the placental margin. It is sometimes only possible to get the placenta away in pieces. These should be afterward put together and examined to indicate what remnants are left behind. It may be quite impracticable to get out every bit, but small remnants or thin layers too firmly adherent for removal do not distend the womb enough to create hemorrhage from their bulk, and subsequent danger of septicemia from their decomposition may be obviated by injecting warm (2 per cent.) creolin water into the uterus twice daily, until everything has come away."—(King's *Obstetrics.*)

Treatment of eclamptic seizures: Inhalation of ether and oxygen; chloral, veratrum, cathartics, diuretics, diaphoretics, hypodermoclysis; evacuation of uterus.

Treatment of mastitis: Treatment before suppuration occurs consists in supporting the breast with a bandage, emptying the gland regularly with a breast pump, and applying a belladonna plaster over the gland to stop the secretion and allay the pain. When pus is present an incision should be made at once, or the abscess may burrow extensively and riddle the breast. The incision should be made in a line radiating from the nipple, so as not to cut the ducts; it should be free, and all pockets opened up with the finger. Then a large drainage tube is inserted and shortened daily, as the wound heals by granulation. If necessary, several incisions are made.

Prophylactic measures consist in not touching the breasts (by doctor or nurse or patient) without thoroughly clean hands; by washing and drying the nipple before and after nursing, and by proper attention to hygienic conditions before labor, and the nipple and breasts being preserved from pressure.

6. When the uterus does not return to (approximately) its normal size and condition within about six weeks after labor, the condition is called *subinvolution. Subinvolution* is caused by fibroid tumors, pelvic inflammatory conditions, early resumption of sexual intercourse, premature rising from bed, retained secundines, uterine displacements and adhesions, etc. It is characterized by enlarged uterus and irregular bleeding. In all cases rest in bed, copious hot vaginal douches, abstinence from sexual intercourse, correction of constipation, and the administration of tonics are beneficial. Any treatment should be preceded by thorough curettage. Displacements should be corrected.

DYSMENORRHEA is painful menstruation. *Causes:* Pelvic congestion, pelvic inflammation, malnutrition, overwork, lack of development, neuralgia, stenosis, or obstruction of the cervix prolapse, or displacement of the uterus. *Treatment:* If possible remove cause; attend to the general condition, hygiene, tonics, regular habits, etc.; curettage may be necessary, and may have to be repeated (perhaps more than once).

8. CONVULSIONS IN CHILDHOOD.—*Causes:* Peripheral disturbances; "an apparently trivial cause such as psychic or sensory impressions resulting from unusual excitement in a child with an inherited unstable equilibrium, may produce a typical seizure. Foreign bodies in the nose or ears, traumatism, intestinal parasites, preputial abnormalities, improper or indigestible articles of food, poisons, and the toxemias resulting from or preceding certain diseases, as rachitis, malaria, or tetany, are among the causes producing convulsions. The organic causes are meningeal hemorrhages at the time of birth, tumors of the brain, cerebral abscess, hydrocephalus, and the various forms of inflammation of the brain or its coverings."

Treatment: "First overcome the attack or symptom. A mustard bath should be given. If the attack persists inhalations of a few drops of chloroform may be given and if there is any fever an ice-bag is placed to the head. Meanwhile a soapsuds enema is prepared and given on general principles. If there is an elevation of temperature, the enema may be given cool at 70° F. Examine the fecal discharge for a possible etiological factor as some foreign substance ingested or for intestinal parasites. Keep the room noiseless. Follow the enema by a rectal injection of the bromide of soda grains ten, and chloral hydrate grains three, for a five-year-old child, if the twitching still persists. When the child can swallow, calomel or castor oil is given to rid the intestinal canal of possible toxins."—(Chapin and Pisek's *Diseases of Children.*)

9. *Treatment of enterocolitis in a child one year old:* "An initial cleansing of the bowel with castor oil or calomel is imperative, followed by starvation for 12 to 24 hours. Egg albumin, barley water, or beef broth may be given. Equal parts of beef broth or barley gruel (1 oz. to the pint) are sometimes more acceptable. The tenesmus is relieved by the control of the diet and by the use of codeine, gr. 1/5 to ¼, or Dover's powder, gr. ½ to 2 grains every two or three hours, until the painful symptoms abate. Bismouth subnitrate, gr. 5 to 10, or bismuth subgallate, gr. 2, with powdered ipecac, gr. 1, may be given advantageously every two or three hours for the control of the mucus and blood in the stools. Whey is permitted when the stools show improvement, and after the acute symptoms have subsided sterilized milk is allowed in small amounts well diluted with barley or wheat-flour gruel. Last pasteurized milk is permitted with jellied gruels and broths. The prostration may require hypodermatic medication in the form of atropine, gr. 1/400 with strychnine sulph., gr. 1/250. As a daily routine, one saline irrigation at 100° F. serves a double purpose, as a cleansing solution and for absorption of part of the water. Strychnine sulphate, gr. 1/300, may be given as a tonic three times a day, and astringent enemas for the control of blood and mucus. Silver nitrate (1/1000) or a starch paste in less severe cases may serve the latter purpose. They should not be given more than once daily, and discontinued if the effect is not satisfactory. Too frequent irrigations often cause irritation and aggravations of the symptoms. Removal to the seaside or cool mountain air is a great help in the management, particularly in the convalescent stage."—(Chapin and Pisek's *Diseases of Children.*)

℞ Pulv. ipecac et opii gr. x.
Ft. in chart. No. x.
Sig.: One powder q. 2. h.

10. *Spina bifida* is a condition due to imperfect development, in which the posterior wall of the spinal canal is defective; membranes and cord may protrude. As a rule, the child dies within a few years; the great majority die within a few weeks or months of birth from escape of the cerebrospinal fluid or from septic meningitis.

SURGERY.

1. *Indications for blood transfusion:* Shock, hemorrhage, hemophilia, pernicious anemia, various infections and intoxications.

Methods of blood transfusion: (1) Direct (mediate and immediate); (2) Indirect (with and without the use of anticoagulants).

Transfusion of blood: "Crile has recently revived direct transfusion by anastomosing the radial artery of one individual with any convenient superficial vein of another. Under local anesthesia both artery and vein are exposed, tied below, and secured with an arterial clamp above. Each is then cut above the ligature and the adventitia of the central end pulled down and snipped off with scissors. The vessels may then be united by the Carrel method. Crile uses a little tube which has two grooves in its outer surface. The central end of the vein is pulled through the tube, turned back over it like a cuff, and held in place by a ligature which is tied in the second groove. The artery is next drawn over the everted vein and secured by a ligature in the first groove. The clamps are then removed and the anastomosis covered with a hot moist sponge, to relax the artery. The time the blood is allowed to flow depends upn the effects noted, but is usually from 20 to 40 minutes. In acute hemorrhage and shock and in pathological hemorrhage direct transfusion has proved of value, but in blood diseases and toxemias it seems of little use. As there is some danger of hemolysis and agglutination the effect of the donor's blood upon that of the recipient should always be studied before transfusion. If, owing to lack of facilities or time (the hemolytic test occupies 24 hours), this cannot be done, intravenous infusion of salt solution should be employed. Tranfusion may, of course, be performed later if such seems to be indicated."—(Stewart's *Surgery.*)

2. STRICTURE OF ESOPHAGUS.—*Causes:* Healing of a syphilitic or tuberculous ulcer, swallowing of caustic fluids, or boiling water, traumatism, malignant growths; the condition may also be spasmodic or hysterical. *Treatment:* The following methods have been employed, gradual dilatation, forcible dilatation or divulsion, electrolysis, internal esophagotomy, external esophagotomy, and (in case of malignant disease) gastrostomy.

3. SURGICAL DISEASES OF THE SPLEEN.—*Abscess* is usually metastatic, arising from a septic embolus in the course of an acute fever; the symptoms are rapid enlargement, with abdominal tenderness and rigidity in the left hypochondrium; treatment consists in drainage of the abscess if it is adherent to the parietes, and removal of the spleen if non-adherent. *Tuberculosis* rarely affects the spleen alone; splenectomy has been followed by good results. *Cysts* should be treated by splenectomy. *Tumors* of the spleen; sarcomata are the only primary new growths; splenectomy is the treatment.—(From Groves's *Synopsis of Surgery.*)

4. FRACTURE OF PATELLA.—*Treatment:* The best method is open operation, and wiring four or five days after the accident; for only by this means can bony union be obtained. The obstacles to bony union, without open operation, are that the tilting of the lower fragment cannot be overcome in any other way; the aponeurosis cannot be removed from between the fragments, nor the blood-clot from the joint, except by slow absorption. If no operation is done the union is fibrous, and the fibrous bond will stretch unless the patient be condemned to a stiff knee for six to twelve months. A working man is badly off with either a stiff knee for that time or a stretched bond forever.

The *open operation* must necessarily be aseptic. The knee may be washed out with 1 in 40 carbolic or 1 in 2,000 bichloride without injury, or sterilized saline solution may be used. The joint is opened by a horseshoe incision, the blood-clot is removed, the aponeurosis clipped away, the bones drilled and fixed in accurate apposition with silver wire, and the wound is closed without drainage. As atrophy of the quadriceps occurs early, massage and passive movements must be begun in ten days. The patient may go about on crutches in three weeks. Bony union is firm in six weeks.—(*Aids to Surgery.*)

The *possible traumatisms in a sprain of the ankle* are: Rupture of one or more ligaments, bruising of the synovial membrane, loosening or separation of cartilages, hemorrhage into the joint and surrounding tissues, laceration or displacement or stretching of muscles and tendons, injury to vessels and nerves, contusion of the skin, and sometimes separation of a piece of bone.

Treatment: "Sprains are best treated by early massage and movement, combined with firm, elastic pressure. In the ankle, for example, massage should be commenced at once, the part being gently stroked upward. The process is painful for the first few minutes, but soon ceases to be so and becomes soothing. The rubbing is continued for from 15 to 20 minutes, the patient being encouraged to move the toes and ankle. A moderately firm elastic bandage or strips of adhesive plaster are then applied, care being taken not to constrict the limb and so interfere with the circulation. The massage is repeated once or twice a day, the sittings lasting for about half an hour. The patient should be encouraged to move the joint from the first, beginning with the movements that put least strain upon the damaged ligaments, and gradually increasing the range. In the course of a few days he is encouraged to walk, or otherwise to use the joint without subjecting it to strain. Alternate hot and cold douching, or hot-air baths, followed by massage, are also useful. Complete rest and prolonged immobilization are to be condemned."—(Thomson and Miles's *Surgery.*)

5. *Intraperitoneal rupture of the bladder* involves the superior or posterior surface. The symptoms consist of shock and local pain. There is constant desire to micturate, nothing being passed except perhaps a little blood. Fatal peritonitis follows unless early treatment be adopted. A little blood-stained urine is usually withdrawn by passing a metal catheter, and the rent may be felt. A measured quantity of boracic lotion should be injected; if a rupture exists, the amount returned is considerably less than that injected. *Treatment* consists in immediate laparotomy, sponging out the fluid, and suturing the rent with a double row of stitches, through the serous and muscular coats, but avoiding the mucous coat. Trendelenburg's position is useful after the fluid has been removed. A catheter is tied in for the first three days, or the urine is drawn off at frequent intervals by catheter.—(*Aids to Surgery.*)

6. *Tumors of the testis* are exceedingly difficult to classify, either on a pathological or on a clinical basis. This arises from the fact that some varieties are composed of several different histological elements, no one of which predominates sufficiently to characterize the growth, and that other varieties show a marked tendency to undergo cystic and other forms of degeneration, and so to lose their original characters. Another peculiarity of testicular tumors is that they are specially prone to malignant transformation, so that a tumor which is originally innocent may eventually infect adjacent glands and become disseminated in distant parts of the body. Some of the varieties met with are very rare, for example, fibroma, myxoma, myoma, osteoma, and teratoma. In all these varieties the treatment consists in removing the testis. Others, such as adenoma and the different varieties of chondroma, seldom occur except in combination with sarcomatous elements, and are therefore most conveniently included among malignant growths (sarcoma and carcinoma); though treatment for these is castration as soon as the diagnosis is made. If the cord or scrotum is involved, the affected parts should be removed.—(From Thomson and Miles's *Surgery.*)

7. *Varicose veins of the lower extremity* may be treated by removal of the pressure and avoidance of any posture apt to cause and perpetuate the condition, together with the use of a woven silk or porous elastic bandage applied before getting up in the morning. Operation is often indicated; there are various forms of operation, all of which aim at the obliteration of the involved vein. Trendelenburg advocates the removal of three or four inches of the internal saphenous vein in the upper part of the thigh after a ligature has been placed at the top and bottom of the exposed portion. All tributary branches should be tied. The usual plan now is to remove the entire internal saphenous vein.—(From Barnett's *Textbook of Surgery.*)

THROMBO-PHLEBITIS OF THE FEMORAL VEIN.—*Etiology*: It is more apt to occur in patients who are debilitated or anemic or who have been confined to bed for a long time; or after certain operations, such as herniotomy, prostatectomy, or for appendicitis; or it may begin as a periphlebitis arising in connection with some focus of infection in the adjacent tissues.

Treatment: The patient must be placed at absolute rest, with the foot of the bed raised on blocks 10 or 12 inches high, and the limb immobilized by sandbags or splints. It is necessary to avoid handling the parts, lest the clot be displaced and embolism occur. To avoid frequent movement of the limb, the necessary dressings should be kept in position by means of a many-tailed rather than a roller bandage. To relieve the pain, warm fomentations, or lead and opium lotion, should be applied. Later, glycerin and belladonna, or ichthyol glycerin may be substituted. When, at he end of three weeks, the danger of embolism is past, douching and gentle massage may be employed to disperse the edema; and when the patient gets up he should wear a supporting elastic bandage. Amputation may be necessary in some cases.—(From Thomson and Miles's *Surgery*)

8. *Gunshot wound of the abdomen.* "The treatment, even without symptoms of visceral injury, is immediate enlargement of the wound, in order to explore the abdomen, check hemorrhage, and close such visceral perforations as may be found. The abdomen is then flushed with salt solution, and closed or drained, according to the amount of soiling present. If the omentum protrudes it should be ligated and removed, while coils of intestine should be carefully washed with salt solution and returned to the cavity. In cases in which there is doubt as to whether or not a wound enters the peritoneal cavity, such wound should be enlarged and the diagnosis positively made, preparation being made at the same time to treat any visceral injuries that may be found. In gunshot wounds on the battle field an exception has been made to the rule of immediate exploration, because it has been found that the chances of recovery are somewhat better without than with the operation undertaken in the absence of proper facilities."—(Stewart's *Surgery.*)

9. CATARACT is any opacity of the lens or its capsule.

Varieties: "Cataracts may be divided into: 1. *Primary*, when independent of any other ocular disorder, and (2) *Secondary* or *complicated*, when accompanying or following some other disease of the eye, such as glaucoma, uveitis, etc.

Cataracts are divided according to the *part of the lens involved* into: (1) *Lenticular*, situated in the substance of the lens. (2) *Capsular*, affecting the capsule. (3) *Capsulo-lenticular*, involving both lens and capsule. They are also known as: (1) *Partial*, limited to some part of the lens. (2) *Complete*, involving the whole lens. (3) *Stationary*, when they remain incomplete. (4) *Progressive*, spreading, tending to affect whole lens. *Stationary cataracts* may be divided into: (1) *Anterior polar.* (2) *Posterior polar.* (3) *Lamellar.* (4) *Various uncommon forms. Progressive cataracts* may be divided into: (1) *Senile* (cortical, nuclear). (2) *Congenital* and *juvenile.* (3) *Traumatic.* In patients *under* 35 all cataracts are of *soft* consistence throughout and *white* in color; such cataracts have no hard nucleus and are known as *soft cataracts. After this period*, the nucleus becomes *hard* and of a yellowish tint, and the lenticular opacity is known as *hard cataract.*

Treatment: Senile cataracts require extraction of the lens, with or without iridectomy; in congenital and juvenile complete cataracts, discission or needling is indicated; for traumatic cataract, extraction may be required; for stationary cataracts, iridectomy, discission or extraction may be indicated.—(From May's *Diseases of the Eye.*)

The nasal accessory sinuses are: Frontal sinuses, ethmoidal sinuses, sphenoidal sinuses, and maxillary sinuses (antrum of Highmore).

Conditions which may be due to their infection include: Orbital abscess, exophthalmos, conjunctivitis, edema of eyelids, epiphora, ptosis, paralysis of one or more of the muscles of the eye, blindness, inflammation of various parts of the eye, meningitis, phlebitis and thrombosis of the sinuses of the dura, cerebral abscess, nasal polypi, headache, neuralgia, vertigo.

10. *Diaphysis* is the shaft of a long bone.

Leucoplakia is a condition in which the tongue (or other mucous surface) has white patches on its surface.

Hypospadias is a condition in which the urethra opens on the under surface of the penis.

Skiagraph is an *x*-ray photograph.

Bronchoscopy is inspection of the interior of a bronchus.

Glossitis is inflammation of the tongue.

Osteomalacia is a condition characterized by softening of the bones.

Galactocele is a retention cyst due to closure of a milk-duct.

Sequestrotomy is the operation of removing a dead piece of bone.

Pyelography is an *x*-ray picture of a ureter and the pelvis of a kidney when these latter have been filled with a solution of a silver salt.

Euphorbia Serpens as a Dechloridizer.—Galdos calls attention to this powerful diuretic in dropsical conditions due to chloride retention. Its action is not due to any cardiotonic property. It is indicated in essential and symptomatic parenchymatous nephritis and should be exhibited in conjunction with sparteine or strophanthin. It is an excellent substitute for theobromine.

Miscellany

Health Work in Jerusalem.—The report of the war-time activities of the Jewish Health Bureau, established by Nathan Straus in Jerusalem, was recently received by the Zionist Organization of America. The period covered by the report is from September, 1914, to December, 1918. According to the report the Bacteriological Department was of the greatest service to the population of Jerusalem during the terrible epidemics of cholera, dysentery, malaria, and scarlet fever. Large quantities of anti-cholera and anti-typhus lymph were produced. In five different districts clinics were opened where free injections were given to all comers, without distinction of race or creed. The Bacteriological Department carried out 27,290 examinations during the period covered by the report. It provided 1,491,962 cubic centimeters of cholera lymph, and 238,800 cubic centimeters of typhus lymph. It administered 30,750 preventive injections against cholera. The Hygienic and Malaria Department examined the blood of 38,380 persons, and provided 154,115 kilograms of quinine. The Department for Eye Diseases discharged 441,874 visits to its clinics. In the department's hospital 436 severe operations were carried out. Patients passed a total of 6,042 days in the hospital. Many other phases of work were carried on, not only in Jerusalem but in all the towns of Palestine and among all the colonies within the scope of its activity.

A Franco-Jugoslavic Medical Entente.—During the late war a complete confraternity was established between the French and Servian soldiers. This was maintained up to the final act in the war drama of realization of Jugoslavic unity. On two separate occasions French medical men went to Servia to collaborate with Servian physicians. The first of these missons was in 1915 when a hundred French physicians went to combat typhus and of this number one-half succumbed to the disease. The second time was in 1916 when the Servian army had been almost miraculously saved from the disastrous retreat into Albania; during the reorganization in Chalcidika another body of French doctors was sent to safeguard the health of this army, and eventually the latter was active in a victorious offensive. In addition a French ambulance and hospital service was maintained on the Salonican and Macedonian fronts. The new kingdom is composed of Servians, Croatians, and Slovenians, comprises 15,000,000 inhabitants, and is destined to be a grand State; only during the period of reconstruction will it require outside aid. For a time its students will have to go abroad and its schools will welcome foreign professors. A rapprochement with Austria and Germany is unthinkable for many years to come and the new State will doubtless look to France. In Paris the students from the countries which constitute the new State as well as the graduate medical men who are studying and practising in France have formed a society known as the Franco-Jugoslavic Medical Union. Distinguished French physicians, such as Widal and Roger, are actively interested in the movement and a propaganda committee of native physicians has been appointed with headquarters in Paris and an affiliated branch will be constituted in Jugoslavia.—*La Presse Médicale* (xxvii, 73).

Italy as a Medical Center.—The disappearance of Germany and Austria-Hungary as post-graduate medical centers for Americans will naturally redound to the advantage of the home institutions, and, for those who will go abroad in any case, of those of Great Britain and France. It is quite possible that Italy may loom up in the near future and an impetus in this direction seems to have been given by an American army surgeon, Dr. Moore, whose article on medical Italy has been reviewed in *Il Policlinico* for November 2, 1919, xxvi, 44. Dr. Moore, who was agreeably surprised at the progressive condition of the medical and sanitary sciences in Italy, enthusiastically recommends the latter country for post-graduate studies. The Italian author of the article in the Policlino marvels in his turn over the wonder of the transatlantic visitor, and this attitude is not surprising, for the well informed medical man who has access to Italian periodicals and is able to read them certainly knows well that Italy borrows little in comparison with the amount of original work which emanates from the numerous centers of medical learning in that country. For years the MEDICAL RECORD has endeavored to give to Italy full credit, especially in its editorial columns, for its numerous contributions to medical progress. Apparently language is the sole barrier. Few Americans know Italian and Italians as a class do not know English.

Invention for Armless Soldiers.—A Scottish plumber, according to press dispatches from London, has invented a machine which enables armless soldiers to eat, drink, light cigarettes and play dulcimers. The extreme simplicity of construction and manipulation is said to be the striking feature of the invention. A few steel wires are set in a frame and two arms like big spiders' legs are attached to the table. The armless man works the two miniature cranes by pressing his stockinged feet on the two treadles. The operation is thus described:

There is a cleavage in the stockings between the big toe and the rest of the foot, enabling his right foot to rest on two bars of the treadle and clutch a bar. Thus while the treadle itself swings the crane backward and forward over the surface of the table the third bar, acting by springs, makes a grip of the clutch or releases objects. The left hand crane is much simpler, ending in a splay footed hoof with a thumb in the middle. At a pressure of the treadle the thumb automatically drops ready to seize a biscuit or fork. While the right hand crane clutches a bowl of soup, the hoof plunges the spoon in and offers it to the diner's mouth. While the hoof digs a fork into a piece of meat, the other clutch cuts it up. The right hand clutch pops a cigarette into the diner's mouth and then strikes a match on the table and lights it and follows this up by playing on the dulcimer.

One form of activity not executed by these arms is shaving, but there seems to be no reason why they should not work a safety razor.

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Original Articles.

BRONCHOSCOPIC TREATMENT OF BRONCHIECTASIS AND PULMONARY ABSCESS.*

BY HENRY LOWNDES LYNAH, M.D.,

NEW YORK.

BY the use of the bronchoscope in the treatment of bronchiectasis and pulmonary abscess many patients suffering from these conditions may not only be relieved, but even cured by the establishing of proper drainage of the lung.

In bronchiectasis, especially in cases following diphtheritic involvement of the bronchi, there is a marked peribronchial infiltration and connective-tissue thickening of the bronchial wall which often produces stenosis by subsequent contraction. These bronchial stenoses not only follow diphtheritic tracheobronchitis, but may also follow the sojourn of foreign bodies for a long period, influenza, syphilis, and other conditions in the mediastinum causing pressure from without, as in peribronchial infiltrations and mediastinal glandular pressure. Pressure from without the bronchus is often productive of a chronic inflammatory thickening of the compressed bronchial wall, which may cause stenosis later.

In intubated cases suffering from laryngeal diphtheria with obstruction of the lumen of the intubation tube, secretions may be retained in the lungs, and produce a "sponge soaking" of the lung structure, and the patient, being unable to expel this secretion from the lung, frequently succumbs. Such cases are frequently diagnosed bronchopneumonia, but the so-called bronchopneumonia is rapidly relieved by bronchoscopic evacuation of the secretion. As soon as proper pulmonary drainage is established, the condition of the patient improves. (Fig. 1.)

In peanut bronchitis following the inhalation of a peanut kernel or particles of masticated peanut, a very severe reaction follows, and an enormous amount of secretion is produced by the irritant action of the peanut. If the peanut kernel or particles are not removed there is such retention and "sponge soaking" of the lung, with foul secretion, that the child succumbs later to pulmonary abscess and septicemia. (Fig. 2.) A child three years of age who inhaled many small pieces of peanut pulp into the right bronchus suffered from a severe bronchitis following the accident, and was sent to the hospital the following day for treatment. There was considerable difficulty with expiration, and a marked asthmatic wheeze was audible at some distance. The bronchoscope was introduced, and many pieces of peanut were removed by forceps and suction. The condition of the child improved after the removal of the peanut fragments, but physical examination showed that little air entered the lower posterior portion of the lung. The following day the posterior branch of the right lower lobe bronchus was explored, a 4 mm. bronchoscope being used. Some foul smelling pus was sucked out from this region, but no fragment of peanut was found, and the aeration of the lower lobe of the lung did not improve to stethescopic examination while the bronchoscope was *in situ*. Unfortunately a small piece of the peanut had lodged in a small dorsal branch of the right lower lobe bronchus, which I was unable to locate and remove. The small piece of peanut had disentegrated, and had produced a septic bronchitis three days after the accident. The abscess ruptured into the pleura, and was drained by rib resection. The child succumbed six weeks later from pulmonary abscess and general septicemia.

FIG. 1.—Radiograph of a patient intubated for laryngeal diphtheria. The lumen of the intubation tube became obstructed, which caused retention of secretion and "sponge soaking" of the lungs. The dark triangular area in both lungs is the gradual "sponge soaking" from below upward. The condition was diagnosed bronchopneumonia, but was promptly relieved after the removal of the tube and bronchoscopic evacuation of the retained secretion.

This is usually the unfortunate termination following the aspiration of extremely irritating substances such as food and nuts, especially when a small particle is deeply lodged in a small branch bronchus which is beyond the range of the broncho-

*Read before the New York Academy of Medicine, Section on Medicine, November 18, 1919.

scope. The secretions become purulent within a short time, and lung abscess is the inevitable result. This is frequently the starting point of bronchiestasis. The retention of secretions below a foreign body or bronchial stricture often follows, even after the

FIG. 2.—Radiograph of a purulent "sponge soaking" of the lung following the inhalation of a fragment of peanut kernel. Note the dark shadow in the region of the right lower lobe, in which a small particle of the peanut lodged. Several small pieces were removed bronchoscopically, but the fragment which remained produced septic pneumonia and pulmonary abscess.

successful removal of the foreign body, for the bronchus will necessarily dilate below the stricture and become a reservoir of foul secretion. A bronchial stricture, no matter how small the lumen may be, does not shut off the airway; but it does shut off the normal expulsion of secretions, and the retention of foul secretions for long duration will promote bronchiectasis lung abscess, or the lung may even become gangrenous. (Fig. 3.)

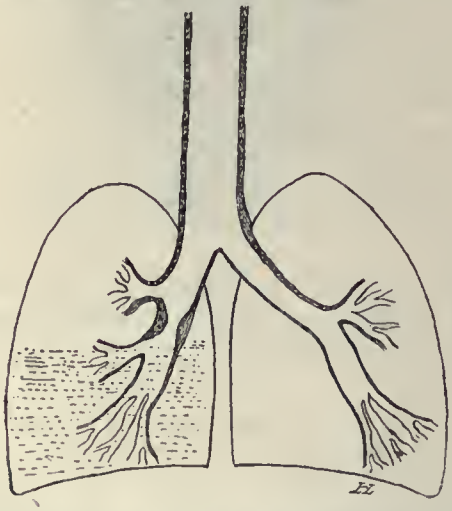

FIG. 3.—Schematic sketch of the tracheobronchial tree and lungs. The stenotic narrowing in the right stem bronchus illustrates the cause of bronchiectasis and "sponge soaking" of the lung from retained secretion. The dotted area in the right lung shows the retention of secretion up to the level of the stricture. Proper lung drainage bronchoscopically will relieve the condition.

Lung abscesses may be either diffuse or circumscribed. In the diffuse variety the lung is usually "sponge soaked" with pus, the removal of which bronchoscopically will greatly improve the patient. On the other hand, a circumscribed abscess may be extremely difficult to cure, especially when the abscess attached by its stalk is at a right angle to the bronchus into which it pours its contents. (Fig. 4.) If the stalk of the abscess connects in a line with the bronchus into which it empties, then it is not

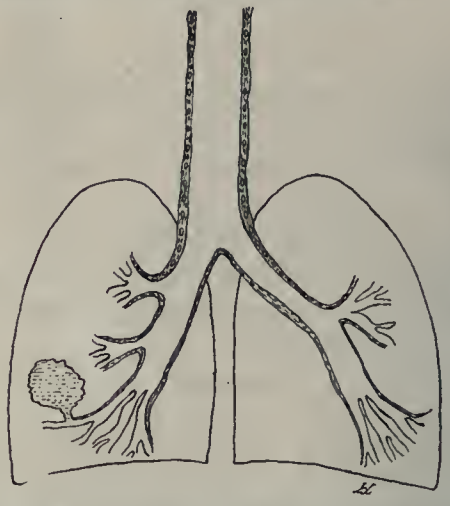

FIG. 4.—Schematic sketch illustrating the reason why circumscribed lung abscesses are difficult to drain. The small round dotted area in the right lower lobe is a lung abscess. Note that the stalk of the abscess connects with a branch bronchus at a right angle. It is difficult to get around the corner and enter the abscess cavity.

a difficult procedure to enter the abscess cavity and drain it properly, but a true circumscribed lung abscess is at times extremely difficult to cure. The method advised by Yankauer will relieve many of the conditions, for the infiltration of the solution will soften secretion and make expectoration of the thick pus much easier for the patient.

In the studies bronchoscopically of pulmonary abscess by the writer, pus is usually seen to be pouring from a small branch bronchus, and it has been

FIG. 5.—Radiograph of a lung abscess in the left lower lobe. The abscess cavity connected on a line with the branch bronchus into which it emptied, and the abscess cavity could be entered with a special five millimeter bronchoscope.

at times difficult to locate the definite abscess cavity in the lung from which the pus is oozing. However, in a case referred to the writer by Dr. Jesse G. M. Bullowa a definite abscess cavity was entered near the diaphragm by a specially made broncho-

scope, 5 mm. by 45 cm. in length. The abscess was well down toward the diaphragm, the stalk of the abscess connecting with a left lateral branch bronchus. The mouth of the stalk of the abscess was surrounded by granulation tissue, from the

FIG. 6.—Radiograph of the same case as shown in Fig. 5, after repeated washings of the abscess. The shadow in the left lower lobe has disappeared, and expectoration of pus ceased.

center of which foul smelling pus was oozing. The 5 mm. bronchoscope entered the abscess cavity through the connecting stalk, for it was on a line with the lip of the bronchoscope, and not around a corner. (Fig. 5.)

When the abscess cavity is connected by its stalk to a branch bronchus which can be entered with a small bronchoscope, it can be readily drained and washed, but many treatments are often necessary before the case is finally cured. In some instances there is considerable reaction following pulmonary washing; while in other cases there is little or no reaction or shock. In the young man referred to,

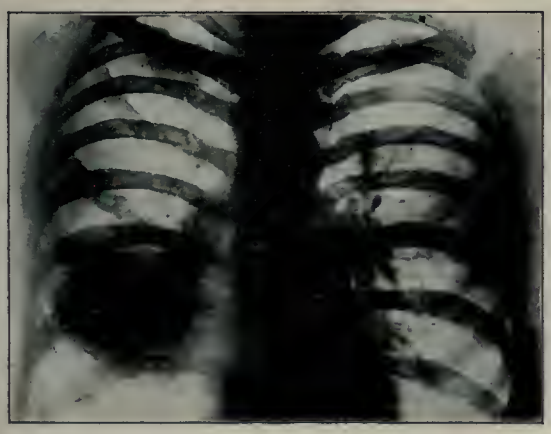

FIG. 7.—Radiograph of a pulmonary abscess the stalk of which was at a right angle to the branch bronchus into which it emptied. Note the dense shadow over the right lower lobe, with pus "sponge soaking" of the surrounding lung tissue.

there was a marked reaction after each treatment. His temperature rose to 105° F. one hour after each washing, and gradually fell to normal the following day. He also complained of much pain in the left chest in the region of the diaphragm. However, he made a complete recovery after a period of three months and has remained well ever since, one and a half years later. (Fig. 6.)

In another case, a man of twenty-two years, referred by Dr. Kupferman, had a pulmonary abscess

FIG. 8.—Radiograph of the same patient as pictured in Fig. 7, after seven lung washings. The density of the shadow has slightly decreased. The abscess cavity could not be entered by the special long bronchoscope, for it was around a corner.

of one and a half years' duration, following tonsillectomy and the inhalation of a piece of wooden tongue depressor. He had an abscess off at a right angle to the bronchus, into which it was emptying, and pus could only be seen oozing out of a small branch bronchus, and I was unable to enter any definite abscess cavity even with a 5 mm. bronchoscope. (Fig. 7.) However, the patient was apparently improved after seven washings, the fluid having softened the thick purulent expectoration which had been difficult to cough-up before treat-

FIG. 9.—Radiograph of the writer's method of drainage of a bronchiectatic cavity and pulmonary "sponge soaking." A long fenestrated soft rubber tube is used as the inner tube of the tracheal cannula. Little air entered the right lung until the tube opened the stricture and drained the "sponge soaked" area.

ment. The patient, unfortunately for him, decided that the weekly pulmonary washings were too slow in producing a cure, and he decided to have the abscess drained by thoracotomy. This was unsuccessful, for he succumbed shortly after the opera-

tion. The radiographs taken at the time of admission and after the last washing showed an apparent improvement. (Fig. 8.) There was also improvement in the amount of pus coughed up, and less odor. This case was one of the type of abscesses well off at a right angle to the bronchus into which it was emptying, and while I could see the mass of inflammatory granulation tissue at the mouth of the abscess stalk, I was unable to enter it with the small especially made bronchoscope. This is the reason why so many of the pulmonary abscesses are so extremely difficult to cure. The washing will soften secretion and promote easy expectoration, but it is by no manner of means a cure-all in long-standing cases when the cavity of the abscess cannot be reached. Bronchiectasis resulting from bronchial stenosis is much more readily dealt with by bronchial dilatation and drainage. In one instance the right bronchus was drained and the lung aerated by the introduction of a long soft fenestrated rubber inner tube into the right bronchus. There was a bronchial stenosis in this patient. She wore the soft rubber tracheobronchial tube for six months, and made a complete recovery. The patient is still alive and perfectly well, two and one-half years later. The bronchi may be intubated by the long bronchial intubation tubes of the writer, but the catheterization of the bronchi through the tracheotomy tube is tolerated much better by the patients, and at the same time they can have the use of the voice. (Fig. 9.)

Pulmonary drainage is difficult in all cases of circumscribed abscess, but I think the conservative bronchoscopic measures of treatment should be given a thorough trial first, before radical major surgery is attempted.

127 West Fifty-eighth Street.

DILATATION AND PLICATION OF THE CAPUT COLI.*

By DOUGLAS H. STEWART, M.D., F.A.C.S.,
NEW YORK.

AT the external, terminal, or rectal end of the large intestine the longitudinal muscular fibers are arranged as a tube or pipe. At the internal terminal, dead-end, or cul-de-sac called the caput coli, such fibers form straps by being grouped into the bands known as tæniæ coli. The circular or napkin-ring fibers are annular tube-like structures generally; but they also at the cecum have portions that are gathered into what might be termed ring-strap taeniæ peculiar to themselves, that serve as reinforcements to soften constrictors. The whole arrangement is such that, taken together with the fact that longitudinal and circular bands are rather shorter than the limits of the extended or distended length or breadth of the colon which they cage, it leads to the shape or appearance called sacculation. This sacculation is but an evidence of extension and distension that are more or less restrained and kept within limitations by the combined curb of both transverse circular and longitudinal linear muscular fibers.

From the aforesaid it follows that the study of colonic movements is fascinating and confusing because it might appear to a superficial observer as though here was presented a proof of the persistence of a lawless force causing irregular or uncontrolled motion. The fact is that any such basic idea is contrary to science and to exact race experience, both of which take for granted that all forces must be law-abiding or must cease to be forces. All motion must be definitely controlled or must change to some other form that is controlled. Surely even the humblest mind that purchases one pound of groceries must grasp the fact that the pull of gravity upon that weight must be exactly what is termed "one pound." Which easily proven proposition includes the statement that since a force is unchanging, it must of necessity be law-abiding. Even so, the actions of the colonic muscles appear to be incoordinate. Some fibers extend themselves while others contract, as may be seen through the fluoroscope or as may be registered upon the plate that bears an actinogram. However, by careful methodical study one may come to discern that this matter, like all other manifestations of life, is governed by a clear rule of conduct. It only remains for the investigator to discover what that rule may be.

If it be admitted that propulsion of colonic contents is a result of colonic activity, then one thing at least will be found always the same. That is that during that act of progressive propulsion the longitudinal fibers are contracting; and this whether the circular fibers are contracting or expanding. So long as neither is passive one sacculus may be contracting while its neighbor may be expanding; but the longitudinal fibers are relaxed or extended during a period of inactivity, solely. When *both* sets of fibers are quiescent the limitations set by their length maintain the external appearance termed sacculation, and the internal aspect called pouches, buckets, or haustræ coli. (It is admitted at once that this is different from the teaching of textbooks.) A scheme consisting o a balloon that is well expanded, though confined within a circular birdcage, might furnish an idea of conditions as they are. In short, all the actions of the colonic muscles are so very curious in their manifestation that they could hardly fail of observation and of record. Yet all mention that the present writer has found is comprised within the intent of the words to be found upon page 381, paragraph 224, of Foster's Physiology, which read thus:

Fig. 1.—A normal cecum.

*First paper.

"Along the colon when the sacculæ are well developed, the movement may be described as intermittent from sacculus to sacculus, the contents of one sacculus being driven by the peristaltic contraction of circular fibers into the next sacculus which

Fig. 2.—Two semi-hernias, one spherical and one triangular

prepares to receive them by a relaxation of its circular fibers and a contraction of its longitudinal fibers."

The curious mechanism works as though pressure closes the ileocecal valve, and thus bars return flow of the semisolid colonic contents, while the long muscular strands pull various segments in sequence over or along those contents, while at the same time opposition to onward passage is lessened or removed by a sort of advance space or vacuum pump that is created through relaxation of succeeding empty distal circular muscular rings. At the same time, also, motion is insured by the contraction of the ring of circular fibers that surrounds the proximal saccular segment. But the segments are so banded together by or dependent upon the longitudinal straps that, should those straps fail, the whole machine would become impaired, dilated, extended, and inert, which conditions have but to reach a certain degree in order to become atonia coli, with its resultant stasis. The act of circular squeezing from a circumference inwards may produce motion of bowel contents in either or both directions at the same time; but the fixation and pull down of the longitudinal fibers, together with a shut ileocecal valve, determine a definite direction to any motion that is initiated. Or, in other words, circular fibers and their activity merely determine that there shall be motion even though it be but an agitation or churning. Direction is decided by the action of the longitudinal fibers in pulling an empty sacculus over the expelled contents of a full one. Surely the colon is one of the most remarkable machines in existence, but whether it could be imitated by man need not detain us, for it is very certain that no engineer will ever furnish toleration or employment for its nonmechanical principles.

The three bands of longitudinal fibers begin or take origin at their fixed point of traction at the appendix. How greatly the removal of the latter interferes with efficiency is an open question—one that would admit of much argument with rather indefinite conclusions. Clinically it appears like some other matters; that is quite on a par with some such question as "Do gallstones hurt?" The only answer to which is the evasive but accurate statement that all results depend upon the influence of preexisting circumstances. Clinically and at times it appears as though the interference or slowdown was marked to such a degree that on several occasions, when appendectomy did not yield the good results that should have followed that operative procedure, yet after several years (5 to 15) of discomfort and stasis, a good firm fixation of the taeniæ was followed by beneficial consequences to the extent of a satisfactory symptomatic cure, which fine terminal effect even a prior plication of the stomach had failed to procure, in one instance.

For clinical purposes the groups of the longitudinal fibers may be termed one anterior and two posterior; for purposes of explanation these may be considered as being placed at the angles of an isosceles triangle, and the spaces which they bound may also be termed triangular. From this conception it follows that the space between the anterior and the posterior internal band may be likened to an inverted letter A, the crosspiece of which might be imagined as the position of the ileocecal valve. The surfaces between the posterior internal and the posterior external band and between the latter and the anterior band may be compared to a capital W or two Vs placed side by side. A stitch from any one of these bands to its neighbor will tend to make an incompetent valve tighter. Such a stitch from the posterior external band will pull upon the outer or the inner end of the valve according to placement. The difficulty seemed to be in discovering why a stitch from the anterior to the posterior internal band and running parallel to the valve did

Fig. 3.—Internal and external linear semi-hernia.

not relax valvular tension. The only reason the writer can give for a contrary effect is that such a stitch jams the ileum further into the cecum, thereby exposing greater valve-leaf surface to the closing urge of the colonic back-pressure.

The question of which two bands shall be brought together or which shall be shortened resolves itself into a question of what change the operator thinks best to make in the given condition of affairs. Does he wish to shorten, to narrow, or to do both to the caput coli; does he wish to put tension on the internal end, on the external end, or upon both ends of the valve, or does he wish to jam the leaves of said valve further into the colon. The mechanics of all these matters are so simple that explanation need not detain us. In any event they are mentioned elsewhere.*

However, it may be well to repeat in this place that any and every stitch must begin and must end in a taenia, nor must any stitch cross a band. As may be easily seen upon trial, drawing of the taeniæ closer together both narrows and shortens the caput coli; but should additional shortening appear proper, then a modified mattress suture may be made to run longitudinally to any or all taeniæ in which case two or three short stitches are preferable to a single long one.

The valve of the colon will be found incompetent more often from malposition and distortion than from any distention or stress. Usually a distended colon is accompanied by a stretched-tight valve; but an appendix may be so bound by adhesions that the effect upon the valve is much like that of the finger introduced into the mouth and pulled sideways. Consequently the appendix should be removed for many reasons, and its stump should be ligated, inasmuch as it is the point of pull upon which the whole longitudinal musculature of the caput is dependent, and the correct action of those muscles is basic to the machine.

Placement of stitches is easy, so that one relies upon palpation or touch; for one who relies upon sight alone for his guidance never will discover where the wall of the colon has thinned. The bulgings between the tæniæ may be either domes, rugæ, or of mixed appearance. Examples are marked S. H. in the illustrations. When these were palpated in the living subject it became evident at once that they felt quite differently from other portions of the colonic wall, much as though there was a deficiency of resistance at certain places similar to what is felt in the instance of an incomplete hernia. When all such spaces were closed or reinforced by appropriate suturing the results were of the happiest nature.

The margins of the tæniæ are sometimes free edges, sometimes adherent. Their thickness or bulging or roundness and their flatness or smoothness or tape-like character differs in different subjects or even varies in various situations. But with a modification of the stitch usually credited to Sick, or with the glover's stitch, or with the ordinary interrupted form, any emergency may be met. In the dome-shaped bulgings the stitch should, in passing, dip lightly into the most prominent part of the bulge, lest when the stitch be drawn tight the dome slides from under its restraint and bulges out in a distorted form either above or below the restraining stitch.

128 West Eighty-sixth Street.

*"Plication of the Cecum," *Western Medical Times*, September, 1919; abstracted in the Medical Record, September 27, 1919.

ANGIOMA OF THE STOMACH.

By W. S. LEMON, M.D.,

ROCHESTER, MINN.

SECTION ON MEDICINE, MAYO CLINIC.

In this report, I wish to add one more case of angioma of the stomach to the five of which I have knowledge, namely, the cases reported by Guisez, Stockis, Burty, Lammers, and, recently, one by Sherril and Graves. The clinical aspect of the case

Fig. 1.—(Case A258233). Photograph of hemangioma of the stomach as it presented on the mucous surface.

came under my observation; it was studied pathologically by Dr. Broders, who examined the specimen at the time of operation.

Macroscopic Examination.—The tumor was irregular in shape, bluish-black, rather soft, having the feel of a mass of angle worms, and measured 6 by 5 by 5 cm. It was surrounded by a fibrous capsule ranging from 1 to 2 mm. in thickness. Bands of fibrous tissue between the dark angiomatous areas made it appear not unlike an anthracotic lung. The tumor lay between the mucosa and serosa, and in places it had broken through its cap-

Fig. 2.—(Case A258233). Photograph of hemangioma of the stomach after section. Note its marked lung-like appearance.

sule and penetrated the surrounding structures (Figs. 1 and 2).

Microscopic Examination.—The mass was made up of a network of capillaries, some showing a fairly marked dilatation. Blood pigment could be

seen both within and without the capillaries. Some fields were entirely of angiomatous tissue, while others showed muscle with small groups of capillaries. A few clusters of lymphocytes were found

FIG. 3.—(Case A258233). Photomicrograph of hemangioma of the stomach, showing a network of capillaries (X50).

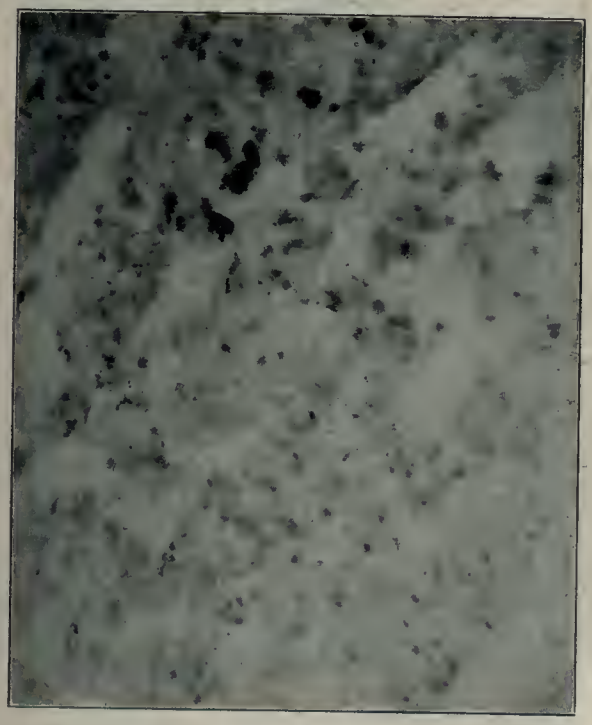

FIG. 4.—(Case A258233). Photomicrograph of hemangioma of the stomach, showing patches of blood pigment in the capillaries (X250).

in some of the fields. A diagnosis of capillary hemangioma was made (Figs. 3 and 4).

History of the Patient.—Case A258233.—Jan. 28, 1919, a man, aged 67, presented himself for examination, complaining of distress in the epigastric region. The patient was a large man, fully six feet tall, and weighed 202 pounds, although he showed but slight evidence of adiposity. His habits of life were exemplary and his trouble could not be traced to any indiscretion or excess. The previous history was unimportant. Six years before he had had two minor opera-

FIG. 5.—(Case A258233). *X*-ray of chest showing dilated aorta.

FIG. 6.—(Case A258233). *X*-ray of stomach showing filling defect.

tions, the correction of a varicocele, and the removal of an epithelioma of the lip. After the removal of the epithelioma he had been treated for several months by the *x*-ray; there had been no evidence of recurrence.

His gastric trouble had extended over a period of

about six months; it had been initiated by an exhausting, but not painful, diarrhea. The stool was "tarry" and contained much blood. Following this attack and two months before his present examination, he had felt an indefinite aching pain located at the left costal arch and sufficiently urgent and persistent to cause wakefulness and to make work almost impossible. The pain had taken on a diffuse character and radiated downward and inward toward the lower quadrants.

Dietetic treatment had been advised, milk being used as a basis, but this increased rather than lessened the distress. A barium meal, taken when an *x*-ray plate was made, proved to give him great comfort. This meal was repeated at the end of a week. The *x*-ray plates of the stomach showed a large unfilled area in the fundus and the splenic flexure of the colon seemed fixed out of its normal position. The descending aorta was considerably dilated and was thought to have been so for many years, as a cough during that time had suggested pressure on the recurrent laryngeal nerve.

Two weeks before examination, the patient had been conscious of some indefinite pain, located at the right costal margin, but his appetite had been good, and food taken relieved rather than distressed, although a certain sense of fullness with discomfort was commencing. He had had, however, no vomiting and no hemorrhage by mouth and there had never been urgent colic nor jaundice. He had lost twenty-five pounds in weight, was dyspneic on exertion and easily fatigued, and had had a slight cyanosis.

Physical examination revealed a loose skin, muscles somewhat atonic, and a loose and pendulent abdomen, adiposity 2 on a scale of 4, cyanosis 1, a well marked arcus senilis, and arteriosclerosis 3. The systolic blood pressure was from 220 to 240; the diastolic pressure remained constant at 120. The urine was normal with the exception of albumin 2, and hyaline casts 1. The pulse was 72 and regular. Examination of the mouth, nose, and throat revealed oral sepsis and several carious teeth. Increased areas of dullness beneath the sternum and marked left ventricular hypertrophy were found, although the heart sounds were clear, without irregularity, and the heart itself was compensating satisfactorily. The lungs were clear, the liver was not enlarged, and there was no evidence of edema in the extremities. The epigastric area was carefully examined by several consultants; there was no evidence of palpable tumor nor other abnormality. The highest readings made during the fractional examination of gastric contents gave a total acidity of 50 per cent. and a free acidity of 30 per cent.

The roentgenographic studies were interesting in that they confirmed previous examinations, namely, an aneurysmal dilatation of the aorta (Fig. 5), the thoracic aorta taking on the appearance of a conical sac-like body, and a filling defect in the body of the stomach which the roentgenologist believed to be caused by a cancerous growth, the operability of which was questionable because of its location (Fig. 6). The one difference in the *x*-ray examination made at this clinic from that made elsewhere was the finding of what appeared to be a normal colon, the displacement of the splenic flexure not being confirmed.

The roentgenologist's diagnosis of cancer of the stomach was confirmed clinically, but in view of its location, the marked hypertension, and the advanced age of the patient, surgical intervention was not advised. The patient, a surgeon himself, realizing that an exploration promised him little, at first chose not to have an operation. After several days' consideration, however, he determined to take what little chance of improvement there might be.

At operation, February 5 (W. J. Mayo), a tumor 6 by 5 by 5 cm., which pathologic examination proved to be an angioma, was found lying in the fundus of the stomach; it was quite freely movable and presented easily. About 11 cm. of the center of the stomach were removed, a sleeve resection and an end-to-end anastomosis made.

The convalescence was uneventful; the patient returned to his home on the second of March, twenty-five days after operation, with the wound healed. Two months later he reported that so far as the operation was concerned, everything had been "eminently satisfactory." He had a very good appetite and was able to eat almost everything and his early distress from sour fermenting stomach had improved materially. Six months after operation he was enjoying good health and was engaged in his medical practice.

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A CASE OF CONGENITAL HEMI-HYPERTROPHIA TOTALIS.

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PHYSICIAN TO MERCY HOME, ETC.

THE patient, R. S., male, age twenty-two months, is the fourth child of healthy parents, of rather low mentality. The other three children are normal and healthy, and mentally above their parents. This one has never been sick, and seemingly is of good mentality. The mother was well during her pregnancy. I know the family from the great-grandmother down to this child,

FIG. 1.—Front view of the baby.

and there is no history of defective development in any member of the family, except a second cousin of this child's, on the mother's side, who has six toes on his right foot.

The great-grandmother, now hearty at the age of seventy-nine, says positively there was no idiocy, in-

sanity, epilepsy, or deformity in any other member of the family, back to her grandparents. This gives a history through six generations, with only one cousin and this case, in any way physically defective.

This child was born after a very quick and easy labor. It was observed immediately upon his birth that

Fig. 2.—Roentgenograph of the hands.

one side was much larger than the other. Indeed, I remarked to the great-grandmother, who was in the room when the child was born, that his right side was a ten-pound baby, and his left a seven-pound baby.

An attempt was made, when he was only two weeks old, to secure *x*-ray pictures, but the result was not satisfactory. Recently, Dr. W. C. Montgomery made some pictures, three of which are here reproduced.

The following are some measurements, which I have made lately:

Side of head: right, 10½ inches; left, 9¾ inches.

Top of head to upper border of ear: right, 6 inches; left, 5½ inches.

Chin to Occiput: right, 11¼ inches; left, 10¼ inches.

Chest: right side, 10½ inches; left side, 9 inches.

Middle of thigh: right, 9½ inches; left, 8 inches.

Calf: right 7¼ inches; left, 6¾ inches.

Foot: right, 6 inches; left, 5 inches.

Anterior-superior spine of ilium to external malleolus: right, 15 inches; left, 13 inches.

Acromion to tip of fingers: right, 13½ inches; left, 12 inches.

Around hand: right, 4¾ inches; left, 4¼ inches.

There is no defect of eyes nor defective development of any individual limb or organ. The skin is normal, and the eyes are alike.

In almost all classical cases the hypertrophy is on the right side. There are a number of cases of only partial hypertrophy—confined to one side of the face, or to a single limb; occasionally cross cases are seen, on one side of the face, and one or more limbs on the other side.

Differential Diagnosis: Acromegaly is bilateral, is confined to hands, face, and feet, and is not congenital. The broad face and great mental hebitude distinguish myxedema, which develops late in life. Hemiatrophy should give little difficulty in diagnosis, the prominence of the bones, the wasted and weak state of the muscles will serve to diagnose this condition. Sporadic cretinism and the various paralytic conditions should offer very little difficulty in diagnosis.

There is no treatment other than to put an extension shoe on the short leg.

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Fig. 3.—The tibiæ, one-half natural size; the right tibiæ is ⅝-inch longer than the left.

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AMAUROTIC FAMILY IDIOCY OR INFANTILE AMAUROTIC IDIOCY.

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Amaurotic family idiocy is a disease of early infancy. It has an unknown etiology, a definite pathology, a uniform clinical course, and a fatal prognosis. It is chiefly characterized by an early decay of body and mind, blindness, and death. Various names were given to this disease of which amaurotic family idocy, Tay-Sachs disease, infantile cerebral degeneration with symmetrical changes in the macula lutea, and primary amaurotic mental deficiency are best known. But infantile amaurotic idiocy would perhaps be more descriptive of this disease, because it occurs only in infants, amaurosis is always present, and idiocy is a constant symptom. It is an uncommon malady and for some obscure reason it affects almost exclusively Jewish children of Russian or Polish parentage. In many cases more than one child in a family is affected.

The etiology of this remarkable disease is unknown. The age of the parents, the number of children in the family, and their order of birth have no direct influence. Marked neurotic taint in the family, blood relationship between the parents, traumatic injury to the pregnant mother, and toxemia in the child have all been assigned among the causes of this mysterious disease.

The pathology is fairly definite. It is a disease of the central nervous system consisting of a degeneration and disintegration of the nerve cells of the brain and spinal cord, leading to neuromuscular weakness, mental deterioration, blindness and death. There is probably a primary cessation of development of the central nervous system and a secondary gradual destruction of the nerve cells.

The symptomatology is that of physical and mental retrogression. An apparently normal healthy baby at birth, begins at about the age of six months to show evidence of general backward-

ness. The normal developmental progress of infancy ceases and a gradual decadence takes place. The baby loses the power to hold up the head, cannot sit up or carry out properly the usual motor functions of early life. It becomes oblivious to

Fig. 1.—Case I, V.S., an amaurotic family idiot, 15 months old.

its surroundings and the face assumes a dull, vacant, aimless, idiotic expression as is shown in Figs. 1, 2, 3, 4, and 5. As a result of optic atrophy and degeneration of the retinal ganglia, the power of vision is gradually lost and there is formed a peculiar cherry-red spot in the region of the macula lutea and fovea centralis of each eye. Hearing, as a rule, became hyperacute. In the beginning of the illness there is a general muscular weakness with slight flaccidity or spasticity of the extremities and a diminution or increase in the reflexes. Nutrition is usually good. In the course of the disease, the child loses entirely the power of vision, there is marked spasticity with increase in the reflexes and general or local spasms. It wastes to a skeleton and lies in a helpless condition till death, coming always in the wake of this hopeless disease, finally relieves the little patient of its useless struggle.

The diagnosis is comparatively easy. The history is always suggestive. A healthy, usually breast-fed infant, and thriving both physically and mentally, begins at about the age of a half year to go downward in body and mind without any definite cause. There is a certain peculiar facial characteristic which is only expressive of this disease. A general physical examination will show changes in the neuromuscular system. There may be paresis of the extremities with slight increase in the reflexes or a general spasticity with exaggerated reflexs. There is usually a strong hyperirritability of the nervous system, so that when the child is suddenly touched or moved it starts as if in fright or may have a general convulsion. Nystagmus and strabismus are not infrequent and hyperacusis is almost constant. An ophthalmoscopic examination of the eyes is essential to a proper diagnosis. In every case of infantile amaurotic idiocy there is seen a circular cherry-red spot surrounded by a grayish white halo in the region of the fovea centralis and macula lutea, as shown in Fig. 6. This retinal red spot on a whitish background is so pathognomonic of this disease that its presence makes the diagnosis positive while its absence is strong evidence against such a diagnosis. The course of this disease is in all cases almost uniform and its termination is always fatal.

This infantile amaurotic disease should be distinguished from the juvenile type of amaurotic idiocy. The juvenile type occurs at a later age, is not restricted to the Jewish race, and has not the retinal red spot. The onset is more insidious and the disease is more chronic. The infantile type is illustrated in the following cases.

Case I.—(Fig. 1) V. S. A female infant, 15 months old. The parents are young, healthy Russian Hebrews. No history of syphilis or other infection in the parents. No parental blood relationships. No taint of neuroses or psychoses in either family. The little patient is the first and only child. Pregnancy, birth and lactation were normal. At about five months of age the mother noticed that the child was not developing properly, she also thought that the baby was never just right. On examination there was seen a well developed, well fed, stupid looking baby with the facial characteristics of an amaurotic family idiot. The anterior fontanelle was open, the posterior closed. There was a general superficial glandular enlargement. Had two lower incisor teeth. Examination of the heart, lungs, and abdomen was negative. Vision was impaired and there

Fig. 2.—Case II, H. G., an amaurotic family idiot, 10 months old.

was slight strabismus. The baby was unable to sit unsupported. Wassermann and Von Pirquet tests were negative. An ophthalmoscopic examination revealed the cherry-red spot. The child gradually grew worse and became totally blind. Spasticity became marked and the reflexes much increased. There was great

hyperacuity and hyperirritability with frequent attacks of local or general spasms. No Kernig or Babinsky sign but the Chvostek sign was present. The baby became greatly emaciated and lay in a helpless condition until a bronchopneumonia made an end to her suffering at the age of twenty-three months.

FIG. 3—Case III, R. S., an amaurotic family idiot, 10 months old.

CASE II.—(Fig. 2) H. G. A male infant, 10 months old. The parents are healthy Jewish people. No history of syphilis, alcoholism, or any other chronic ailment. No parental consanguinity. This baby is the third child in the family. The first and second are alive and well. Pregnancy, birth, and lactation were normal. The health and development during the early months of life were noneventful. At the age of about half a year it was noticed that the baby did not hold up the head properly and was not bright enough for his age. Examination showed a well developed foolish looking baby. The weight and measurements were normal for the age. Anterior fontanelle was open. Had six teeth. Examination of the chest and abdomen was negative. There was spasticity of the extremities with exaggerated reflexes. Vision was almost entirely gone. The typical cherry-red spot was present in each eye. Von Pirquet and Wassermann tests were negative. The child was not brought for further examination. By this time he has probably succumbed to this relentless disease.

CASE III.—(Fig. 3) R. S. A female infant, the seventh child of healthy Russian Hebrew parents. First cousins. No history of any chronic illness or psychoses. The child was born at full term, the labor and the breast feeding were normal. Two months before this child was born, her sister, who was the sixth child in the family, died of amaurotic idiocy at the age of twenty-one months. The other children are alive and well. When the baby was only a week or two old the mother noticed that she was very hypersensitive to sound. Between the fourth and seventh month of age she had frequent twitching of the upper eyelids. At the age of eight months the child was unable to raise the head and did not make any effort to sit up. She was dull, listless, and paid no attention to familiar people or objects. At ten months of age, a general physical examination was negative. The anterior fontanelle was open, the posterior closed, cranial sutures closed. There was no nystagmus or strabismus and the child could see fairly well. But an ophthalmoscopic examination already revealed the cherry-red spot in each eye. There was no apparent change in the neuromuscular system. The Wassermann and Von Pirquet tests were negative. At the age of eighteen months there was a marked decline in motor function and a general spasticity with increased reflexes. The face was idiotic, vision almost gone, and hyperacusis was marked. Between the eighteenth and the twenty-third month of age the child grew rapidly worse. She lost a great deal in weight and wasted to a skeleton. The anterior fontanelle was now larger than at ten months of age, the posterior fontanelle opened and the cranial sutures separated, due evidently to an accumulation of fluid in the cranial cavity. There was total blindness and an idiotic expression. The mouth was kept almost locked, general spasticity and episthotonus were marked and the reflexes much exaggerated. No Kernig or Babinsky sign, no ankle clonus, but the Chvostek sign was present. There were frequent attacks of tonic and clonic convulsions and occasionally facial spasms. At twenty-five months of age the child was in a state of extreme atrophy. She lay in a helpless condition with the arms and legs extended, the hands flexed and contracted and the feet markedly extended as I showed in a photographic illustration in the *New York Medical Journal*, November 10, 1917. During the twenty-fifth month of age the unhappy infant died.

CASE IV.—(Fig. 4.) S. G. Is a male baby 17 months old. The father and mother are young, healthy Jews. No history of syphilis, tuberculosis, or any other chronic infection or intoxication. No parental consanguinity. The little patient is the second child; the first died of pneumonia at eight months of age. Pregnancy, birth, lactation, and the development up to the age of seven and a half months were normal. At this age the child was sick for three days with high fever and was in a semicomatose condition. No diagnosis was made by the attending physician. Immediately following this illness, the baby began to lose strength, could not sit up or hold up the head unsupported as it used to do before the illness. The entire disposition of the child was changed; he was dull, indifferent, paid little attention to his surroundings, and did not grasp objects within reach. At eleven months of age, the infant had an attack of convulsions. Now at seventeen months of age the child looks well developed but is dull and listless. There is hardly any vision left. The typical circular cherry-red spot in the macula lutea is present. The anterior fontanelle is open. He has four teeth. The chest and abdomen are negative. There is a general spasticity and increase in the reflexes. A fine tremor in the lower extremities is elicited during reflex excitation. No Kernig or Babinsky sign. No nystagmus or strabismus. Marked hyperacuity and irritability. The weight and measurements are normal for the age.

FIG. 4—Case IV, S.G., an amaurotic family idiot, 17 months old.

CASE V.—(Fig. 5.) S. L. A male infant, eleven months old. He is the first child of young healthy Jewish parents. There is nothing of importance in the parental history. No consanguinity. Pregnancy, birth, and lactation were normal. He was considered a normal child till eight months of age, when it was

noticed that he was not doing well. He was dull and indifferent. Could not hold up the head or sit up. A physician was consulted several times and he thought that the trouble was due to difficult teething. Examination at eleven months showed a well developed baby with a careless facial expression, a blind, aimless look,

FIG. 5—Case V, S.L., an amaurotic family idiot, 11 months old.

and an occasional silly smile. The anterior fontanelle was open, he had four teeth, examination of the heart, lungs and abdomen was negative, there was slight spasticity of the extremities with an increase in the reflexes. The child was almost blind and had the typical cherry-red spot. The measurements were normal and the Wassermann test was negative.

There is no known treatment of any value in this disease. Proper feeding and the best hygenic care should be given. Bromides and warm baths are soothing to the irritable nervous system.

From an observation of these five cases and a few others that have come under my care, some interesting points have presented themselves. All these infantile amaurotic idiots came from parents that were apparently healthy in body and mind and were young or at most of middle age. They all happened to come from about the same social and economic class. People that knew no privation, led a clean life, with clean habits. Pregnancy, birth, and lactation were normal in all cases. They all had the same peculiar character-

FIG. 6—The eye grounds in amaurotic family idiocy. From an original drawing by Waren Tay in "Diseases of the Eye," by Norris and Oliver. (J. B. Lippincott Co., Philadelphia). Note the circular dark spot in the center of a whitish field.

istic amaurotic-idiotic facies. The voice in all infantile amaurotic idiots has a certain vibrating nasal quality, due probably to paresis of the soft palate. In all of them the disease passed through the same cycle of events with almost monotonous uniformity, and eventually all met the same fate.

The etiology of this disease and the reason for its predilection for Jewish children is as obscure now as it was when Waren Tay first described it in 1881. The disease is either congenital or acquired. In favor of its being congenital is the very early onset, the identical course of events, and the same termination in all cases. Such exactness and uniformity in the time of onset, the period of illness, and the pathological and clinical manifestations must evidently be caused in all of them by one and the same biologic dysfunction. But whence does this mysterious illness come? The parents of all of them seemed to be healthy and apparently come from a healthy ancestry, while parental consanguinity was present only in Case III. Still the Mendelian principle may perhaps supply the missing etiology.

Assuming that the disease is acquired, then the infant must be infected at birth or immediately after, and there is an incubation period of six or seven months at which time the disease manifests itself. It is doubtful, whether, as is commonly supposed, the infant is well up to about a half year of age and then almost suddenly begins to degenerate in body and mind without evident cause. In cases I and III it was noticed from very early infancy that the children were not exactly normal in every way. There was at all times some evidence of physical and mental ailments. Case IV suggests the possibility that in every case some acute illness may be the cause of the breakdown of the nervous system which was at no time equal to the task imposed upon it by the wear and tear of life. But the nature of this supposed nerve infection or intoxication is unknown. It may not be impossible that the much wanted etiology will ultimately be found in some abnormal action or reaction in the endocrine group which has a profound influence over the general metabolism and the life history of the nerve cells. But, at present, there is no evidence of an endocrine pathology in infantile amaurotic idiocy. It must therefore be assumed that the cause of this disease lies in an abnormal physicochemical structure of the nerve cells which limits the span of their life to a little over three-score and ten weeks.

222 EAST BROADWAY.

ON THE DESIRABILITY OF INSTITUTING A SPECIAL MEDICAL BOARD WHICH SHOULD CORRESPOND TO THE PATENT OFFICE:

THE FUNCTION OF THIS MEDICAL BOARD BEING TO ESTABLISH AND PROTECT THE PRIORITY OF IDEAS RELATING TO MEDICAL SUBJECTS.*

BY A. L. SORESI, M.D.,
NEW YORK.

IF the ethical principle accepted by all reputable physicians that they shall not profit directly by any invention that relates to medical science, is the proof that the medical profession stands on such a high plane as perhaps no other profession does, this does not mean that the men who have—or have

*Read before the Historical Section of the Academy of Medicine, Nov. 22, 1919.

had—the original ideas that make medicine a really progressive science, should not be given full credit for their original pioneer work. Some one might object that pioneer work is recognized and given full credit nowadays and might bring forward thousands of instances to show that his assertion is correct. This does not mean that full recognition is an actual fact in all cases, and I might add that the cases where the originator of something really new fails to receive full credit are more numerous than the cases where full credit is given.

Let me give you an instance that illustrates my point: Cystoscopy is nowadays one of the most valuable means of diagnosis and direct treatment of numerous diseases. To whom are we indebted for such a wonderful means as cystoscopy being given to the medical profession? Obviously, to the man who first devised what would be called the basic instrument that made cystoscopy possible and whose fundamental ideas are embodied in all the more perfected modern cystoscopes. Well, what credit is Nitze given for his really original and fundamental work? In some textbooks it is mentioned that Nitze applied a lamp at the end of the instrument, but the modern cystoscopes are called simply Doctor A's, Doctor B's, Doctor C's, Doctor D's, etc., cystoscope; no mention is made of Nitze's instrument, notwithstanding the incontrovertible fact, that each cystoscope is nothing but a modification of the original Nitze's cystoscope. Don't you think it would be only fair to associate the name of Nitze with the name of the man who made the modification and call the improved instrument cystoscope Nitze's and Doctor A's, Doctor B's, Doctor C's, etc.? This combination of names was not objected to on patriotic grounds—Nitze being a German—but because of the deplorable tendency to forget what is due to real pioneers, if their names are not of actual value in increasing the reputation of the man who happens to modify in some details the work of the originator. And without any idea of passing personal remarks, but only in order to protest against a deplorable tendency and prove my assertion, I recall a fact that you all know. There was in this city a doctor who worked many years and spent considerable money and time in improving the cystoscope, Dr. Brown; well, after his death we saw advertised an improved cystoscope called Brown's and B's; then the cystoscope was still improved, until perhaps it is the best on the market, but the name Brown was dropped. Who remembers poor old Brown and his hard work?

The medical man who does original work spends his energies, practically always his money, and often sacrifices his health; he does not get the applause of the crowd, his name is unknown to the crowd; people will bless the physician who helps them or their dear ones, without knowing that the help they receive is the result of the patient, often tedious and dangerous, work of a man—living perhaps in another continent—who spent his lifetime studying, in order to solve some difficult medical problem. If any one of us lights an electric lamp the thought will go, not to the electrician who installed the lamp, but to Edison, to Volta, to Galvani; if a child is dying of diphtheria, the physician injects some antitoxin, the child is saved, but the thoughts and thanks of the mother do not go to Roux or Behring, but to the physician who actually does the very simple injection of the live-saving antitoxin.

The physician who does original work not only does not derive any money or even fame and glory in most cases, but often, and when his discoveries are most important, is compelled to fight in order to see his sound ideas accepted, when he is lucky; in most cases he will have to stand humiliation, to be considered a fool or a crank, until he is old and worn out, or decidedly dead. This has been true in past centuries, when pioneers in research work were excommunicated or more simply hanged or burned, and is true nowadays, when too often we kill a man's ambition by lack of recognition of his work. I can give you a most striking instance illustrating my assertion, by recalling to your attention the fact that therapeutic pneumothorax was advised and practiced by Forlanini over thirty years ago, yet, notwithstanding his splendid work done in the clinics of the Universities of Torino and Pavia before physicians and students, and his ability as a clinician, therapeutic pneumothorax was not accepted until recent years; some have even tried to take away from Forlanini—great modest man that he was—the full credit for his important pioneer work. Forlanini was perhaps to be blamed for being an old-fashioned scientific man, who did not have the ability of some modern scientific men, who know how to use the lay press in order to gain fame and diffuse their new medical discoveries among the laity and the profession. May I ask, if Forlanini, instead of being professor of clinical medicine in two of the largest medical colleges, had been a modest physician in a small town, would not someone else have taken away from him the credit for having given the medical profession such a valuable means as therapeutic pneumothorax?

Someone might answer that the priority of any medical idea is guaranteed by the date of publication in a medical journal. I feel sure that anyone having the least familiarity with medical literature knows that the date of publication does not mean much, and I shall give you a most striking illustration of how much it does actually mean. While visiting different clinics abroad after the armistice, I happened to see a surgeon who, having completed a difficult suture deep in the abdomen, had accidentally torn one end of the thread and was in a rather bad plight, being unable to tie any knot. I suggested that he tie the knot with the aid of forceps and he thanked me very sincerely and warmly, saying, "I had not thought of the Dr. G's knot." No one can imagine my surprise, because the so-called "Dr. G's knot" was described by myself in *The American Journal of Surgery* in March, 1911, and I had personally taught Dr. G. how to make it in 1915, while he was taking a course in my surgical institute. Well, this gentleman, Dr. G., published in 1918, in two most important and widely circulated surgical journals, *The Annals of Surgery* and *Surgery, Gynecology and Obstetrics*—after having read a special paper on the subject before two different surgical societies—two papers describing a new method of tying a surgical knot. After having mentioned my name, my paper, and the fact that I used forceps to tie knots, he also had the nerve to state: "I find nothing in the literature describing this method." You can see for your-

selves from the original articles that I present to you and a letter received by Dr. G., that he did not make a simple mistake of omission, but intentionally presented as his own a procedure that he had learned from me and that he knew was not originated by himself. I mention this case, not to claim any especial priority about tying a knot—the matter is of small importance and the man concerned is smaller still—but to prove that medical publications do not really protect the originality of any idea, so that the originator may be put in a very unpleasant position, as happened to me in the case referred to, when, not having any reprint with me, I could not prove my case, and might have left a bad impression—absolutely unjustified—in the minds of the surgeon and his assistants.

If medical publications do not protect originators in a case as simple and plain as the one referred to, what will happen when the matter is rather complicated, such as new ideas about treatments, pathogenesis, etc.? And allow me to ask you: What protection has a man doing original work when he starts to study a subject that requires laboratory experiments and clinical investigations that must be carried on for a long period of time? I could refer to several personal instances in which original work which I had started was published by other men before I had an opportunity to do so, pressed as I was by the enormous amount of work that I was doing, but I shall not take up too much of your valuable time. It is sufficient to state these facts:

The man who does original work has no means of protecting his ideas, and unfortunately there are men in our profession who are unscrupulous and try to take away the credit of anything new from the real originator. It is absolutely right that no medical ideas should be exploited for financial gain or through the lay press, because we all want to keep the science and art of medicine on a plane where speculators in human ills have no place; *but some simple and efficient means of protection should be offered to anyone doing original work in medicine. This protection is not only the duty of the medical profession towards the ones who sacrifice themselves in doing original work, but it is indispensable in order to help the progress of medicine.* In fact when a man starts to do original work nowadays, he either has to do it in secret or run the chance of somebody taking away from him the credit for his ideas. If he works in secret many elements that might help him will not be made use of, and not only would progress be slow, but many good works would not be carried through on account of the impossibility of any one man being able to solve all the problems that will present themselves during the study of any medical subject; if he does not do his work in secret, an injustice is done him, because his ideas are not protected.

Allow me to state that the originator of any new idea might have that idea in his mind very clearly from the beginning, or the idea might be rather hazy and require a great deal of thought in order to make it clear to the originator himself; then comes the process of thinking how to make the idea practical and translate it into words and facts; at this moment the originator can state what he is aiming it and can start on actual work. The original idea might at first seem to concern only a rather small matter, then its importance broadens until, at times, it might become the basic idea from which many others will originate. The genius is one who starts some new basic idea that will allow other intelligent men to do some progressive work. Columbus was a genius, because he conceived the basic idea of the existence of a new continent, the other discoverers who came after him only developed the original basic idea of Columbus, and if an enormous number of men have contributed to make America the most progressive country in the world, each one should be given the credit he deserves for his contribution; no one, however, forgets the one that made such a wonderful country possible, Columbus.

The same acknowledgment should be made in things pertaining to medical science. We have the giants like Pasteur, and we have big and less big men, each contributing to the progress of medicine according to the amount of talent with which Nature has endowed him; all, from the giant to the smallest man must receive full recognition for their contributions toward the progress of medicine. The smaller men must not try to steal any of the credit that is due the bigger men. The small man has to understand that what counts is the basic idea, not the details that hundreds of other men, either today, or tomorrow, will certainly improve; and if the small man does not understand that he has to pay his respects to men of broader minds, who have done real pioneer work, the medical profession —which as a whole is the most just and fair association of men existing today—must find a means of making him understand that fairness and honesty are the qualities that must always distinguish the medical man, and that we are so proud to possess such qualities that we do not want anyone among us who does not feel that fairness and honesty must be inborn in the physician and the most essential of his qualifications. I say this much because we see sometimes, indeed too often, men who have contributed small details toward perfecting some valuable contribution to medical science, speak with a kind of scorn of the men who originated the very thing to the perfection of which they have contributed some detail—perhaps of no great importance—speaking and acting and pretending recognition, as if they were the inventors of the whole thing. To keep up the illustration given before: What right have the different men to call a certain cystoscope, Dr. A's, Dr. B's, Dr. C's, when in reality Dr. A, Dr. B, Dr. C, and Dr. D have only modified details, and what right have they to the advantages that come from the supposed invention of a new instrument, as important as the cystoscope, that gives them great prestige among laymen and perhaps also among physicians?

I remember a very conceited surgeon showing me an apparatus for traction on fractured bones and telling me that it was absolutely new and original; I made the remark that after all it was nothing but a modification of the old Codivilla's nail—as in reality it was. But if I had not known Codivilla personally, I would not have formed a very good opinion of him from what this surgeon had to say about him. Poor Codivilla, he had the nerve and audacity to present something new about twenty years before this great small surgeon invented the same thing.

I shall not insist any further, because I do believe that all of you are convinced that nowadays the medical profession does not offer any protection to the ones who intend to do original work, and that such protection should be given, because it is a moral duty of the medical profession toward the ones who help the progress of medical science. The necessary protection can easily be given and the patent office offers us a plan that we can imitate and adapt to the peculiar conditions of medical science. The patent office does not grant a patent that infringes the claims of one already granted, or for which an application has been previously filed; this means that the priority of any claim is awarded to the person who first made the application for such recognition, whether a final patent has already been granted or not.

Following these general outlines I propose the institution of an international board that would have the authority and power to pass on the priority of ideas relating to medical subjects. Anyone, physician or layman, having or thinking to have an original idea relating to any medical subject, communicates such ideas, as clearly as possible, with the help of sketches, models, diagrams, etc., when this is deemed desirable, to the secretary of the board, formally filing an application for a claim of priority.

The secretary shall record the date of the presentation, when the application is brought directly to him, or the date of mailing, as marked by the official post-office stamp, when the application is sent by mail; the date on record will be the one on which the claims of priority will be based. The secretary and his staff will study the application, when the claim to priority can be easily established or rejected, and a decision will be reached as rapidly as possible; when the matter is rather complicated, members of the board specially competent will be consulted before passing judgment on the application; when the matter is exceedingly important and complicated, the decision could be left to special meetings of the board, to which the applicant and the medical profession should be invited to be present and discuss the matter. The decisions reached by the board should be final, and should be accepted by the profession when referring to authors who have done original work.

The board should be international with national branches in all civilized countries, and should furnish any information regarding medical subjects upon the payment of a small fee, so that anyone thinking he has an original idea can at a small cost obtain all the information necessary about the subject in which he is interested. By this arrangement the board would not be burdened with applications for priority of ideas which evidently are not new.

Applications for priority of ideas that are not developed within a certain time—to be determined later by the board—should be considered void, and as not made. The board should be international in order to have the necessary authority to carry on its work and take care of any new ideas that may be developed in any country, so that the possible abuse now existing that a man might publish something new in a small journal, published in an unimportant country, the language of which is not universally understood, therefore obtaining little or no notice at all; and then see someone else take up the same thing and publish it as his own and be given credit for it, would not be possible; for the board would offer complete protection to the big as well as to the small men, to the big and to the small countries alike, and would be completely fair.

I propose that any person, either physician or layman, can apply for a claim of priority of any idea relating to medical subjects. I do this for two reasons: first, because men who are not physicians might and have helped and actually do help the progress of medical science, and they have a right not only to the gratitude of the profession, but also to receive the credit for their valuable contributions; and I may recall to your attention that to a chemist, Pasteur, we owe the most valuable personal contribution to the progress of medical science; to a singer, Garcia, we owe the laryngoscope, to prove that my inclusion of laymen constitutes fair play and is justified.

The second reason is that chemists, manufacturers of surgical instruments and others, do contribute to the grogress of medical science, and it is right to give them credit for their good work, not only because this is fair, but because it would also stop a practice that is really shameful, and I shall explain myself in very plain words: We see advertised, instrument Dr. So-and-So, electric outfit Dr. So-and-So, preparation Dr. So-and-So. Well, in a great percentage of these cases the doctor whose name is associated with the instrument, the operating table, the electric outfit, preparation, and what not, had as much to do with the invention, or at times even, with the perfection of even small details of the instrument, operating-table, electric outfit, preparation, etc., as any inhabitant of the moon, if there be any such. What happens in these cases is this: The manufacturer has devised or perfected a surgical instrument, an operating-table, an electric outfit, preparation, etc., the original idea of which might be due to somebody else; the market value of these products depends, however, on the label attached to them, as the labels on bottles of wine—during the happy times when there were bottles of wine—made the market value of champagne; the manufacturer therefore needs a good label, and he gets it by attaching to the apparatus the name of a more or less famous medical man, who not being the champagne itself, is satisfied with being the label.

The immorality of such practice does not need to be emphasized, and I am sure that you will all agree that it should be stopped; the name of a physician should not be attached to any commercial invention, unless the physician himself is the real inventor; any physician giving his name to any commercial invention, when he is not the real inventor should be disciplined and made to realize that if he has no self-respect he must respect his qualification as a physician and not drag it down as a label for commercial purposes. The constitution of such a board as I have advised would immediately put a stop to such a practice, because the manufacturer would inform the board of his intention of making a new apparatus, and when the apparatus is finished and put on the market, he

could not have a more or less famous medical man give his name to it, because it would be recorded under the name of the manufacturer. Some one may object that the manufacturer could record the invention under the name of a physician; this might happen, but it is not so likely to occur as would appear, because the gentleman who gives his name to something to the making of which he has not contributed, gives it only to the finished product. There is then no risk of failure, and he gets a valuable advertisement only in exchange for respectability; and when you consider how often a valuable surgical instrument has made the reputation of a surgeon, you will realize that there are —unfortunately—men who are ready to exchange self-respect for the good sound dollars that go with reputation, no matter how acquired. On the other hand, when the physician himself is the inventor he will file the application for priority, as he would file the application for any other idea, so that full credit should come to him.

The next and very important point is the financial side of the proposition. I do believe that there are many ways of solving it. The Carnegie Institution, which publishes the *Index Medicus*, or the American Medical Association could be interested in the matter; then there would be some revenue from the fees paid by persons applying for information and for recognition of claims; the board could even take patents on inventions that can be exploited commercially and receive a royalty on the same from manufacturers. There could be no objection to this practice because it would not give rise to any commercialism, as the inventors or the members of the board would reap no personal benefit or monetary gain. The fund thus collected might be used, in addition to defraying the current expenses, to help develop ideas that require a very large outlay of money. This point is especially important, because we must not forget that often the most intelligent men are also the poorest.

If the objection is made that permitting the board to patent ideas which relate to medical subjects and make a profit on them, would result in physicians and patients having in the end to pay for such profit, I shall answer that, if physicians and patients do really pay such a contribution, this contribution will be so small and the benefit derived from helping medical progress so great, that the gain will be wholly theirs, because the progress aimed at will benefit them and save them larger expenditures of money, on account of disease which can be either prevented or treated more scientifically, if medical progress is favored. I am also of the opinion that after the board has been established, it would not be difficult to obtain part of the funds necessary for its activities through contributions from governments, institutions, and individuals.

I move, therefore, that the Chairman of the Section of Historical Medicine appoint a temporary board, that will study the practical details that are necessary to start the institution of an international board, the function of which shall be to establish and protect the priority of ideas relating to medical subjects.

220 West Fifty-ninth Street.

ANESTHESIA IN CEREBRAL AND SPINAL SURGERY.

By ANTHONY M. PALERMO, M.D.,

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In brain and spinal surgery, the anesthetic is most important; the surgeons in this field show their appreciation of this by employing one experienced in this line of work, and consider him as important as their trained assistants.

The method of administration for these patients is markedly different than that used in general surgery.

Ether-oxygen is most frequently used. Ether, properly given, is a stimulant—the only anesthetic that has a stimulating action upon the circulatory, respiratory, and nervous systems, and like other stimulating drugs, if not properly used, it depresses these systems.

Chloroform acts directly upon the heart muscle, depressing that organ and at times causing death; there is the added danger due to the locking up of a very toxic agent within the lungs, to be absorbed and to act still further upon the already poisoned and embarrassed heart.

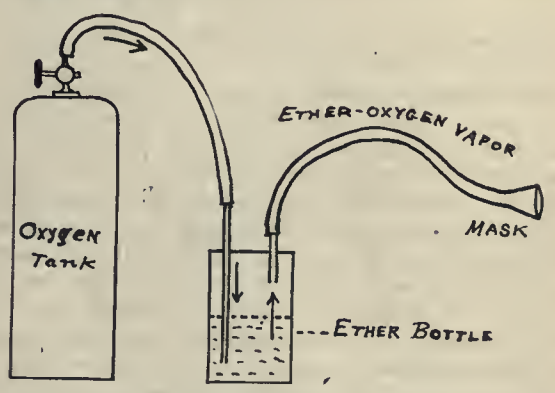

Fig. 1.—Diagram showing the method of obtaining the ether-oxygen mixture.

The method of nitrous oxide: oxygen is rarely used; I will say never. The anesthesia is too superficial and uncertain. The inhaler is in the way of the operator and assistants, and the anesthetist is handicapped by being unable to control his patient without disturbing the operative field. The closed method by which nitrous oxide and oxygen are given in some cases causes venous congestion of the lungs, brain, and other organs of the body, which is undesirable in brain surgery; the blood pressure is markedly raised.

Ethyl chloride and numerous other agents employed for general anesthesia are not to be considered in this special branch of surgery.

Ether seems to fill the vacant space between nitrous oxide on one side and chloroform on the other, in that it is more efficient and reliable than the former and much safer than the later.

Of the many complicated automatic apparatuses, I have ultimately come to use just the simple oxygen tank, on the side of which hangs a bottle containing ether—the anesthetic I use constantly. In this way the oxygen becomes saturated with ether vapor and thence it is carried to the lungs as such through a

FIG. 2.—Showing the operation performed under ether-oxygen anesthesia.

tube running from the bottle to the mask, as illustrated by the accompanying diagram (Fig. 1.).

The administration of the anesthetic to these patients is made more difficult because the administrator must remain at the foot of the table so that he may not interfere with the work of the surgeon and his assistants. The patient is draped and is entirely covered so that little opportunity is afforded the anesthetist to observe the patient; the respiration, pulse, and color of the blood are his only signs. The quantity of either given is dependent upon the amount of oxygen going through the ether bottle—the more oxygen, the more ether vapor.

Before the administration of ether, if the patients are asked to breathe rapidly and deeply for a few minutes, there is hyperoxygenation of the blood which seems to lessen and obtund the sensibility; under no circumstance should a patient be forced to take an anesthetic—this is as true for children as for adult patients. Only management is necessary to secure the cooperation of even a very young child; the anesthetist may even himself breath through the cone and let the patient play with it. In adults there should be some practice in deep breathing deliberately before using the anesthetic with the object of accustoming the respiratory mechanism to take deep breaths by habit even when not entirely under control of the will—and the patient should have the suggestion of this effect frequently repeated in his ear as he "goes under" the anesthetic. The occupation of attention necessary for deep breathing during the taking of the anesthetic lessens the concentration of the mind on the sensations and actually lessens the discomfort. Besides, deep breathing distributes the anesthetic over the lungs, leads to its absorption more rapidly, and makes the irritation of the anesthetic less by diffusing it over a larger surface. On the contrary, short rapid breaths lead to an intensity of the irritation and a much slower absorption.

The anesthetic is started with pure ether, using the Yankauer mask, and after the patient is fairly under its influence the operative area and the patient are draped; the anesthetist now retires to the foot of the table and the ether-oxygen tank is now connected. The patient is kept very slightly under—and in children, usually crying, but relaxed. He is kept this way until the dura is opened—when the narcosis is increased. In brain surgery, from the time the bone is removed (permitting the bulging of the dura), unless the depth of the anesthesia is increased when the dura is incised, and if there is much loss of cerebrospinal fluid or a marked bulging of the brain itself, some reflex condition results, such as a change in respiration, coughing, swallowing, et cetera; but this does not occur in the same degree, or as often, if the patient is well anesthetized at this time. As soon as the operator begins to suture the incision, the anesthesia should be lessened and then discontinued when the temporal fascia is sutured. In this manner, the patient requires very little ether and is entirely out of the anesthesia before the operation is completed—and only mild or no signs of shock are apparent. Rarely does the patient complain of having suffered from pain during the operation.

To date, 250 patients have been anesthetized in this manner and not a single death or complication has occurred which could be attributed to the anesthesia; of this number:

158 were subtemporal decompressions; 12, suboccipital decompressions; 16, Gasserian ganglion operations; 14, laminectomies. The accompanying illustration (Fig. 2) shows (1) the anesthetist at the foot of table; (2) the oxygen tank with bottle of ether hanging on side; (3) the patient completely out of sight. I have never tried intracranial, intravenous, or rectal anesthesia as I think it is unnecessary to resort to more difficult and dangerous procedures in view of the results obtained with the ether-oxygen method as described above.

408 WEST 145TH STREET.

WINE IN FRANÇOIS RABELAIS' DAY.

By DOUGLASS W. MONTGOMERY, M.D.,

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THE mental attitude toward wine then and now are two totally different things. Then wine was intimately associated with theology, and with a thousand social customs almost equally sacred. It was considered both theologically and physiologically to be one of the two chief sources of blood, and the fermentation of the grape was regarded as the type for the processes of digestion. The stimulation produced by it, now classified as the first stage of its poisonous action, was then thought necessary to evoke the manifestations of genius.

It would be difficult now to arouse a religious fervor over a formula like C_2H_5OH, or to impress the public with the preeminent food value of a little ethyl hydroxide, some volatile ethers, some flavors, sugar, and a little coloring matter assembled together in watery solution. Furthermore, the physiologist, who would draw his entire ideas of alimentary digestion from the fermentation in a wine vat, would get little attention, and the epicure and social enthusiast is rather stumped on reflecting that the subject of his enthusiasm is the refuse of a microorganism, with life processes essentially similar to those of his own.

However, we have so many facts to sneer with nowadays that we must be a little careful in our sneering. In many situations wine (and its fellow drinks) is still "a good creature," and we should be much at a loss without it.

Rabelais was so fond of wine and of eating and of their attendant joyousness and goodfellowship, that he was scarcely dead before the legend arose that he was a brutalized drunkard and glutton. And yet he was as far removed from being a drunkard as he was from being a teetolar. He might, occasionally, as he has said, get the registers of his brain a bit confused by partaking too freely of new wine, but few have given more vivid descriptions of the brutalizing effects of over-indulgence in either food or drink.

He had several pet names for his favorite drink, such as purée de Septembre, a name for must or new wine, which was pressed out in September, the month of the ripening of the grapes. Another was "Eau bénite de Cave," holy water of the cellar, a characteristic monastical designation, quite in accord with Rabelais' status as a monk, and, according to Abel Lefranc, probably original with him.[1]

Another pleasant synonym was vine-tree syrup, with which the breath of the priest, who helped Prince Gargantua to dispatch his matins, was well fortified against the raw morning air.[2]

Piot, from the Latin *potus*, was another favorite name for that nectaric, delicious, precious, celestial, joyous, and deific liquor called wine. Janotus de Bragmardo employed this term in his well-known harangue, and said that if we lost it we should also lose sense and law.[3] Was this in the nature of a prophecy? It would seem so, for since losing our wine we notice a notable crop of senseless and lawless socialistic theories spread abroad in the land. It would appear as if men, losing their solace, become as cantankerous, vicious, and wrong-headed as old mares, and that when they assemble they either try to be zealously edified, or, like the parlor Bolsheviki, they think up some delivish scheme against their neighbors. "A cup o' kindness" might change the whole social atmosphere.

The Cherished Vintage.—It is not every year that produces good wine either in plenteousness or in flavor, and an especially good vintage was so lovingly regarded, and was such a notable event, that it was used as a chronological point of departure. It was the year of the good vintage, "Ce fut l'an de la bonne vinée," was an even better introduction to a story than "Once upon a time."

And the wine of that year was bottled with especial care, and kept for great occasions, and when it was drunk the stories and the old friends of that year were brought to mind. Warren Gregory of the Belgian Relief, in speaking, one evening, of the irrepressible Belgians, said that an old butler gave him a glass of wine, which he said he had helped to bottle sixty-five years before. He also added that there would be one big time when the Germans would be driven out of Belgium, for many were saving up, in the most recondite places, the wine for the occasion. I have no doubt that that "Big Time" was pulled off according to schedule.

The Time for Drinking Wine.—The time of day to drink wine was seriously regarded. In reading Rabelais, however, one would think that when anyone had a thirst it was seized upon as a fitting time to drink.

In the prologue to the fourth book he says that at prime he drank white wine, also at *tierce*, *sext*, and *nones*. At vespers and at compline he drank claret. This meant that he drank the whole day through, from early morning until he went to bed, for prime was 6 o'clock in the morning, or sunrise at the equinox, while *tierce*, *sext*, and *nones* were three of the quarterly divisions of the old Roman day, carried over into the Church of Rome. And vespers are the *vesperæ* or evening hours, while compline, Latin, *completæ*, is the last service of the day, completing the service of the canonical hours, and it also designates the hour of that service. The poor tired sisters occasionally forget the compline, and then they have to drag themselves out of their nice warm beds in order to close the day properly.

Wine Before Breakfast.—I well remember the shock I received one time when crossing the ocean on a North German Lloyd steamer. A young Teuton on board began the day, every day, by drinking Munich beer. He had resided for some years in a remote part of Mexico, far removed from that delicious drink, and the morning seemed long to him in awaiting the opening of the bar.

Friar John is another instance of an early drinker, but there were extenuating circumstances. Friar John cried out "Cool wine, cool wine, Gymnaste, my friend!" No wonder he cried out for a cool, fresh drink, for the worthy monk had just come in from one of the most strenuous single-handed combats ever recorded in history, and furthermore, it was a hot September morning, just after sunrise, and he brought with him five pilgrims, and a captain as prisoner. In fact, he was returning from being prisoner himself, which was no light matter. We must also take into consideration that wine was then the only exhilarating drink, as tea and coffee had not yet been introduced.

Taking an alcoholic drink, as a cocktail, as a preparative initium to a meal, is an old custom, and we find that on a sultry evening Gargantua went out into the garden, gathered some lettuce, washed it in a cool running fountain, and after eating it, and so, in a certain measure, assuaging his thirst, he extinguished the latter completely by taking a great draught of wine.[4]

At other times this would be turned about, and salty foods would be partaken of in order the better to relish the wine.[5] And still, at other times, at the commencement of a repast, there would be read some pleasant history of ancient prowess, while they were sipping their wine.[6]

When drinking to one another in Rabelais' time they had a curious expression for "flowing bowl," or, as Sir Walter Scott would say, "a cup so filled that the wine sparkled on the brim;" it was "verre pleurant," literally the weeping glass.[7]

Wine in Elderly Life.—Friar John taunted Panurge unmercifully about the signs of old age which were beginning to show. Panurge admitted that there were indications of age present, but begged him to impart this information to no one, that it might remain a secret between themselves. He admitted, however, that there was one sign he himself had noted. He said that he found wine better and more to his taste than ever, and that more than ever he feared lest he should happen on bad wine.[8]

As a matter of fact elderly people are exquisitely appreciative of the glow and the delicate suave taste of good wine, while sensitiveness to the cruder sorts of wine, or to any excess, becomes more marked as life advances. It shows itself in many ways as an exacerbation of an indigestion, an irritability of the bladder, a quicker flushing of the face, a lighting up of an eczema, an irritability of the tongue and other mucous membranes, a herpes, twinges of the muscles and joints, and a sharpening of the temper.

As the great Scotch Rabelais put it:[9]

When once life's day draws near the gloamin'
Then fareweel vacant, careless roamin',
An' fareweel cheerful tankards foamin',
An' social noise.

Not infrequently one becomes more sensitive to beer than to wine, and, in fact, whiskey is less liable to give trouble than either of them. It is a far simpler drink. It is, to a great extent, the complexity of the other two that works the mischief.

Wine in Surgery.—The narrative of the death of Epistemon in the battle with the giants, when his head was cut off, the replacement of his head, and his restoration to life by Panurge, and the account Epistemon gives of his sojourn in hell, in the intervening time when his soul was absent from his body, is one of the most interesting chapters in Rabelais.

After the battle Epistemon was missing, and Pantagruel was saddened to the point of wishing to commit suicide. When the body was found, Panurge recognized that it was still warm, and taking the head, which had been completely severed from the body, held it safely and warmly, and away from the wind, while the body was being carried to the place where they had feasted the night before. Then he cleaned off the neck and head with white wine. He then adjusted the head on the body with great care, and secured it in place with fifteen or sixteen stitches, and smeared the wound with a resuscitative ointment.

Presently Epistemon began to breathe, then opened his eyes, then yawned, then sneezed, after which he passed some flatus. Upon hearing this Panurge gave it as his opinion that the patient was entirely restored, and gave him a glass of white wine with a piece of sugared toast. In this way Epistemon was cleverly healed, excepting that he was hoarse and suffered from a dry cough for more than three weeks, the only remedy for which was copious drinking.[10]

Besides this use as a surgical dressing, wine was also employed for washing the hands. It is related that Prince Gargantua muttered a number of graces, washed his hands with cooled wine, cleaned his teeth on a pigs' knuckle, and chatted merrily with his companions.[11]

The uses of wine, especially in surgery, are historically very interesting, as in the Middle Ages they were extensively employed. There is still a camphor wine in the German pharmacopœia, originally from the French, and composed of: Camphor, 1 part; 90 per cent. alcohol, 1 part. Dissolve and add: mucilage acacia, 3 parts; white wine, 45 parts.

In the Napoleonic period the attention of the medical profession was attracted almost entirely to pathological anatomy—the dead-house held the center of the field. The science of surgery advanced rapidly, and as it advanced the practice of surgery became worse and worse. It is said that it never was more murderous than in 1870, just at the dawn of its greatest advance. The wines, so freely used in the Middle Ages, had been almost entirely replaced by fatty dressings, ointments, and this most regrettable change contributed its share to the horrors of the Franco-Prussian war. I personally knew surgeons, who, in operating in particularly severe cases, or on gala occasions, would put on gowns stiff with blood and grime, which they had worn at Sadowa (1866), or on the battlefields of France (1870). In scientific attainments these men were far ahead of their successors, the extent of whose knowledge is often limited to maintaining a faultlessly sterile operating field, which, by the way, is no mean achievement.

In the Middle Ages wine was intimately associated with the most sacred religious feelings, and with the most intimate conviviality, both of the community and of the family.

In religion, in social life, and in family life, the drinking of wine was surrounded with most elaborate and punctilious ceremonies. The feelings aroused in regard to partaking of it as a religious ceremony were so intense as to give rise to great wars, causing untold misery and destruction. It was supposed to be both health-giving and life-giving, and was regarded as the analogue of the blood, which was thought to be the seat of the soul. It and bread, indeed, were held to be the substances out of which blood was formed.

Certainly the world does change. It changes so rapidly that the father and son live in two different worlds, each largely incomprehensible to the other. The change of ideas in regard to wine is one of the strangest of these mutations. In all this may be seen one phase of the eternal, always beginning,

never ending quarrel between forms of government; between one generation and the next succeeding to it, and between the ancients and the moderns.

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323 GEARY STREET.

INFLUENZA.

A CONFIRMATORY REPORT UPON THE ABORTIVE ACTION OF QUININE DIHYDROCHLORIDE.

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AND

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SINCE our preliminary report upon the specific treatment of influenza with quinine dihydrochloride (MEDICAL RECORD, Dec. 21, 1918), a large number of cases have been injected. This salt of quinine was selected because it was easily obtainable in ampoules and but slightly irritating. In every case injected a rapid and uncomplicated recovery has resulted, excluding in this series only those which had developed marked pneumonic signs, in which latter instances, with but one exception, there had evidently been a prodromal stage during which the injection should have been made.

Recalling that but one injection is required to cause the disappearance of the influenza symptoms it seems evident that the treatment is specific to the same degree that antitoxin, used early, is a specific for diphtheria. However, it is probable that the quinine solution acts by increasing the body defenses rather than through neutralization of a toxin. A later communication will deal with this phase of the problem.

The treatment is equally effective at all ages. The youngest injected was four years, the oldest sixty-three. The injections have been made on the first to the sixth day of the disease and also in cases where definite pneumonia existed. The absence of a specific action upon the secondary pneumonia emphasizes the importance of early injection.

Influenza cases with temperature ranging from 101° to 106° with a pulse rate up to 120, with headache and general prostration, have responded almost immediately. Within a short time the headache and general pains disappear, the facies improves, the tongue becomes moist, the temperature and pulse rate drop, and the sense of foreboding present in the most severe cases is lost. Without other medication the cough is lessened, the temperature may drop from 105° to 101° within a two-hour interval, and rarely rises again above 101.°

We do not wait to see if the disease will control itself. The earlier the injection is made the better, and to do otherwise is only to run a risk. It is certainly advisable to make the injection on or before the third day of the average case while the pulse rate is around 100 and the respirations still under 26.

We use a 10 per cent. solution of quinine dihydrochloride. For the adult the dose is 15 to 22 grains given but once and at one time. At least ⅓, often ½, and occasionally the entire dosage is given intravenously. The remainder is injected into the biceps muscles. For young children 7 to 10 grains is the dose. There may be a general tingling sensation and warmth during the injection; sometimes a slight chilly feeling, a transitory pallor if given too rapidly, or nausea.

In conclusion we may state the further course of the uncomplicated influenza case which has received one injection. Within a very short time the entire picture is changed from one of evident illness to one of convalescence. The following day the temperature is about 100° and the patient is well about forty-eight hours following the injection. The irritating cough, if present, may persist for some time and the appetite may but slowly return.

17 EAST THIRTY-EIGHTH STREET.

Medicolegal Notes.

Payment of Assistant Who Administers Anesthetic.—The North Dakota Supreme Court holds that in surgery the proper administration of an anesthetic is an essential part of the operation, for which a surgeon is commonly paid an adequate fee, which includes the minor fee of an assistant. When he employs an assistant the presumption is that he agrees to pay him, unless the contrary appears from express words or conditions. Chief Justice Christianson dissented, being of opinion that the law does not imply any promise on the part of an attending physician to pay the doctor administering the anesthetic at operations. He quoted Garrey v. Stadler, 67 Wis., 512, 516, 30 N. W. 787, 789, as follows: "We think we are justified in assuming that it is quite exceptional for the members of that [the medical] profession to undertake the treatment of their patients on special contracts by which they are to be paid a sum in gross, and by which they bind themselves personally with their patients to pay for any needed assistance in the proper treatment of the case."—Semple v. Kings (N. Dak.), 172 N. W. 817.

Expert Testimony as to Permanency of Injuries.—In a personal injury action objection was made to the admission of opinion evidence of a doctor as to the permanency of the plaintiff's injuries, and that he would never again be able to pursue his occupation of coal miner. The court held the objection was without merit. Proper elements of damages in such cases are the nature of the injuries, and whether permanent or only temporary. Who is better qualified to speak on this subject than an attending physician and surgeon? That such evidence of a medical expert based on actual knowledge of the facts or facts proven by others is admissible is supported by the great weight of authority.—Barna v. Gleason Coal & Coke Co., West Virginia Supreme Court of Appeals, 98 S. E. 158.

Privileged Communications in Criminal Cases.—Under the Washington statute providing that a regular physician or surgeon shall not, without the consent of his patient, be examined in a civil action as to any information acquired in attending such patient, which was necessary to enable him to prescribe or act for the patient, and the statute declaring that the rules of evidence in civil actions, so far as practicable, shall be applied to criminal prosecutions, the Washington Supreme Court holds that a physician cannot, in a criminal case, testify over objection of the accused as to any information acquired in attending him as a patient. The privilege of a defendant accorded by these statutes to prevent a physician from testifying was held not waived by the defendant's voluntary disclosures to others outside of the court.—State v. Miller (Wash.) 178 Pac. 459.

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IS THERE AN INFLUENZA CYCLE?

A RECENT Bulletin of the Census Bureau calls attention to the fulfilment of a prediction made by Dr. John Brownlee in *The Lancet* of November 8, 1919. After a careful study of the records of the past, the writer became convinced that a second influenza epidemic usually follows the first at an interval of thirty-three weeks, providing the thirty-third week does not fall between June and December, in which case the recurrence may be expected at the end of sixty-six, or perhaps ninety-nine weeks; in accordance with this rule he predicted that the fall epidemic of 1918 would recur in January or February, 1920, and the figures of the Census Bureau show that the return of the epidemics in Chicago, Washington, and New York this winter took place exactly sixty-six weeks after the mortality peak of 1918 in those cities.

This periodicity suggests that the pathogenic organism of influenza, whatever it may be, not only has the power of reproduction continuously for a long period, if susceptible persons are exposed, but also has the power of developing in cycles of thirty-three weeks or a multiple of the same. The present recurrence, the writer in the Bulletin suggests, might possibly be explained on the hypothesis that the immunity conferred by one attack lasts thirty-three or sixty-six weeks—a very improbable supposition, and one that is contradicted, he adds, by the fact that most of those attacked in 1918 were still immune in 1920, while many of those not attacked in 1918 contracted the disease upon its return.

"The more reasonable explanation seems to be that the present epidemic is due to a definite cyclical regrowth of the infecting organisms from the seed of the former epidemic. Definite cycles of development are common in the known animal and vegetable world; some plants flower annually, some biennially; the malarial organism may complete its cycle in two or more days; the locust requires in some cases seventeen years. Similarly the organism responsible for our recent pandemic may complete its cycle in thirty-three weeks or perhaps sixty-six weeks."

This recurrence of the disease after sixty-six weeks would seem to strengthen the belief that the epidemic of 1889-90 and that of 1918-20 are identically the same and have a common etiology, although the predominant clinical manifestations differ, the present epidemic being characterized by lung complications chiefly, while the heart and nervous system suffered more severely in the pandemic of 1889-90. Dr. Brownlee's observation, if confirmed in future pandemics, will be an interesting addition to the mysterious and too little studied subject of the periodicity of disease.

DIVERTICULA OF THE BLADDER.

THE complications to which a diverticulum of the bladder may give rise are mechanical, infectious, calculous, and neoplastic. The first include rupture, compression of the surrounding viscera, hernia, and inversion. Rupture of a diverticulum is very uncommon, but it can occur from exaggerated distention of the bladder. When rupture takes place the liquid contents of the diverticulum—a liquid always septic—may enter the peritoneal cavity, resulting in rapid death from septic peritonitis, even when surgical interference is prompt. But if the rupture takes place into the perivesical fat the infection will probably remain localized because of the extremely thick adhesions which bind the diverticulum to the surrounding structures; therefore, a collection of pus forms which, if left untreated, will open through the abdominal wall. Compression of the neighboring viscera is the most frequent mechanical complication met with and does not depend upon the size of the diverticulum even when very large. The bladder, ureters, and rectum are the organs involved. Retention of urine from compression has been known to occur, while when the ureters are compressed the consequence will naturally be distention and the resulting ascending infection of the kidney. The resulting pyelonephritis is frequently bilateral and death will soon occur. In other instances pyonephrosis or sclerous atrophy of the kidney has been observed. Compression of the rectum by a diverticulum has been known to cause constipation, while hernia of this malformation must not be mistaken for a cystocele. When a diverticulum forms an inguinal hernia it presents a narrow neck which does not correspond with a portion of the tract of the hernia. English has reported three instances of diverticulum in femoral hernia. A hernia of a diverticulum does not usually give rise to any functional symptom; disturbances of micturition are absent while the physical signs in no way differ from those encountered in intestinal or omental hernia. Consequently, the diagnosis is usually made during operation; the diverticulum may contain calculi or become strangulated. Inversion of the diverticulum within the bladder has once been reported.

Infection of a diverticulum is the most common complication. The process may remain confined to the cavity of the malformation, resulting in a diverticulitis, but the danger resides in the extension

of the infection to the upper urinary tract. A diverticulitis may exist without cystitis. This does not imply that there has not been a cystitis, but while the vesical process has subsided under proper treatment, the incompletely drained cavity of the diverticulum containing stagnant urine offers an eminently favorable medium for the pullulation of bacteria so that infection is not long in attaining a very considerable degree. The clinical signs of diverticulitis are those of cystitis, but there are others which are peculiar to the process. Thus the urine will at times be limpid, at others cloudy, or when voided spontaneously it will be clear, while that withdrawn by the catheter is distinctly purulent. The process may occasionally assume a very acute aspect, recalling by its local and general phenomena a perivesical phlegmon. Perforation or gangrene is uncommon, but should either occur the consequences are naturally serious, especially when the diverticulum does not adhere to any of the surrounding structures which might otherwise limit the extent of the infection. Infection of the upper urinary tract is favored by compression of the ureter by the diverticulum. Dilatation first occurs, soon followed by infection, usually resulting in a pyonephrosis; but if the ureter is occluded a pyelonephritis—usually bilateral as is the case in pyelonephritides from distention—ensues.

A rare but very serious infectious complication is thrombosis of the iliac vessels which may cause fatal embolus. The presence of calculi in a diverticulum is common, particularly when infection exists, in which case they are phosphatic, but uric and oxalic calculi have also been found. Radiography is the best diagnostic means at our disposal, but it will probably give inexact data as to the number of stones contained in the abnormal pocket. Intradiverticular neoplasms are extremely rare and are discovered only by cystoscopy. Clinically, they give rise to severe hematuria which, when intermittent, may be suspected of being renal in origin.

ELECTRICAL BURNS.

AN electrical burn is a circumscribed lesion of the skin and underlying structures, produced by direct contact of a conductor with the body. It is distinguished from lesions due to radiation from an electrical focus or caused by the arc which flashes between two conductors. In the first case the violet and ultraviolet chemical rays are in play, while in the second it is the spark. What influences its production quite as much as its gravity is: (1) The type of current, the continued current adding an electrolytic action to the thermic action; (2) the intensity of the current which is in relation to the voltage which develops the quantity of heat disengaged, the thermic effect being proportional to its square; (3) the density of the current, that is to say, its concentration over a small surface of contact; (4) the resistance offered by the human body—principally the skin especially when dry, thick, or callous; (5) the duration of the contact, prolonged in some cases by contraction of the flexor muscles.

Electrical burns do not offer any very special clinical characters until the third degree has been reached. They occasionally appear in the form of black parchment-like sloughs with well-defined borders, but usually they are crater-like, as if cut out with the curette, with dry distinct borders and presenting the same degree of gravity in all. They are usually painless, without inflammatory reaction or congestive phenomena common to ordinary burns, excepting in the rather rare cases in which they are extensive and deep. The evolution is usually aseptic or at least there is not much suppuration, and cicatrization, which is long in taking place, results in a smooth, elastic scar devoid of deep fibrous adhesions. Unless the loss of tissue is very considerable repair takes place readily, otherwise contractures and vicious attitudes of the limbs involved will result, causing functional incapacity. Complications are very rare.

Given these characters and evolution, treatment will be of the simplest kind; an antiseptic dressing and the application of tincture of iodine being about all that is essential. In cases where the muscles have been carbonized or the bones necrosed, surgical interference will be required, but the operation is facilitated by the distinct limits of the slough. The treatment of the commotion with loss of consciousness frequently arising from these burns is that of asphyxia in general.

Death is the effect of the continued or alternating current, the kind matters little. With the alternating current the most dangerous frequency is between 50 to 100 interruptions per second; the intensity is always a factor of gravity, since the force of the current increases with it. For the voltage it is different, low voltages are more dangerous than the high. Their action is not the same; the low tensions produce death by arrest of the heart, the medium by arrest of the heart and respiration, and the high by respiratory inhibition. The part played by the burn is to shield the victim from the effects of the current if this is prolonged enough to cause death, because the lesion produced at the point of contact increases the resistance opposed at this point to the passage of the current and, consequently, plays the part of an interrupter, so that the burn—a local effect, tends to avert death—a general effect on the organism.

THE DIAGNOSIS OF DEXTROCARDIA.

CULCER has recently collected a total of fifty-eight cases of dextrocardia and found that in twenty the inversion was total and uncomplicated, while seven others were total inversions with cardiac malformations. There were eleven cases of dextrocardia with malformation of the heart and in twenty others the dextrocardia was pure. Therefore, contrary to what might have been expected, dextrocardia and simple pure inversion are more common than dextrocardia with concomitant cardiac malformations. Of fifty-

seven cases—the sex was not stated in one—there were seventeen females and forty males; therefore, the masculine sex represents 66 per cent. of the cases. Of the twenty cases of simple inversion nineteen of the patients were between twelve and forty-six years of age and one was a child of eight. Of the seven cases of total inversion with cardiac malformation, three subjects were less than three years old and four between thirteen and twenty. Finally, of the eleven cases of dextrocardia with malformations, there was one woman seventy-six years old, one male of forty-one years, and nine children below the age of ten.

Therefore, it would seem that, when dextrocardia or total inversion is simple, it has no apparent influence on the patient's life, and an advanced age may be attained without the presence of the anomaly being known. But when these conditions are combined with congenital cardiac defects, life becomes impossible or at least is considerably shortened, with very rare exceptions.

An attentive examination will lead to a correct diagnosis of dextrocardia, and it would be a gross error to mistake the cardiac beats for a pulsatile empyema, although a right-sided pulsatile empyema is also uncommon. In this case the true apical shock should be visible in its proper place. It is common knowledge that a pulsatile empyema may often be accompanied by an extrathoracic tumor or a pneumothorax, and that their own peculiar symptoms are sufficient for the diagnosis. The extent of cardiac dullness to the right might lead one to suspect a dilatation of the heart, when in reality the case is one of dextrocardia; but such a diagnosis surely could occur only as the consequence of gross carelessness.

When the diagnosis of dextrocardia has been made, the question arises as to whether it is acquired or congenital. If at the same time there is a total inversion of the viscera the cardiac anomaly will, in all likelihood, be congenital, but a too hasty conclusion must not be formed because the heart need not necessarily be inverted when the viscera are, as inversion of the abdominal organs only is known to occur.

It follows then, that in order to arrive at a certitude by an attentive thoracic examination, one must eliminate mediastinal growths pushing on the heart; mediastinitis, which may create adhesions and consequently a retraction producing a displacement of the heart to the right; and lastly, left-sided pleurisy or pneumothorax pushing the heart to the right. Right-sided pulmonary affections with adhesions and consequent retraction, such as an old pleurisy, empyema, pneumothorax, or tuberculosis, may cause some displacement of the heart to the right.

The cause of dextrocardia, like that of all congenital visceral transpositions, is unknown. Carpenter maintained that dextrocardia was hereditary, but this is manifestly incorrect, for out of Culcer's fifty-eight cases there were only four in which this relation existed.

Vagotonia.

A Spanish physician, Dr. A. Mut, has recently rewritten this subject from the pioneer labors of Langley, followed by those of Eppinger and Hess, Falta, Froehlich, Castellino, and others. During the war, activity along this line was not pronounced and the doctrines of Eppinger and Hess were not accepted by many clinicians. From Mut's paper, which appears translated in the *Archivos de Biologia* of Sao Paulo, Brazil, for August-September, 1919, iv, 38, we abstract the following account of vagotonia as revised up to date: The child with this makeup recalls the scrofulous individual of two generations ago, although the facies and the swollen glands of the neck are found in association with cold and cyanotic extremities and vasomotor instability; in other words, torpid and erethetic scrofula combined. There is a predisposition to eruptions of the scalp and in adolescence a tendency to acne The subjects present a state of irritable weakness and are easily fatigued. Other somatic conditions mentioned are adenoids and enlarged tonsils, myopia, and the sign of Graefe (lack of synergy between movements of the eyelids and those of the eyeballs), instability of the cardiac action as shown by palpitation, tachycardia, etc. There are, further, geographical tongue, granular pharyngitis, salivation, air-swallowing, irregular and capricious appetite, crises of constipation alternating with diarrhea, and membranous colitis. Among genito-urinary symptoms are phosphaturia, pollutions, and precocious ejaculation. Reflexes are exaggerated and tremor may be seen at times in various muscles, as the tongue and eyelids. The skin is disposed to flushing, cyanosis, and dermographism. Upon this substratum many phenomena known collectively as hysterical may develop. Of especial clinical interest are cardiac crises, such as paroxysmal tachycardia, gastric crises, and asthmatic paroxysms. Diagnosis is made by drug action, the subject reacting strongly to pilocarpine, while atropine should always favorably affect a true vagatonic. Drugs which produce sympathicotonus like adrenalin are also indicated. Curative treatment is limited largely to hydro- and physiotherapy. The reader will note the marked parallelism between vagotonia in childhood and Czerny's exudative diathesis.

Improvement in Cancer Statistics.

At the Gynecological Clinic at the University of Berne cancer figures for the period 1914-1918 show a great improvement over those of 1908-1913. During the first named period radiotherapy has been extensively employed but the improvement appears to be due largely to the fact that patients come earlier for treatment so that many more cases and more operable cases come to the Clinic than in other days. The material has in fact almost doubled and while the operative mortality in the old period for cancer of the cervix reached the high figure of 41.6—Wertheim's operation—it has been during the last period but 10 per cent. The secondary mortality shows only a slight betterment. While the survivors in the old period number only 12 per cent., in the latter period the figure is 40 per cent., subject of course

to discount for the nearness of some operations to the present time. In the first period in point of time the average survival was 12.2 months, while in the second period the corresponding figure was 18.3. This improvement is due largely to prophylactic radiation after operation. A special classification is inoperable cancer of the porto vaginalis. In the old series not much could be done beyond simple palliation, but in the second series of cases radiation was available. Some patients died soon after admission, but 90 per cent. were treated and the average survival was over nine months. Some patients in whom both radium and *x*-rays were used showed a longer interval—as much as 12 months. The author—Steiger in the *Correspondenz-Blatt für Schweizer Aerzte* for November 6, 1919, xlix, 45—is inclined to favor the *x*-rays above radium, as the initial gains from the latter are often dearly obtained, he says, at the price of fistulæ, etc.

Masculine Pseudohermaphrodism with Normal Vagina.

While a normal vulva is common in male pseudohermaphrodism it is not often that the vagina is perfectly developed, for the absence of a uterus usually involves more or less deformity of the vagina, from total absence to a short rudimentary canal without the structure of the normal organ. Hence these pseudo-females are not often able to have sexual relations with men. The following case reported by Schwartz in *Le Bulletin Médical* for December 6, 1919, xxxiii, 54, should be of interest. The subject was ostensibly a woman aged 25 who presented herself for painful bilateral inguinal tumors. On one side the tumor proved to be a hernia but in the opposite side was found a testicle with epididymis and vas deferens. Operation on the first side showed that a testicle was also present in the hernial sac. The vulva was perfectly formed and the vagina was ample in width and about 12 cm. deep, ending in a cervix uteri. There was a uterus but apparently it had no cavity and an imperforate os. Menstruation had naturally never been established. The *embonpoint* hair of the head and pilous system in general, and the breasts were those of a woman, but the voice was rather masculine and the feet large. The individual was attracted to males, had been married two years and had normal and pleasurable sexual relations with the husband.

News of the Week.

Pharmacopœial Convention.—In harmony with the requirements of the by-laws, attention of interested parties is called to the meeting of the Tenth Decennial Pharmacopœial Convention of the United States, to be held May 11, 1920, at the Willard Hotel, Washington, D. C. All incorporated bodies and other institutions entitled to membership in this convention are entitled to apply at once to Dr. Noble P. Barnes, Arlington Hotel, Washington, D. C., for the necessary blanks for membership. It is important that all applications for membership be in the hands of Dr. Barnes at least six weeks before the date of the meeting.

Colorado Cancer Control Campaign.—Under the leadership of Dr. Charles A. Powers, Chairman of the Colorado Committee of the American Society for the Control of Cancer, that State is conducting a thorough educational campaign by means of lectures and the distribution of literature. Twelve hundred copies of the booklet, "What We Know About Cancer," have been sent to physicians and surgeons throughout the State, embracing the entire membership of the Colorado State Medical Society, the Homeopathic Medical Society, and about two hundred and fifty other practitioners. Public Health and Red Cross nurses have been circularized, and the pamphlets, "Cancer-Facts Which Every Adult Should Know," and "Fourteen Points About Cancer," have been issued in large numbers. During October, November, and December the twenty-two lectures delivered by the various members of the lecture staff were heard by 1,345 individuals.

Appropriation for Influenza Fight. — The New York Legislature appropriated fifty thousand dollars to combat the influenza epidemic by relieving the urgent demand for physicians and nurses.

Rise in Price of Coffins.—The recent advance in the price of coffins announced by the National Casket Company of Long Island City was denounced by the Commissioner of Health of New York City as coming with bad taste and meriting suspicion, since it is coincident with the increased need for coffins due to the country-wide epidemic of influenza. The Commissioner has declared his intention of bringing the matter to the notice of the Federal Government.

Campaign Against Rats in Great Britain.—The new British rats and mice act compels occupants of land to keep their premises free of rodents, a penalty of £5 being imposed for failure to do so. According to press reports, the people of the United Kingdom, young and old, have embarked on a vigorous campaign of extermination.

Red Cross Workers Prisoners of Bolsheviki.—According to cable advices from Vladivostok the following Red Cross workers were captured recently by the Bolsheviki in Siberia: Dr. W. H. Ford of Kingston, Okla. (probably); Dr. J. N. Mehill of Jaroso, Col.; Otto W. Lowe of New York, and Edward E. Charette of Stockton, Cal. Request for their release has been forwarded to the Russian Soviet authorities through the Czechs. The prisoners are not believed to be in any danger, according to the cable advices, this opinion being founded on reports from the newly conquered parts of Siberia indicating that the Bolsheviki are pursuing a liberal policy toward prisoners.

Health Campaign Among Boys. — The United States Public Health Service has started a campaign in America to reach all boys between the ages of 15 and 20 years and interest them in a campaign to keep themselves physically fit. Surgeon General Ireland of the Army, and Surgeon General Braisted of the Navy have taken a keen interest in this movement, which has the backing of the Young Men's Christian Association, churches, welfare organizations, and educators throughout the United States.

County Health Work in South Carolina.—Seven counties of the Palmetto State have agreed to

make the necessary appropriations to carry on a county health work during 1920. The State Health Department plans to conduct this work in eight counties during the present year.

Unlawful Practice Cases in New York City.—The County Medical Society announces that as the collection of evidence and the prosecution of cases of unlawful medical practice occasion an expense which the income of the Society does not justify, and as such activity is entirely voluntary and not obligatory on the part of the Society, it has been decided that in future all cases of unlawful practice which come to the attention of the Censors which, in their judgment, require investigation or prosecution, will be forwarded to the Police Department of the city and the District Attorney. The Society, therefore, will not hereafter assume the expense of investigating complaints or prosecuting cases.

Cripples Cared For.—The New York Society for the Relief of the Ruptured and Crippled reports that 12,000 new patients applied for treatment at the dispensary during the past year, and that 1,600 are treated yearly in the hospital.

Influenza in Twenty States.—The United States Public Health Service announced on January 27 that influenza is prevalent generally in twenty States, and has made its appearance in several others.

Anesthesia Research Society Formed. — Announcement is made of the organization of the National Anæsthesia Research Society, with the avowed purpose of collecting data and prosecuting original research in this field of medicine. The Research Committee, which will have the supervision of original work and the editing of material designed for the profession and professional press, is headed by Dr. F. H. McMechan of Avon Lake, Ohio, editor of the Quarterly Supplement of the American Year Book of Anæsthesia and Analgesia. W. J. Jones, D.D.S., of Columbus, Ohio, president of the Inter-State Anæsthetists' Association, is the secretary, and will have an active part in the work of the committee. Representative anesthetists of the country who have distinguished themselves by research and progress in their field are being invited to join the committee.

New Tuberculosis Association.—The anti-tuberculosis work in New York City which, for the past seventeen years, has been thoroughly and energetically carried on by the Committee on the Prevention of Tuberculosis of the Charity Organization Society, has been taken over by a new and larger corporation, the New York Tuberculosis Association, Inc. All the members of the old committee including such prominent workers in the tuberculosis field as Dr. Herman M. Biggs, State Commissioner of Health; Dr. Royal S. Copeland, Health Commissioner of New York City; Mr. Lee K. Frankel, Dr. S. S. Goldwater, Mr. Thomas W. Lamont, Dr. S. A. Knopf and others are members of the Board of Directors of the new association. Dr. James Alexander Miller is the president of the association and Mr. Homer Folks is the vice-president. Dr. John S. Billings, long connected with tuberculosis work in New York City, is the director. Among the secretaries so far appointed are: Mr. G. J. Drolet, statistician; Miss Gretta Jones, relief organizations; Mrs. Josephine Toering, tuberculosis dispensaries; Mr. E. C. Rybecki, labor; Mr. David Ryan, publicity.

New Hospital for Panama.—The new National Hospital of the Republic of Panama is now under construction. The hospital will cover fourteen acres on a high point facing the Pacific in the suburbs of the city of Panama, and will be composed of eleven buildings of reinforced concrete. The capacity of the hospital will be 600 patients. The construction of the hospital is in charge of Major Edgar A. Bocock, M. C., U. S. Army, who is now superintendent of the Santo Tomas Hospital, Panama. He will take charge of the new hospital upon its completion.

Aid for Poland Typhus Victims. — The Red Cross Societies of Belgium and Sweden have joined with five other countries in an effort to prevent the threatened spread of typhus fever over Western Europe. The Swedish Red Cross, according to cable advices, has asked its Government for a subsidy of 1,000,000 crowns to combat the epidemic. Belgium is expected to send doctors and nurses to Poland.

University of Warsaw Research Laboratory.—Through the agency of the American Red Cross a new medical laboratory has been opened in Warsaw. The equipment, which is new throughout, is complete from the simplest phial to the largest and most expensive instruments. The laboratory, under the direction of Major Bruce Mohler of Fremont, Ohio, is in charge of Dr. Placida Gardner of Los Angeles, Cal., with Dr. Gladys Vaughan of Wolfeville, N. S., as chief bacteriologist.

Quinine for Lepers.—The American Red Cross recently received acknowledgment, through a Sister of Charity, of a case of quinine sent to the leper colony at Tarafangana, Madagascar. The gift was gratefully received at a time when, according to the Sister, "the shortage of supplies was hampering our work of charity in this poor mission of Tarafangana."

Recurrence of Typhus in the Balkans.—Sixty-two American Red Cross nurses are now on duty in Serbia and Albania, battling against the recrudescence of typhus, which has made its appearance in the Balkan States. Additional American aid was found necessary because of the lack of hospital facilities and the difficulty in teaching native nurses to handle typhus cases properly. Failure to wear "typhus robes" and to use proper sanitary precautions are some of the conditions that have been found in districts where typhus was thought to have been stamped out.

Antituberculosis Campaign in France. — The Rockefeller Foundation has decided to extend its work along the line of a post-bellum campaign against tuberculosis in France, particularly in the Chateau-Thierry and St. Quentin areas, where more than half the old population has returned to the ruined villages. The same methods adopted by the Foundation in America will be employed in France, and close cooperation will be maintained with the American Red Cross and the French relief agencies.

"Sickroom Attendants."—The plan of Charities Commissioner Bird S. Coler to establish a training

school for "sickroom attendants," with the object of relieving the shortage of nurses, has been approved by the Woman's Municipal League, which issued the following statement: The plan gives a training course of nine months, after a post-graduate course of three months. During all this time expenses are paid, uniforms are furnished, and students receive $35 a month. The only educational requirement is ability to read and write well enough to keep simple bedside records. Women of any age above 18 may enter these schools for trained attendants, a fact which opens up a field for middle-aged women and widows who find themselves suddenly deprived of means of support.

Liquor for Use in Influenza Epidemic.—The Bureau of Internal Revenue has regulations regarding the use of intoxicating liquors during the influenza epidemic which makes it incumbent upon the physician who prescribes and the pharmacist who sells the liquor to procure a permit for the purpose. A warning is issued at the same time against profiteering in the sales.

Infant Mortality Rate Reduced.—In making its annual report for the year 1919 the Diet Kitchen Association of New York City claimed its share of credit for the reduction in the mortality rate of infants under one year of age. For each one thousand births there were only eighty-two deaths, the lowest infant mortality rate on record for the city. Through its eight milk and health stations, pre-natal work among expectant mothers and baby welfare work the association assisted in this reduction. During the past year 8,071 babies under two years of age; 1,695 children between the ages of two and six; 6,780 mothers and 882 expectant mothers, as well as 899 social service cases, have been under the care of this organization.

Red Cross Society Elects Officers.—The New York Chapter of the American Red Cross Society has elected the following officers: Col. James H. Perkins, chairman; Mrs. William Kinnicutt Draper, vice-chairman; Homer Folks, executive officer; Mortimer N. Buckner, treasurer; Henry J. Cochran, assistant treasurer; John Bassett Moore, secretary; Alfred L. Curtiss, assistant secretary; executive committee, Mortimer N. Buckner, chairman; John G. Agar, Mrs. August Belmont, George Blumenthal, William C. Breed, George S. Brewster, Robert W. De Forest, John S. Ellsworth, Homer Folks, Mrs. John M. Glenn, John M. Glenn, Walter Jennings, Paul U. Kellogg, Grayson M. P. Murphy, Miss Mary Parsons, Mrs. Whitelaw Reid, Mrs. Austin Baldwin, George M. Woolsey; Mrs. Leonard Wood, honorary member.

Orthopedic Clinics.—The North Adams (Mass.) Hospital has arranged with Dr. J. E. Goldthwait of Boston, for the holding of monthly orthopedic clinics under his direction. The first of the clinics was held January 21.

Nurse Held for Manslaughter.—According to the report of an inquest filed in the Superior Court, Dedham, Mass., January 27, the nurse who attended a patient in a private hospital in Wellesley was held responsible for the patient's death, which "was due to multiple scalding," 95 per cent. of the body being badly burned. The court held that death "was contributed by the unlawful negligence" of the nurse.

Nobel Prizes Declined.—The Nobel prizes for 1919 in economics and medicine, which were offered to Frenchmen, have not been accepted. The refusal was based upon the fact that the Swedish body saw fit to confer the prize for chemistry upon Dr. Haber, the inventor of the poison gases used by the German army during the World War.

Laboratory Diagnostician Needed. — The New York State Civil Service Commission announces an examination, to be held February 28, for the position of Assistant Laboratory Diagnostician. The salary is $2,000. Minimum age 25 years; preferred ages 34 to 40 years. A degree in medicine is required. Candidates must have a thorough knowledge of bacteriology, immunity, and vaccine and serum therapy. They should have had at least one year of practical experience in laboratory diagnosis. They will be examined in the subjects of infection, immunity, and vaccine and serum therapy and laboratory diagnosis. Subjects of examination: Written examination relating to the duties of the position, relative weight 4; education and experience, relative weight 6.

Dr. Hugh S. Cumming of Hampton, Va., has been appointed to succeed Dr. Rupert Blue as Surgeon General of the United States Public Health Service. Dr. Blue's term expired January 15. Dr. Cumming, who was for several years quarantine officer at Hampton Roads, is now in Europe studying typhus fever conditions.

Dr. J. M. T. Finney, Professor of Clinical Surgery at Johns Hopkins University Medical Department has declined to accept the professorship of surgery at Harvard University Medical School.

Dr. D. M. Marvin has removed his office from 12 West 130th Street to 829 Park Avenue, New York City.

Medical Society Elections.—The WATERBURY (CONN.) MEDICAL ASSOCIATION, at its annual meeting held January 12, elected the following officers for the ensuing year: *President,* Dr. Edward W. Goodenough; *Vice-President,* Dr. M. J. Lawlor; *Secretary,* Dr. G. A. Gosselin; *Treasurer,* Dr. C. S. Robbin; *Assistant Treasurer,* Raymond F. Frapria.

The KENNEBEC COUNTY (MAINE) MEDICAL ASSOCIATION, at its annual meeting January 20 elected the following officers for the ensuing year: *President,* Dr. S. C. Badger of Winthrop; *Vice-President,* Dr. George A. Coombs of Augusta; *Secretary,* Dr. S. J. Beach of Augusta; *Treasurer,* Dr. H. E. Thompson of Augusta.

Charitable Bequests.—By the will of the late Emma Feuchtwanger of New York City the sum of $75,000 was left to charities. Among the institutions named are the Montefiore Home; Sanitarium for Hebrew Children; Hebrew Infant Asylum; Blind Asylum of New York; New York Skin and Cancer Hospital; Servants of Relief of Incurable Cancer; Beth Israel Hospital; Hebrew Relief Society, and Henry Street Nurses' Settlement.

Obituary Notes.—Dr. CHARLES A. CHURCH of Millbury, Mass., died January 14 as the result of injuries received when his automobile was struck by a freight train. Dr. Church, who was in his sixty-fourth year, was graduated from the University of Vermont College of Medicine in 1884.

Dr. Frank Lawrence Cochrane of Brooklyn, N. Y., killed himself January 16 by firing a bullet through the mouth, into the brain. Death resulted almost immediately. He was 43 years of age. He was graduated from the College of Physicians and Surgeons in 1900. He was a member of the American Medical Association.

Dr. Robert Kearns of Middletown, N. Y., died January 22, at the age of 55. He was graduated from the College of Physicians and Surgeons, New York City, in 1888, specializing in otolaryngology. He was a member of the American Medical Association.

Dr. Daniel J. McSweeney of Boston, Mass., died January 19, at the age of 52. Death was due to cardiac disease. Dr. McSweeney was graduated from Harvard Medical School in 1903. He was a member of the American Medical Association, the Massachusetts Medical Society, and various other organizations.

Dr. Isaac Smith of Peel Tree, W. Va., died of heart disease January 16, at the age of 68. He was graduated from the Kentucky School of Medicine, Louisville, in 1876.

Dr. O. T. Logan, pioneer medical missionary of Hunan Province, China, was recently killed at Chengtu while visiting his friend, General Y. H. Feng, according to advices received at the "Yale in China" offices at New Haven. Dr. Logan had left instructions that his body should go to the medical school conducted by Yale men at Changsha, to provide material for study by the seventy students in the school. He is well known through his discovery of a variety of fluke.

Correspondence.

THE CHRISTIAN SCIENCE PSYCHOSIS.

To the Editor of the Medical Record:

Sir:—Christian Scientists in general will be grateful for the modicum of fairness, however deeply buried under the mass of condemnations of their religion, which appeared in the article in your issue of December 27, entitled "The Christian Science Psychosis." Perhaps it has not occurred to the doctor that there may be many persons, more spiritually receptive than he, who find nothing "ambiguous" or "incomprehensible" in the textbook of Christian Science. It should be remembered that the great majority of Christian Scientists have become students of this religion because of very definite results, usually in the form of healing of disease and frequently after the failure of all material means. Moreover, it is not an unusual attitude to attribute mental unsoundness to all who differ from one in the important relations of life, religion, politics, healing methods, etc.; and one easily believes from reading the article in question that such a belief obtains with this critic.

While manifestly it would be impossible for me to affirm or deny the allegations regarding the three cases he describes, there is enough evidence at hand to prove irrefutably the healing power of Christian Science in so-called mental diseases. And not a few of such healings have been recognized by the medical profession. My attention has been called quite recently to two cases of healing by the same Christian Science practitioner of so-called insanity where the patients were confined in asylums. Both responded in a very short time after spiritual help was had, and both had been long under medical treatment without favorable results.

Regarding his statement as to the kind of people who become students of this religion, it may be asserted that Christian Science numbers among its earnest students in this country and abroad many persons who are adjudged by their fellows of sufficient mental soundness and intellectual accomplishment to warrant their elevation to high places in the affairs of their respective countries. The Army and Navy have a goodly sprinkling of Christian Scientists. There are numerous lawyers, judges, professors, statesmen, editors, teachers, business men, and not a few from the ranks of medicine and the ministry among its followers and workers. To accept the statement of this critic, all of these persons must of necessity be subject to some form of mental aberration.

Christian Scientists are satisfied to work out their salvation in accordance with the teachings of the Man from Nazareth, who not only healed all manner of diseases but, as a proof of their discipleship, enjoined upon His followers the necessity of like accomplishment. Christian Scientists have accepted this injunction of the Master in good faith and are earnestly striving to emulate His works. That they have already accomplished much is quite generally recognized by unprejudiced observers.

Albert F. Gilmore.

New York.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, Jan. 23, 1920.

Falling Birth Rate in Great Britain.—A falling birth rate in existing circumstances is no more nor less than a national calamity. It is obvious and especially in a country like Great Britain, whose manhood has been so grievously depleted by the war, that the need for conservative child life is among the most insistent of social problems. In 1918 the national increase of population by excess of births over deaths was, in England and Wales only 50,783 compared with an annual average for the preceding five years of 287,671, and as a result of the influenza epidemic which cost the country 100,000 lives in 1918 alone, there was in the last quarter of the year an actual excess of deaths over births of 79,448. It is gratifying then to learn that the various public activities associated with the care of mothers and infants are steadily expanding. In the last report of the English local government board's medical officer, the necessity is pointed out of still further concentrating on measures which will reduce the mortality of children born, and increase the number of those born alive in contradistinction to those stillborn. There is no doubt that a good deal of this mortality is preventable, and in this direction the principal hope lies of restoring the balance of the population in the presence of a continuously falling birth rate. The infant mortality rate for the whole country in 1918 was 97 per 1,000 births; in London it was as high as 107. Persistent efforts have been and are being made to stimulate local authorities to

secure full notification of all births in their areae, and it is encouraging to note that there has been a general improvement in this respect. Before the war the facilities for caring for expectant mothers were so good and so extensive that they were exerting a most beneficial influence upon the birth rate, and upon the quality of the infants born. Unfortunately these facilities, especially the provision of centers at which expectant mothers could attend, were greatly hindered by the society of medical practitioners during the war. However, the indications seem favorable now that medical officers of health and local authorities alike, are alive to the necessity for such work. By caring for ill-nourished mothers, under special arrangements of the food controller, immense benefit was reaped by mother and infant. Expectant and nursing mothers were supplied with milk and extra rations of meat and butter. Nursing mothers had also the privilege of using the newborn infant's ration card for obtaining meats, fats, and sugar. These arrangements were additional to those made to secure priority in the supply of milk for children under five years of age and for othes especially needing it. It is almost superfluous to state that these measures were of the greatest value in sustaining expectant mothers through a trying period, and in securing for children enough milk to keep them in health. Also, indirectly by improving the nutrition of the nursing mother, preserving the life of the suckling infant at an age when in the absence or deficiency of its natural supply, a change to artificial feeding was exceptionally dangerous.

According to the report, at least 34 per cent. of the total infant mortality is ascribed to premature birth, congenital defects, atrophy, debility, and marasmus. In industrial areas, in particular, large numbers of children are born to die at or within a few days of birth. These children present no gross defects or lesions of the vital organs, but the tissues have never been properly nourished. Presumably it is the nutrition and environment of the mother during pregnancy which is at fault, but whether there is a defect or deficiency of the vital principles, the so-called vitamines, or simply of adequate nourishment, and how far environment, such as housing conditions, is responsible, is a matter for future investigation. At any rate, there can be no doubt that the ordinary diet of many mothers in industrial districts is so poor in quality that it is surprising they can maintain life on it, much less sustain the unborn infant and provide it with sufficient stored-up food to carry it through the period when it becomes exposed to the external influences involved in a separate existence. The report gives its authority to the theory that the prevalence of rickets and acidosis in young children is largely due to these same influences. It may be stated that maternity and child welfare are becoming universal in England and Wales. Action has been taken by all county councils and all metropolitan boroughs, and there are now very few of the smaller authorities which have not come into a county scheme or are not carrying on work of their own. The absorption of the work of voluntary associations by local authorities and the taking over of schemes initiated by the smaller local authorities by the county councils still continue. The extension of the work undertaken by the county councils and the larger urban authorities has led to the engagement of a number of whole-time assistant medical officers of health for maternity and child welfare only, or for this work in combination with school, tuberculosis, venereal disease, and other medical work. It is interesting to gather from the report that the number of health visitors, whole and part time, increased from 2,555 in 1917 to 3,038 in 1918, and the number of maternity and child welfare centers from 1,278 to 1,365. Through the efforts of the county councils, working in cooperation with the county nursing associations, the provision of midwives continues to make progress, and many rural areas which were without a midwife have now been provided with this service. The number of midwives employed directly by the local authorities is increasing, but is still very inadequate to the needs. On this point, the report says: "There is no doubt that, as a consequence of the difficulty in obtaining the services of a midwife, doctor, or monthly nurse, in many rural areas the mortality of both the mother and newborn child is unduly increased, and that if these services were more freely available, the low infant mortality of rural districts could be still further and considerably reduced." The need for "home helps" during the lying-in period is becoming very generally felt. A number of both local authorities and voluntary associations have already engaged them, and others are making arrangements for that purpose. There has been a considerable increase in the number of crêches and day nurseries. Since the cessation of war conditions, and the release of married women from industrial employment, some of these have been closed, but an increasing number of local authorities have become interested in the subject, as a means not merely of caring for the child while the mother is at work, but for improving the health of children who require special attention, and of instructing mothers, and girls in attendance at school, in the proper care of the young infant. There has also been a considerable development of dental assistance for children and nurses and expectant mothers. During 1918 this was largely taken up by many of the populous provincial urban authorities and by the county councils for rural areas.

I have intentionally dwelt at some length upon the measures being taken in England to increase the birth rate and to preserve and improve the quality of infants born, because these are matters which concern every civilized country and especially an industrial country such as the United States largely is. Conditions in the large cities and industrial areas of America closely resemble those of Great Britain, and the need for conserving infant life, or, at any rate, for maintaining the quality of infants born at a high standard is almost as urgent in one country as in the other. Consequently, measures which have proven satisfactory in Great Britain would appear to be worthy of adoption in America. Maternity and infant welfare schemes which largely owe their origin and development to Dr. Eric Pritchard of London, have already worked well and in this era of preventive medicine will undoubtedly in the future have even greater success. There are two main objects of medicine at the present time:

one is to rear a healthy race, and this can only be done by caring for expectant mothers, nursing mothers and infants, and by dispelling the ignorance which exists among mothers generally as to the proper bringing up of children. The other main object of medicine is to prevent disease.

The Woman of To-day.—Dr. A. I. Schofield lectured at the Victoria Institute on January 19, on "the Psychology of the Female Mind." He said, in part, that the new woman was better than her precursor and the wonder was that she had been so long in developing. But the remarkable lack of women's interest in their own minds was, he said, a very curious point. He still waited for a true concept of the female mind written by a woman. The subject was of the first importance, for it was not too much to say that the future of England largely depended on the quality of women's minds to-day. Women generally were more spiritual as well as more emotional than men, though the difference was not so well marked as in earlier ages, owing doubtless to the slow approximation in type of men and women, which in its turn was due not only to the emancipation of women, but to the invention of machinery, which rendered men's greater physical power comparatively negligible in industry and so acted as a great leveler of sex. Differences in respiration between the sexes, which were carefully described and illustrated with diagrams fifty years ago, had almost disappeared together with the woman's small waist of which they were the product. Not all the psychological differences between the sexes had, however, been yet extinguished. Dr. Schofield still found women less scrupulous as to means than man, less careful to "play the game," though she was more scrupulous as to ends. She still relied more than man on intuition and instinct, and often with better results. One of the subtle reasons of the social ascendancy of man was to be found in dress. In past ages, as in all the animal world, it was the male who dressed to attract, the choice of a male resting with the female. Hence, the gorgeous plumage of the male bird and the extraordinary decorations of the early savage wooer. All this had been changed, but when once a woman's independent economic position was assured, she would probably select her mate in a way that would now, with our false standards of conduct, be considered positively indecent. Considering, however, that she would be the mother of the resulting race, it seemed to him only right.

The Treatment of Fractures.—Sir Anthony Bowlby, the president of the British Royal Society of Medicine, at a meeting of the clinical section of that body, held on January 9, 1920, spoke on the application of war methods to civil practice. With regard to the treatment of patients with fractures, he said that the fractures in France during the last year of the war were treated by "extension and suspension," so that the circulation and mobility of the injured limb were maintained throughout as far as possible, and wasting of muscles and stiffness of joints had been thereby largely prevented. All hospitals and medical schools should arrange for much more systematic teaching of how to deal with fractured limbs, so that all young surgeons would in future realize that the so-called "setting" of the fracture was the beginning and not the end of surgical treatment. It would be necessary, therefore, for some at least of the fracture cases in general hospitals to be collected in special fracture wards equipped with the necessary apparatus for extension and suspension and supplied also with a mobile *x*-ray outfit, for there were many cases in which a good result could be obtained only through the knowledge imparted by frequent radiography.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 22, 1920, clxxxii, 4.

1. Prostatism. Edward L. Keyes, Jr.
2. Difficulties in the Diagnosis of Meningitis. Harold W. Dana.
3. Blood Plasma Chlorides Versus Renal Function. W. C. Rappleye.
4. Institutional Control of Diphtheria. Francis A. Finnegan.

1. **Prostatism.**—Edward L. Keyes, Jr., describing prostatism as the condition which results from obstruction to urination at the bladder neck due to adenomatous or sclerotic changes in the glands of the prostate itself, or of the posterior urethra, and discussing the various pathological changes which lead to this condition, considers the treatment under the two heads, *when to operate*, and *what type of operation should be employed*. The prolonged preparation of the patient for operation upon the prostate and the prolonged and careful after-treatment constitute an orderly systematized medical procedure. But the operation itself remains a blind, bloody, brutal, blundering performance —an emergency operation, if ever there was one. Such being the case, it is small wonder that a very large proportion of physicians and public still look askance upon the operation, and refuse to submit to its dangers, seeking rather the relief afforded by the catheter. It is probably still the case, as has often been alleged, that in a cross section of the community the general surgeon or practitioner will promptly dispose of about forty or fifty per cent. of the operable prostatics who seek his assistance, while the specialist will reduce this immediate mortality to about ten per cent. The answer to the question as to when a prostatic should be operated upon is that he should be operated upon just as soon as he shows symptoms of prostatism. The answer to the question regarding the type of operation involves the distinguishing of three types of cases: (1) The frankly adenomatous type with involvement of all the lobes; (2) the adenomatous type with partial involvement, one of the lateral lobes being apparently not enlarged, or with complicating sclerosis, so that one may question whether the obstruction is due to the sclerosis or to the enlargement of the lateral lobes; (3) the frankly sclerotic prostate and the adenomatous bar due to enlargement of Albarran's glands. The frankly adenomatous the writer believes to be curable by the ordinary suprapubic prostatectomy, on condition that the mucous membrane of the bladder neck is spared at the superior commissure, and that the fistula is left at a point as distant as possible from the bladder neck. The intermediate class of cases, partial hypertrophy or adenomatosclerotic cases, must be operated upon according to the same principle. The problem of the frankly sclerotic prostate is still with us. Various types of operation have been devised, any of which will temporarily relieve a certain proportion of cases. The writer knows no universal answer to the question of the best operation for this type of cases.

New York Medical Journal.

January 17, 1920, cxi, 3.

1. Practical Considerations on Acquired Retrodisplacement of the Uterus. John Osborn Polak.
2. The Technique of Tonsillectomy in Use at Camp Hancock Army Hospital, 1918. George M. Coates and M. Raskin.
3. The Ligature of the Internal Iliac Artery in Gynecological Operations. Raphael Massart.

4. An Unusual Case of Dwarfism in Twins. Hyman Goldstein and Maurice Schneck.
5. Hemostasis Obtained with Small Rubber Bands Instead of Ligatures. Angelo L. Soresi.
6. The History of the Patients Suffering from Rectal Disorders in Relation to Diagnosis. Arthur A. Landsman.
7. Poland in the World War, from the Medical Aspect. (Concluded). Francis E. Fronczak.
8. An Analysis of Eighty Case Records of Bronchial Asthma. Alexander Sterling.

5. Hemostasis Obtained with Small Rubber Bands Instead of Ligatures.—Angelo L. Soresi has found the use of small rubber bands very satisfactory in obtaining hemostasis or for tying tissues, and recommends them instead of ligatures. The bands, one or more on each, are placed on the artery forceps, at the hinge, the forceps then being boiled, care being taken not to boil them long enough to impair the resiliency of the rubber. When the tissues or the blood vessel are caught in the usual way with the forceps, a band is slipped over the tissues or vessel with the help of the thumb forceps, and the artery forceps are immediately removed. The bands make possible the safest hemostasis because there is no danger of late hemorrhage due to the slipping of the ligature, the unraveling of knots, or the cutting of the tissues by the ligature itself. The rubber band grasps the tissues immediately and securely, at the same time it does not stop the flow of blood to the tissues by a violent strangulation, as happens when the ligature is used. The resiliency of the band prevents its cutting the tissues. The band cannot slip when it is being placed over the tissues, as it must pass from the artery forceps which hold the tissues before the forceps can be removed. As soon as the band passes beyond the tips of the forceps blades the tissues are securely held, the band forming a groove out of which it cannot slip. The application is much more rapid than that of the ligature. The rubber, when pure, is tolerated by the tissues better than is catgut, silk, or any other material now used for ligatures, and also because, being free from knots and ends, it leaves less foreign material in the wound. The band, furthermore, is safer because it avoids the possibility inherent in all ligatures of having the ends act as setons. The danger of infection is less because the bands, unlike the ligatures, are never touched by the hand. Because of the gentle action of the rubber band in compressing the tissues, the tissues beyond the band are not condemned to rapid death and sloughing. In the abdominal cavity this is important with respect to the danger of infection and the formation of adhesions. The cheapness of the bands is another item of advantage. The writer has used the bands on tissues and rather large blood vessels, being unable to find on the market bands small enough for small blood vessels. In some cases he has doubled the band, but prefers a single band proportionate to the vessel or tissues to which it is to be applied.

Journal of the American Medical Association.

January 24, 1920, lxxiv, 4.

1. The Clinical Rôle of the Fat-soluble Vitamin: Its Relation to Rickets. Alfred F. Hess and Lester J. Unger.
2. A Campaign Against Venereal Disease in the Army of Occupation. David M. Davis.
3. Aortitis Syphilitica. C. F. Hoover.
4. The Laboratory Professor and the Medical Sciences in the United States. Charles R. Stockard.
5. Hospitals of Greece. Carl E. Black.
6. Empyema at the Cincinnati General Hospital During the Influenza Epidemic. Joseph Ransohoff.
7. The Treatment of Mucous Colitis. W. A. Bastedo.
8. Methods of Administering Saline and Other Solutions to Infants and Children. John Aikman.

1. The Clinical Rôle of the Fat-Soluble Vitamin: Its Relation to Rickets.—Hess and Unger, referring to the large amount of study which, in the last few years, has been devoted to the deficiency diseases, especially scurvy, call attention to the fact that these investigations have brought forward results that coincide remarkably for animals and for man. All diets leading to scurvy in the guinea pig produce scurvy in man; all antiscorbutics are potent for both species; all signs and symptoms of the disease are common in some degree to both guinea pig and man. There is, however, the important difference that in man the disorder is a slow, markedly subacute process, whereas in the guinea pig it is almost an acute disease. An investigation of scurvy naturally led to a consideration of rickets, a disorder which, from a clinical standpoint, has always been linked with scurvy. Of the numerous theories as to the pathogenesis and etiology that of the vitamin deficiency is the newest. The present status of the etiology is briefly reviewed. The subject of rickets can be well studied on infants, owing to its great prevalence, but no systematic study of a group of infants carried through a long period has been made so far as the writers are aware. This is due in part to the fact that an investigation of this kind is impossible in the hospital, in the dispensary, or in the home, but can be carried out only in an institution where the hygienic and sociological conditions are alike for the entire group, and where all factors are under absolute control. About a year and a half ago they undertook the study of rickets in about 100 infants cared for in a modern child-caring institution. These infants lived under excellent hygienic conditions, their nursing care was the same, their food was prepared in a central diet kitchen, and they remained in the institution for the entire period of observation. Once a month they were examined for rickets. This included notation as to the size of the fontanelle, the beading of the ribs, the enlargement of the epiphyses, the condition of the musculature, the eruption of the teeth, the static development, etc. They were placed on various diets—an abundance of fat and fat-soluble vitamin in the form of milk and cream; a deficiency of these substances, as in skimmed milk; an abundance of water-soluble vitamin as supplied by autolyzed yeast; or diets such as Mellin's Food or condensed milk. In all cases there was but one deficiency in the diet, which was adequate in quantity, that is to say, in its caloric content, and contained in every instance sufficient antiscorbutic foodstuff. After a preliminary study it seemed that beading of the ribs, especially in conjunction with enlargement of the epiphyses, furnished the most reliable criterion of the course of the disease. They turned, therefore, to an intensive study of the ribs. It was found that six grades of beading could be distinguished. If the examinations were carried out always by the same person remarkable uniformity could be obtained. The writers discuss the significance of beading, and chart their findings, calling attention to the fact that there was not only rachitic, but also scorbutic beading. This conforms to observations in experimental scurvy. Turning to the question of the influence of fat-soluble vitamin in the etiology of rickets, the writers call attention to the well known fact that this vitamin is present in abundance in animal fats—such as cream, butter, and eggs—as well as in the leafy vegetables, but absent or almost absent in the vegetable oils. As far as has been demonstrated it cannot be synthesized by the animal body. In order to provide an adequate amount of this important dietetic factor they placed a number of infants, during the first months of their lives, on large amounts of milk, in some instances giving cream in addition. By this means, if fat-soluble vitamin is the controlling influence, the development of rickets should have been prevented. In some cases, with this dietary, which also included orange juice, a very mild degree of rickets was observed, but in others marked signs developed. Rickets developed in several instances on 24 ounces daily of protein milk (containing about 2.5 per cent. of fat) and even in nursing infants, whose mothers were on a diet that included a large quota of milk, butter, and vegetables. It is difficult to bring these observations into harmony with the hypothesis of a lack of fat-soluble vitamin. This point is discussed *pro* and *con*. Approaching the question from the other side—whether infants who receive very little fat-soluble vitamin in their diets become rachitic—five infants were put on a dietary that was complete in every respect except for a lack of this principle. The babies were from four to nine months of age, and somewhat below the average in physical development. They should have developed rickets if a lack of fat-soluble vitamin is the essential cause of this disorder. The results, which are given in charts, show that this vitamin is not the much sought for antirachitic factor; that it cannot bear the same direct relationship to this disorder as do other vitamins to their respective diseases—referring to scurvy and beriberi. Even if rickets is in

some degree influenced by a fat-soluble vitamin deficiency there are more important and dominating factors that determine whether or not the disorder shall come to pass.

The Lancet.

January 3, 1920, i, 1.

1. Bradshaw Lecture on the Surgery of the Heart. Delivered Before the Royal College of Surgeons of England. Sir Charles Ballance.
2. A Lecture on the Aims of the Welsh National Medical School. Edgar L. Collis.
3. On the Serum Diagnosis of Syphilis, With Special Reference to the Standardization of Red Blood Cells and Complement. Frederick C. Lewis.
4. A German Bullet Embolus. H. J. B. Fry.
5. Malaria and Insanity. A. T. W. Forrester.
6. The Bone Deformities of Renal Dwarfism. Hugh Barber.
7. An Improved Technique for the Staining of Sputum for Tubercle Bacilli. A. Distaso.
8. Resection of the Rectum for Cancer. P. Lockhart-Mummery.
9. Direct Infection in Tuberculosis. E. Ward.
10. On Indiarubber Wound Drains. Arthur Edmunds.
11. On the Use of the Actual Cautery in Gastric Ulcer. James Kirkland.
12. The Dying-out of Native Races. W. H. R. Rivers.

4. A German Bullet Embolus.—H. J. B. Fry reports a remarkable instance of the migration of a rifle bullet in the venous blood stream. There was a small oval wound of entry a half-inch below the left anterior superior iliac spine. The bullet entered the vascular system by gouging the posterior aspect of the left external iliac artery and penetrating the lumen of the left internal iliac vein, causing an arteriorvenous aneurysm of these vessels. From this position the bullet was carried up the common iliac vein and the inferior vena cava. It passed through the chambers of the right side of the heart, through the pulmonary valve into the left branch of the pulmonary artery, where it impacted as an embolus in one of the branches supplying the lower lobe of the left lung, thereby causing two infarcts in this lobe. Such a tortuous and deflected course is in itself remarkable, but, in addition, there was no injury to be found in either of the veins along which it traveled or of the flaps of the tricuspid and pulmonary valves through which it passed. Moreover, there was never any pain or discomfort referred to the heart or the lungs. The question naturally arises whether this bullet could have found its billet by any other path. The clinical evidence and post-mortem findings prove without question that the bullet could only have reached its final situation by the above route, as there was no other wound of the body and no other place of entry into the vascular system except the above-mentioned aneurysm.

British Medical Journal.

January 3, 1920, i, 3079.

1. An Address on Gunshot Fracture of the Femur. Sir Anthony Bowlby.
2. Remarks on Some Clinical Types of Abdominal Tuberculosis. K. W. Monsarrat.
3. Sphenoid Empyema and Epidemic Cerebrospinal Fever. Dennis Embleton.
4. Sterility in the Male. Kenneth Walker.
5. The Significance of the Position of a "Contraction Ring" in Cases of Extreme Pelvic Contraction With Vertex Presentation. C. D. Lochrane.
6. Rhinoplasty and Cheiloplasty. Rushton Parker.

5. The Significance of the Position of a "Contraction Ring" in Cases of Extreme Pelvic Contraction with Vertex Presentation.—C. D. Lochrane holds that in obstructed labor due to contracted pelvis with a vertex presentation it is at least doubtful if a true "retraction" (Bandl) ring can form before sufficient upper uterine segment retraction has occurred to elevate the site of the ring above the level of the fetal shoulders. But cases are occasionally seen in which the formation of a "ring" has become so marked before this stage that it is found constricting the fetal neck more or less closely. The trunk and limbs of the fetus are then imprisoned above the ring in an unretracted, but often apparently tonically contracted, upper uterine segment. With a markedly contracted pelvis, the head, in these cases, is held in purchase between the ring above and the pelvic brim below. The most recent view is that a "ring" formation in this position under these circumstances does not merit the name of "retraction ring" (Bandl), but is rather of the nature of a "contraction ring" due to local spasm of the uterine muscle (with or without contraction—but without definite marked retraction—of the upper uterine segment). In the opinion of the adherents of this view the chief cause of this spasm, before marked retraction has taken place, is overirritation of the uterus by excessive manipulations in efforts to deliver. Though opinion is not even now unanimous on this point, there is undoubtedly much to be said in its favor. Whatever the exact pathogenesis of the ring may be in these circumstances a very serious proposition is undoubtedly encountered when it develops in association with a markedly contracted pelvis. Lochrane has had the opportunity of treating one case of this type and of observing the treatment of another. In both the conjugate diameter was so small that the indication was absolute for cesarean section, had the cases been seen at or before the onset of labor. There had, however, been much intrauterine manipulation in both during previous attempts to deliver. A ring in both cases tightly constricted the fetal neck (vertex presenting). It appeared quite impossible that the head could be delivered upward through the ring if cesarean delivery were attempted. It appeared equally certain that, even were it possible to deliver the head *per vias naturales*, it would have been quite unsafe to attempt extraction of the trunk through the narrow ring, however extensive the previous embryulcia. In the writer's case the upper uterine segment showed some evidence of thickening above the ring as compared with the part below, the fetal trunk being somewhat difficult to palpate distinctly. The ring sulcus was quite marked on external palpation, and indeed to the eye. In such cases an unusually difficult situation is presented, the fetal head being absolutely fixed and impacted between the "ring" above and the true brim below. By the time the case reaches this stage the fetus is usually dead, owing to the cutting off of the maternal blood supply—the result of tonic uterine contraction. In considering the treatment of this condition it must be remembered that, while the usual death of the fetus gives the widest latitude in choice of procedure, the patient is generally in rather bad shape physically. There is danger in extensive or prolonged manipulations both of general collapse and of uterine rupture. The type of interference involving the least shock, and that capable of being performed most rapidly, is that to be chosen. The lines of treatment calling for consideration are: (1) craniotomy alone; (2) craniotomy with embryulcia; (3) cesarean section alone; (4) cesarean section after craniotomy; (5) cesarean section after craniotomy and decapitation. The best choice for the patient lies between craniotomy followed by cesarean section and craniotomy *plus* decapitation and cesarean section. Preliminary craniotomy should be done in any case. In the unlikely event of the fetus being alive, an effort must be made to save it, even at added risk to the mother. Under suitable conditions immediate abdominal cesarean section, with rapid incision of the ring internally, would be the correct treatment. The site of incision being under immediate control, the choice of the immediate suture or hysterectomy would then be guided by the probability of previous septic infection. In the writer's case the abdominal cesarean section, under deep chloroform anesthesia, was performed, and supravaginal hysterectomy was done, both adnexa being left *in situ*.

Influenza in Fiction.—According to Posthuma, Maurus Jokai composed late in the nineteenth century a novel which appeared in English in 1901 with the title, "The Nameless Castle." The scenes are laid in Hungary in 1809. A character receives a letter from a locality in which influenza prevails, or may prevail, and is advised to disinfect it with burning camphor. Asked to explain, the adviser states that Napoleon brought the disease home from the battleground of Eylau, and it became necessary to erect a hospital in Paris for the care of victims who were severely smitten. The comment is made that influenza is harmless in its native soil, but transported to a new locality becomes a deadly pestilence. This description fits the recent pandemic better than the disease of 1890, which Jokai doubtless witnessed.—*Nederlandsch Tijdschrift voor Geneeskunde.*

Society Reports.

WESTERN SURGICAL ASSOCIATION.

Twenty-Ninth Annual Meeting, Held at Kansas City, Mo., December 5 and 6, 1919.

THE PRESIDENT, DR. ROLAND HILL, ST. LOUIS, MO., IN THE CHAIR.

Artificial Impaction of the Femur in the Aged.—Dr. CHARLES D. LOCKWOOD of Pasadena, Cal., said that the frequent occurrence of nonunion in fractures of the neck of the femur, not only in the aged but also in young adults, was chiefly due to peculiarities of circulation in this location. The blood supply of the neck of the femur was different from that in the shaft of the bone. The more accurate the approximation of the fragments in fractures, the less exudate and callus there would be, and the more rapid the healing process. Failure of bony contact would often cause nonunion in the long bones at any age; it was almost sure to result in non-union in the neck of the femur in old people. Artificial impaction was an essential part of the treatment as demonstrated by Cotton. It afforded immediate bony contact and insured an adequate blood supply for union. With the patient under anesthesia, the limb was placed in extreme abduction and strong traction with slight internal rotation applied. The great trochanter protected by two layers of felt, was struck three or four swinging blows with a large wooden mallet. A light plaster of Paris cast was applied from below the knee to the waist line and including the sound limb to the knee. The anesthesia lasted only five or ten minutes, and there was no shock to the patient. The patient was placed upon a fracture bed equipped with a special frame and elevating device, enabling the nurse to raise the patient with ease, to bathe, attend to the bowels, and change the bedding. The cast might be removed as early as the eighth week, but if well borne, it should be left on for twelve weeks. By the end of the fourth month the patient was up and about on crutches and bearing some weight on the broken leg. The speaker had treated three fractures successfully by this method in people over 70 years of age, and all were walking and perfectly well.

Some Rarer Fractures.—Dr. EDWARD EVANS of La Crosse, Wis., read a paper of which the following were the conclusions: (1) Industrial injuries and employment liability insurance acts of various states have shown that it is indispensable to take *x*-rays of injuries involving hands or feet, if any suggestion whatever of crushing or sprain exists, as fracture of the small bones of the hands and feet are very frequent, often have very little displacement, and are frequently overlooked unless the *x*-ray is used. (2) Fractures of the bones of the hands and feet require careful and sufficiently prolonged immobilization, after careful reposition, if there is displacement, to get good results. (3) It is rather hard to get and maintain exact apposition of fractures and prevent overlapping of fractures of the long bones. (4) It is not certain if open reposition under favorable conditions—proper surgical and hospital facilities—should not be resorted to more frequently. (5) While the war has helped to stimulate a much needed closer study and interest in the treatment of fractures, it is doubtful if we have learned much that is applicable, or at least has yet been applied in our practice. (6) No satisfactory explanation has apparently as yet been made for the rarefaction of the bone leading to pathological fracture, no fundamental cause or causes sufficient to explain this condition.

Surgical Experience with Tuberculosis of the Joints; Rollier's Heliotherapy.—Dr. GUSTAV SCHWYZER of Minneapolis, Minn., stated that it was his practice to operate on every tuberculous joint under an Esmarch bandage whenever it was feasible. Only with this bloodless procedure was he able to differentiate between healthy and diseased tissues. As to the method of operating, he generally followed the method of Kocher. Through his incisions free access could be gained to the entire diseased area, and it was very important that all tuberculous tissue be carefully excised. If the disease was confined purely to the synovial membrane of the joint, he limited his work entirely to the removal of this membrane, thus avoiding complete ankylosis. But if the bone was involved, the bone ends were exposed by dislocation. The healthy outer integuments were stripped up and turned back like the cuff of a sleeve. Then the diseased part of the bone was cleanly removed. If one aimed at a complete ankylosis, a good apposition of the bones was imperative. In all resections the wound cavities were drained with rubber tubes surrounded by washed-out iodoform gauze strips. The buried suture material consisted of silk and linen. Silkworm gut was the best material for the surface. A plaster of Paris cast was put on before the Esmarch bandage was released. The drains were removed through windows in the cast within a week. As to Rollier's treatment, it would be taking another great step ahead in the treatment of surgical tuberculosis if we could establish numerous institutions in America where this treatment could be used intelligently; but not having the benefit of such institutions at present, we must face the situation as it lay before us. Granted we had the advantages of hospitals specializing in heliotherapy, there would always be patients who could not spend a year and a half to three years in such institutions, waiting for a definite cure. For these patients surgery might be preferable.

A Mixture of Ethyl Chloride, Chloroform, and Ether for General Anesthesia; an Experience in War Surgery.—Dr. E. P. QUAIN of Bismarck, N. D., said that the observations that were made in the use of this mixture in the type of surgery which confronted the medical officer at the time were very favorable. It was uniformly considered the most suitable anesthetic for most minor injuries as well as for wounds of moderate severity. It was employed at Evacuation Hospital No. 114 in the Argonne during the last part of the war as the anesthetic of choice for most operations which could be finished within fifteen or twenty minutes. The speed of the operating team was, therefore, in many instances, the criterion as to whether the choice would be the ethyl chloride mixture or simply ether. Ethyl chloride was put into the bottle from a tube up to the 5 c.c. mark, 1 c.c. chloroform was added, lastly ether was poured in up to the 30 c.c. mark and the liquid was thoroughly mixed. *Method of Administration.* (1) One of two pieces of cotton flannel was laid dry over the patient's face and the other piece was placed in a cup or small pus basin. (2) The whole content of the bottle was poured into the cup over the piece of flannel, which absorbed practically all of the 30 c.c. mixture. (3) The piece of flannel was then rapidly picked up before evaporation took place and spread out smoothly over the other piece on the patient's face. The patient must be told to hold his breath before the saturated cloth was approximated to the face and until the mask was properly adjusted. (4) The mask was placed over the face and the puckering string drawn tightly and tied so that the margin of the mask was held firmly around the face, under the chin, in front of the ears, and over the top of the head. It was desirable that the mask be applied air tight to the face, although practically this might be impossible, especially over the hairy part of the head. There could be no reason why this ethyl chloride mixture should not be used in emergency surgery in civil practice when conditions and necessities corresponded more or less to those of the wounded soldiers.

Operative Technique in Spina Bifida.—Dr. JOSEPH RILUS EASTMAN of Indianapolis, Ind., presented a communication in which he formulated the following conclusions: "(1) Spina bifida associated with increasing hydrocephalus is inoperable. (2) Spina bifida associated with paralysis should be operated on only for the purpose of preventing subsequent ulceration and rupture. (3) Rubber dam, stitched at one margin to the skin below the tumor, adhesive plaster, and plentiful collodion should be used to prevent fecal and urinary contamination. (4) A light, rubber-covered clamp applied to the neck of the tumor is the safest method of preventing the loss of cerebrospinal fluid, and also of excluding infection from the cord. (5) The sac can usually be tied off as in inguinal hernia."

Rhinophyma.—Dr. M. G. SEELIG of St. Louis, Mo., said that rhinophyma was an essential disease of the nose of more than ordinary interest. Rhino-

phyma might be described fairly accurately if one merely set down the various descriptive terms which had been used in naming the disease, such as whiskey nose, pound nose, nodular nose, growing nose, copper nose, elephantiasis of the nose, hypertrophy of the nose, lymphangioma, acne hyperplastica, fibroma molluscum, and cystadenofibroma. In the earliest stage of the disease the nose was a dark copper red, and there were dark red spots about it, particularly on the cheeks and at the glabella. Gradually there appeared on the nose lentil-size to pea-size discrete or confluent nodules. As these nodules coalesced, and the soft parts hypertrophied, the whole organ became deformed by the tumor-like nodules. The deformed growths occurred usually at the tip and on both alæ, and might be discrete and lobulated, or they might fuse, forming one large knob. Sometimes they were pedunculated. The disease occurred usually in the fifth and sixth decades, that is, the deformity was complete at these periods, the process having taken five to twenty years to develop fully. The treatment of the disease was exclusively operative. The most satisfactory operative procedure consisted in shaving off the redundant tissue until the nose was brought back to what one assumed was its original form. In this shaving process, two things should be borne carefully in mind: (1) Do not shave too deeply. (2) Preserve a thin rim of epithelium around the nares. If the shaving was carried too deeply, all sebaceous gland rests were removed and no niduses of epithelium from which, as brood centers, epithelization might spread, were left. This delayed healing, and even if the nose were grafted, the resultant skin had a harsh, white, dry appearance so striking as always to attract attention and cause comment. Furthermore, deep shaving might injure the nasal cartilages and set up a stubborn perichondritis. If a thin ring of intact skin was not left around the nares, serious disfigurement might result from the contractions incident to cicatrization. Hemorrhage, which was usually very free, was checked with comparative ease by simple gauze pressure, and the patient was sent to bed with a large, well vaselined gauze pad over his nose. The next day this pad was removed, and the denuded area was strapped with imbricated strips of sterile zinc oxide adhesive plaster. This plaster dressing was changed daily. It was not necessary to skin graft these patients.

Diaphragmatic Hernia.—Dr. T. F. RIGGS of Pierre, S. D., said that according to Giffin, about 650 cases of diaphragmatic hernia had been reported in the literature up to 1912, and 18 articles on this subject, from the point of view of the radiologist or surgeon, had appeared during the past two years. According to the authorities, the great majority of the diaphragmatic hernias occurred to the left of the midline. The case reported by him he believed to have been a true traumatic hernia on the right of the median line. If it were true that the profession was not making as high a percentage of correct diagnoses in diaphragmatic hernia as in other more frequent abdominal conditions, the failure was probably due to lack of a sufficiently definite symptomatology. It was reasonable to expect the traumatic hernia to be more easily diagnosed than the nontraumatic form, but one must remember that the severity of the symptoms was not necessarily in keeping with the size of the hernia. The possibility of a diaphragmatic hernia should be more often considered.

Jaundice and Its Surgical Significance.—Dr. CHARLES H. MAYO of Rochester, Minn., stated that jaundice as a symptom of disease might present a very serious problem in tracing its cause. In approximately 50 per cent. of the cases seen the absorption of bile was due to obstruction of the common duct by gallstones; in 20 per cent. of all cases it was due to absorption of bile in the liver, or infective or catarrhal jaundice without duct obstruction. From 5 to 8 per cent. of cases of jaundice were due to serious infection of the gall-bladder, possibly gangrene with or without stones. They were usually accompanied by a degree of pancreatitis with marked swelling of the lymph glands on the three ducts; all persons having one on each duct, but no one more than two. Jaundice from cancer presented a very serious problem, although it represented but 15 per cent. of the cases seen; one-half of these were from cancer of the liver, the other half from cancer of the pancreas, or the gall-bladder and ducts. During the years 1916, 1917, and 1918, in thirteen cases seen it was necessary to unite the hepatic duct either to the duodenum or to the stomach; two of the patients died. Jaundice was a late symptom of gallstones in the majority of cases, the result of neglect to recognize the condition or to advise operation in the preventive period. The mortality following cholecystectomy in the treatment of cholecystitis with or without stones was low, only 1.8 per cent. in 2,460 operations performed during a period of three years. There were 337 cases in which the cholecystectomy and choledochotomy were both done with a mortality of 3.2 per cent. In a very serious group of thirty-six cases of obstruction and malignancy, cholecystostomy and choledochotomy were done with a mortality of 16.6 per cent. Choledochotomy alone was done in a somewhat similar group of forty-seven cases, with a mortality of 15 per cent. If all the choledochotomies were grouped together, however, the mortality in the 420 cases was but 5.7 per cent., too high a mortality for simple cases of stone and obstruction, and too low for the late and complicated cases, including the cancers. Stones were found in the common duct in 274 of the 420 cases.

A Congenital Anomaly of the Duodenum and Its Surgical Significance.—Dr. LEONARD FREEMAN of Denver, Col., said the surgical treatment might be difficult because of certain more or less awkward complications. (1) The lesion was deeply situated, being due to a firm adhesion pulling the gut down to the root of the colonic mesentery, the embarrassment often being further increased by the location of the incision, which was usually to the right of the spine, while the kink was to the left. (2) The inferior mesenteric vein and left colic artery lay just external to the kink and might be injured if care was not exercised; hence, one should cautiously strip the peritoneum bluntly from the surface of the bowel, rather than attempt to divide the ligament with knife or scissors, taking care that the gut was not perforated during the manipulation. (3) The completion of the procedure exposed a raw intestinal surface which might be quite large, and required attention in order to prevent troublesome adhesions. Sometimes the edges of the torn peritoneum could be stitched together so as to cover the denuded area without compromising the lumen of the bowel, but occasionally it might be desirable to employ a free omental graft, as he had done in one instance. Since his attention had been called to this subject, he had operated upon six of these duodenal obstructions. In no one of them was the diagnosis made previous to the operation, the real trouble being discovered only after a lesion near the pylorus had been excluded. Partial occlusion of the duodenum at the duodenojejunal angle, simulating pyloric obstruction, occasionally occurred from the persistence of a condition normally existing in fetal life. In this, the duodenum, instead of appearing in the abdominal cavity from beneath the transverse mesocolon to the left of the spine, as it should, emerged to the right, its transverse and ascending portions possessing a peritoneal covering and mesentery of their own, similar to the rest of the small intestine, instead of being fixed in fibrous tissue, as was normally the case. At the duodenojejunal angle, however, the bowel was hung up to the root of the colonic mesentery by a firm adhesion, the kink thus produced being intensified by the downward pull of the free duodenal loop. This kink was deeply situated and in freeing it care must be taken not to injure the bowel, the inferior mesenteric veins, or the left colic artery. A considerable denudation of the gut might be necessary, which should be covered either by reuniting the peritoneum or by means of a free omental graft.

Abdominal Drainage.—Dr. D. W. BASHAM of Wichita, Kan., took the ground, in this paper, that we should avoid indiscriminate drainage. The drain should be placed in a careful manner so as to conduct the products of infection away from the field of operation to the outside of the abdomen. All sorts of manipulations of the abdomen for the purpose of facilitating the outward flow of pus should be avoided. When the drain had completed its function, it should be removed, and one should not try to replace it; especially the remaining sinus should not be plugged up with gauze which

could serve but to obstruct the escape of the serous flow which must follow.

The Surgical Treatment of Empyema.—Dr. W. W. GRANT of Denver, Col., confined his remarks to his personal experience based upon the two epidemics of 1917-18 and 1918-19, at the Recruiting Depot, Fort Logan, Col. In the epidemic of 1917 and spring of 1918, he operated on twenty-eight cases of empyema, with a mortality of six cases, and in the winter of 1918 and 1919, he operated on three cases only with no mortality. There were 300 or 400 cases of influenza and as many cases of pneumonia as in the former epidemic, but it was much more fatal and fewer cases reached the surgeon for operation. A detailed report of twenty-eight cases was made to the Surgeon-General's Office. In all cases, twenty minutes before the operation, an ounce of whiskey was administered and a hypodermic injection of 1/6 grain morphine with 1/200 grain of atropine and ½ grain of spartein. One to one and a half inches of rib were resected. On the right side the eighth rib and on the left the ninth or tenth, usually in the posterior axillary line, the aim being to secure the most dependent drainage. A rubber drainage tube, sometimes double, was immediately introduced and the tissues sutured snugly around it, the tube fixed primarily with a stitch and a safety pin, and the long outer tube dropped into a bottle of water beneath the bed as in certain cases of gall-bladder drainage. The quantity of pus varied from two to four quarts. The discharge diminished rapidly, and on the second or third day the patients were taken to the dressing room twice daily and the cavity irrigated with a 5 per cent. bicarbonate of soda solution, adding boric acid and immediately followed by a solution of iodine. The shortest period in which any patient returned to duty after operation was seventeen days, while the convalescent period with most was from two to three months. Empyema was not cured by aspiration nor by the immediate closure of the wound after operation. It was recognized that in the influenza and pneumonia epidemics the character of the infection was more intense and varied, and the mortality in consequence greater under any treatment than we had been accustomed to experience in sporadic cases under ordinary conditions of life.

Malignant and Benign Tumors of the Breast.—Dr. BYRON B. DAVIS of Omaha, Neb., said that his private records of operation for diseases of the breast contained the histories of 166 persons suffering from malignant tumors, and 44 from benign. In this series no cases had been included that were operated on during the last three years, and the records covered his private work from 1898 to December, 1916. The records of many other cases operated on were inaccessible or so incomplete as to be valueless. The cases included had practically all of them been verified by the microscope in the hands of a trained pathologist. Of the 166 cases of malignant disease that an effort had been made to trace, there was one operative death, the remaining 165 having left the hospital apparently in good condition; 165 were diagnosed as carcinoma, and only one sarcoma was found. All but one occurred in women. His study of these cases and the results obtained were encouraging rather than discouraging. Operations for cancer saved lives. The very early operation, so early that the microscope was necessary to make the diagnosis, was bound to produce better results than the operation done after the disease was easily diagnosed. The radical operation should be directed in such a way as to remove as thoroughly as possible the highways along which the disease was disseminated. The campaign of education of the public with reference to the signs of early cancer and its curability, when operated on early, should be continued and kept up unceasingly. Finally, the fact should be appreciated that every woman operated on for cancer of the breast, who remained free of the disease, afforded a basis for more powerful propaganda in the community in which she lived than all the tracts that could be written.

Cancer Involving the Mouth.—Dr. GEORGE NOBLE KREIDER of Springfield, Ill., read this paper. He held that the radiograms of the chest should be included in every case of preliminary examination of patients showing evidences of cancer in the mouth or breast. This had been his invariable procedure for the last two years. Many times such conditions would be found in the chest picture as would cause the surgeon to hesitate to operate. In several of his cases the patients had insisted on operations even though it was explained that there was little hope. Cancer involving the mouth had always seemed to him to be the most frightful form of malignant disease. When the disease attacked other parts of the body, the patient might have considerable periods of mental and physical relief. But in the mouth, and especially when the tongue was affected, there were few moments of the waking hours that were devoid of pain and mental distress. These cases, therefore, deserved particular study. Between April and October, 1919, four mouth cases came under his observation. The first man appeared May 19. The patient was still living, but his condition in August was reported very bad. The right upper maxilla was involved. The tongue was involved in the second man, who appeared April 9. He died June 29, surviving 80 days. The third man appeared June 17, and died December 10, surviving 168 days. The fourth man appeared August 6, and died September 21, surviving 45 days. In civilized countries, the disease was much more frequent in men than in women. The teeth were found diseased and irritated the growth in every case. The teeth should always be removed before any treatment was attempted. The men, without exception, had been large consumers of alcohol. They were also excessive users of tobacco. Some day the profession and people would wake up to the dangers of nicotine poisoning. It was not possible to operate on any of these patients because the disease was too far advanced.

The Operative Treatment of Vesicovaginal Fistulas.—Dr. E. S. JUDD of Rochester, Minn., stated that in former years vesicovaginal fistulas were found for the most part after difficult parturition. At present they occurred frequently from procedures for the radical removal of carcinoma of the cervix uteri, whether by operation, cautery, or radium. Sixty-one per cent. of cases of vesicovaginal fistula operated on at the Mayo Clinic since 1908 had resulted from some operative procedure for the removal of tumors of the uterus; and only 39 per cent. followed childbirth. Of five cases in the above series the fistulas followed the use of radium alone. Radium was of undoubted value in inoperable carcinoma of the cervix, but should not be used if the tumor had not been removed or if fistulas remained. The scar resulting from the cautery and radium rendered the technique of the operation much more difficult than in the cases which followed childbirth. The first essential in the treatment consisted in destroying the communication between the vagina and the bladder and the best manner of accomplishing this was to dissect the bladder completely away from the vagina as was done in the operation for the relief of cystocele. If the mucous membrane of the fistulous tract was not freed so that it could be turned into the bladder on the one side and into the vagina on the other, the communication would almost certainly reform. Undoubtedly a certain percentage of these patients required more than one operation and repeated attempts should be advised to close the fistula, if the sphincter muscle of the bladder had not been destroyed. If the sphincter muscle was injured it should be repaired and the fistula closed. If it was impossible to secure function of the sphincter a communication between the vagina and rectum just above the anal sphincter could be made and the vaginal outlet closed. This procedure as advocated by Keen was probably the best in these unfortunate cases. Peterson collected forty-one cases in which this operation was performed with comparative success. Seventy-eight cases of vesicovaginal fistula had been operated on in the clinic since 1908. In fifty-four of these it was possible to close the fistula with one operation, in sixteen, two operations were performed, and in one six operations failed completely to close the fistula. The size of the fistulous opening in these cases varied from that of a small pin point to complete eversion and prolapse of the bladder. In three of the cases there was more than one opening. A large incision in the vaginal wall included all the openings and converted the operation into a single closure after the openings into the bladder had been separately closed. The bladder sphincter was involved in ten cases, but it was destroyed in only three; it was repaired quite satisfactorily in

the seven cases. One of the ureters was involved with the vesical fistula in six cases. The position of the ureter should always be determined and in some cases where it was involved in the fistula the suprapubic operation was the one of choice. Legueu had recently advocated the transperitoneal vesical route for vesicovaginal fistula. This operation had some advantages in the cases in which the fistulous tract became attached to the pubic bone and was thus held in a most inaccessible position for the vaginal route. If the fistulous opening was small the fistula might be inverted into the bladder and held there by tension on the pursestring suture which was pulled out through the urethra. This procedure was described by C. H. Mayo. A number of small vesicovaginal fistulas had been closed by the high frequency current. Before operation the tissues should be made as near normal as possible. A cystoscopic examination should be performed to determine the position of the ureters, the presence or absence of a sphincter muscle, and whether or not the bladder had been completely severed from the urethra. When the injury was near the neck of the bladder, the vaginal operation was the one of choice. When the opening was high in the vaginal fornix and there was much scar tissue, the suprapubic operation might be of service but more room might be secured for the vaginal exposure by incision of the perineum. A long incision was made in the vaginal wall down to the bladder, beginning below the sphincter muscle and extending to and through the fistulous opening. The bladder was then separated from the vagina, beginning near the cervix and bringing it forward toward the urethra. If the cervix had been removed and the fistula was high in the vagina the peritoneum might be opened, as advocated by Kelly. A small curved hemostat passed through the urethra and into the vagina through the fistula helped to bring the fistulous tract downward into the dissection. After the bladder had been loosened and its edges could be easily approximated the opening should be closed with catgut and the edges of the mucous membrane inverted. The vaginal incision might then be closed with chromic catgut and all dead space obliterated. If the sphincter had been repaired it was best to use fine silk sutures in addition to the catgut, being careful not to penetrate the mucous membrane with the silk. A retention catheter was left in the bladder for from eight to ten days. The patient should be kept quiet for from twelve days to two weeks. There was no mortality in this series. Of fifty-six patients heard from, four had derived no benefit from the operation: six were considerably improved, and the remaining forty-six were completely relieved.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held November 18, 1919.

DR. EDMUND P. SHELBY IN THE CHAIR.

Influenza and Tuberculosis.—Dr. MAURICE FISHBERG presented this paper in which he stated that during the past two years the menace of influenza had loomed up as important not only as an acute and deadly disease, but also as a pathological process which was likely to increase the morbidity and mortality from tuberculosis for years after it had abated or disappeared. This was seemingly in agreement with our present view of phthisiogenesis that pulmonary tuberculosis was in most cases a reactivation of an infection with tubercle bacilli acquired many years before the onset of active symptoms, and that hardly any one escaped such infection before reaching adolescence. It had been stated that when a patient with active pulmonary phthisis was attacked by influenza, the tuberculous process in the lungs was likely to assume a more acute and progressive course, and to terminate fatally. In other words, we had been taught that among the mixed infections to be dreaded by tuberculous patients, that with influenza bacilli was the most ominous. Influenced by these teachings, which abounded in many books and monographs on tuberculosis and on influenza, the prediction went forth that an increase in the tuberculosis morbidity and mortality might be expected during and after the recent pandemic of influenza, and the Department of Health of New York, and of other cities in this country, had issued warnings to this effect. Moreover, whenever a patient kept on coughing, or was more or less feeble during convalescence from influenza, a diagnosis of tuberculosis was likely to be made, and he was at times banished to a sanatorium or to some distant clime. That there was no basis for this apprehension was evident to the writer after the pandemic of 1918-19 reached New York City. A large proportion of tuberculous patients under treatment in this city contracted influenza, and not a single one succumbed. Some were in the far advanced stages of the disease, with large cavities in the lungs, yet they passed through the acute symptoms of influenza and recovered, the tuberculous process then pursuing its course as if no complicating disease had affected them. This was observed at the time when a large proportion of the non-tuberculous cases under the writer's care succumbed to influenza. In hospital practice experience has taught the same lesson. In fact, it appeared that the prognosis in cases of influenza was much better in those who suffered from tuberculosis, or any other chronic pulmonary disease, notably asthma, bronchitis, emphysema, bronchiectasis, etc., than in those in whom the lungs and bronchi had been apparently in healthy condition. Moreover, far from aggravating the condition of tuberculous patients, it has been observed that influenza ran a milder course than when attacking healthy persons, and the old lung lesion remained in about the same condition as could be expected if no complicating process had attacked the patient. Statistics published by some authors seemed to indicate that in from 15 to 25 per cent. of their patients the tuberculous process has been activated by influenza, or some of its congeners. But these statements of patients and statistics of physicians were vitiated by the following facts known to every observant clinician: 1. Any acute, evanescent respiratory disorder may be called "grippe," influenza, etc. Since we have learned the symptomatology and course of influenza during the past year we know that during the twenty years preceding 1918 very few of such cases could be considered influenza. Moreover, we know that acute exacerbations of tuberculous processes in the lungs were usually considered "colds" by the average patient. 2. The initial symptoms of phthisis were not unlike those of mild forms of influenza in many cases, except that acute coryza and pharyngitis were extremely rare at the onset of phthisis. If this last fact were borne in mind, and every patient who said that the tuberculous symptoms were preceded by those of influenza were asked whether there was at that time an acute rhinitis, tonsillitis, or pharyngitis, it would be discovered that nearly all would answer in the negative.

Now, this was a very important point in the differential diagnosis: Influenza, the type which had prevailed in Europe and America during the past two years, attacked primarily the upper respiratory tract, while the bronchi and lungs were affected in only a relatively small proportion of cases. The majority of patients suffered from acute coryza, tonsillitis, pharyngitis, tracheitis, etc. These inflammatory processes were practically never seen in real incipient phthisis. When, however, the lesion in influenza descends to the deeper respiratory passages, producing bronchitis, pneumonia, pleurisy, etc., confusion with acute phthisis might occur, when it was not taken into account that these symptoms were preceded and are in fact accompanied by signs of an acute inflammation of the throat. The clinical differentiation between tuberculosis and post-influenzal pulmonary sequelae was quite easy in most cases when the following points were borne in mind. Bias must be dispensed with, and if any was permitted to linger, it was in favor of the view that after an attack of epidemic influenza the lesion in the lung was unlikely to be of a tuberculous character. In phthisis the alterations in the resonance and breath sounds were almost invariably found over the upper lobe of either or both lungs, while in influenzal bronchitis, post-pneumonic fibrosis, or localized catarrh, the lesion was in the vast majority of cases found in the lower lobes, most commonly the left side of the chest. Phthisis in which such extensive lesions had developed within a comparatively short time always manifested

itself by severe constitutional symptoms, especially tachycardia, fever, emaciation, etc. In post-influenzal lung lesions the pulse was, as a rule, slow, fever was lacking, except in cases with pleural effusions, or pulmonary abscess, etc., which should be recognized by their concomitant symptoms and signs, and emaciation was exceptional. This discordance between the extent of the lung lesion and severity of constitutional symptoms should at once throw some doubt on the diagnosis of the tuberculous character of the lesion. Physical exploration of the chest also gave reliable signs as to the true nature of the disease. Percussion yielded and impaired or dull note over extensive tuberculous lesions; in many cases this was found without any adventitious sounds being audible on auscultation. The reverse was true in most cases of post-influenzal pulmonary lesions in which we frequently found a large number of coarse, consonating râles over an extensive area which is resonant on percussion. Collating available evidence, it appeared, however, that tuberculous patients were just as likely to contract influenza during an epidemic as others. But the number of severe cases, complicated by pneumonia, pleurisy, etc., as well as fatal cases, was not higher than that observed among non-tuberculous patients. Indeed, if any difference was observed it was in favor of the tuberculous. It might be stated that, after influenza had passed, the tuberculous patient remains in the condition in which we might have expected to find him had he been spared by the epidemic disease. There is neither an improvement nor an aggravation of the tuberculous lesion to be observed. Their experience in this regard is not unique. It appeared that all who had recently written on this subject report that influenza was less likely to attack tuberculous patients than others; and that when tuberculous patients were affected with influenza their outlook for survival was as good, or even better, than that of previously healthy individuals. A study of influenza in various tuberculosis sanatoria throughout the country was in accordance with the above statements, and European experience during the past two years ran in the same direction. Nowhere had it been observed that tuberculous people were more predisposed to influenza, and that when affected, the acute disease should run a more acute and fatal course than was observed in the general population. From Central and Eastern Europe available evidence shows similar conditions. Gerber was struck by the remarkably favorable course of influenza in the tuberculosis division of the No. 3 War Hospital in Vienna. From June till the middle of October, 1918, nearly two-thirds of the 750 tuberculous patients contracted influenza and only 2 of these succumbed to complicating pneumonia. In Germany, where epidemic influenza was very severe among the general population, perhaps owing to malnutrition, it was rather mild among the tuberculous. The tuberculous process in the lungs has not been observed to assume an acute and progressive course after an attack of influenza. Vital statistics and reports from sanatoriums showed that during the past and current year the mortality from tuberculosis had not increased despite the fact that influenza had been raging during this period, nor have the number of tuberculous patients seeking admission to institutions increased during the past twelve months. The pulmonary sequelæ remaining after influenza were almost without exceptions non-tuberculous in character and did not require the treatment accorded to phthisical patients.

Roentgen Ray Studies of Bronchial Function.—Dr. JESSE G. M. BULLOWA and Dr. CHARLES GOTTLIEB recorded roentgen ray observations of the bronchi of dogs in whom the tracheal-bronchial tree was outlined by barium in olive oil or petrolatum liquidum. They observed a bellows-like expansion and contraction of the bronchus, synchronous with respiration and emphasized the importance of bronchial spasm in limiting the distensibility of the lung. They also observed a longer cycle, a slow peristaltic wave of low amplitude, which emptied the lungs without cough and without invoking ciliary movement. Bechic movements were studied and the possible importance of bronchial-spasm in causing cough by traction of the parieties was suggested. The effect of adrenalin was observed and although in some lungs it caused contraction of the bronchial muscles, in others, which had been contracted by muscarine, dilatation was observed. The filling of the alveoli with bismuth was also demonstrated radiographically.

Bronchoscopic Treatment of Bronchiectasis and Pulmonary Abscess.—Dr. HENRY LOWNDES LYNAH presented this communication. (See page 215.)

Dr. L. T. LE WALD said there were several points that might be brought out bearing directly on the elimination of material that got into the trachea in esophageal fistula. Four such cases had come under his observation and he thought the Section might be interested in seeing the slides of those cases showing the fistulous tracts from the esophagus to the bronchi. In these cases the food had been going into the bronchi for some time and when this happened the bronchi seemed to develop an immunity or tolerance to food products. There was no delay in the emptying of the bronchial tree as Dr. Bullowa had described; within a day all traces of the bismuth had disappeared on *x*-ray examination of the lungs. At Bellevue College, they had injected the bronchial tree three times in the cadaver. Dr. E. W. Caldwell, in 1909, first did this by introducing fine shot into the trachea of a cadaver and then shaking them into the smaller bronchi. Subcarbonate of bismuth in suspension might be used in the study of the bronchial tree in the cadaver.

Dr. HARLOW BROOKS expressed his great admiration of the work done by Dr. Bullowa and Dr. Gottlieb. He said it opened up new possibilities in the treatment of the very difficult condition of pulmonary abscess which almost always originated from a primary bronchiectasis and in which both medical and surgical treatment had thus far been unsatisfactory. He thought that a combination of the procedure described this evening, together with the postural method employed in one of the hospitals, might be found effective. In one of the hospitals a number of cases of lung abscess were treated by requiring the patients to incline out of bed, head downward, on their hands several times a day, in the meantime coughing and expectorating. Of the cases treated in this way in this series several recovered. By adding the postural treatment to the method described it might be that the outcome would be more satisfactory in this class of cases which they all felt previously were eventually going to terminate fatally.

Dr. GEDIDE A. FRIEDMAN said he still believed asthma was due to spasm of the small bronchi and that it was possible that adrenalin caused no relaxation of the bronchi with normal tonus. Dr. Bullowa had shown that adrenalin caused contraction of the normal bronchi. The same principle held true for the pylorus. If one injected adrenalin, as he had done, in a normal human being and then made a fluoroscopic examination he would find that in the normal man, using one-half of 1-1000 adrenalin solution, nothing happened, but adrenalin immediately relaxed a pylorus that was in spasm. It seemed that adrenalin had a different action in a muscle of normal tonus from that in muscle with hypertonia. He had always found adrenalin the best remedy to relieve spasm, be it bronchial or gastro-spasm.

Dr. WILLIAM H. STEWART stated that he had had one case of esophago-tracheal fistula. It was discovered while examining the esophagus for malignancy that most of the bismuth paste passed through the fistula into the lower bronchi on both sides. They were beautifully reproduced on the roentgenograms. This patient coughed up the bismuth without any trouble although most of the cases reported developed penumonia which proved fatal. He has been interested in observing the cases of pleuro-pulmonary fistula complicating draining chronic empyemic cavities. These cases had been injected with a solution of bismuth subcarbonate in sweet oil to outline the cavities. In some instances some of the injected substance entered the bronchi through the opening into the lung without causing much distress to the patient, as it was almost immediately coughed up. He had never noticed a peristaltic action such as described by Dr. Bullowa, but, considering how rapidly these patients with pleuropulmonary fistula coughed up the bismuth solution, there could be no doubt that there was some such action aiding cough and chest contractions in expelling foreign substances from the bronchi.

Dr. EDMUND P. SHELBY said these were three very in-

portant contributions. He doubted whether the value of Dr. Fishberg's paper in which he brought out so well the relationship between influenza and tuberculosis was fully appreciated. It was very gratifying to have that subject cleared up so favorably and on the basis of such a thorough investigation, and to feel assured that influenza was not a factor in the incidence of tuberculosis. He had had several cases suspected of being tuberculous who gave a history that their trouble dated from an attack of influenza and all proved not to be cases of tuberculosis but of bronchiectasis.

Dr. ALFRED MEYER recalled that at the meeting of this Section on February 18, 1918, he had reported his experience with influenza in the tuberculous at the country branch of the Montefiore Home at Bedford. The impression that he had gained at the outbreak of the epidemic that quarantine against the disease would prove effective had been shown to be correct. Quarantine was established at the Bedford institution a few days after the outbreak of the epidemic in nearby villages, on October 6, 1918, and was continued for seven weeks and during that period not a single case of influenza developed. Lay officers had endeavored to induce him to lift the quarantine but he had remained firm and did not lift the quarantine. Finally, however, through some defect in the quarantine measures the disease gained entrance to the institution. Dr. Fishberg stated that a smaller proportion of tuberculous individuals contracted influenza than occurred among those who were free from tuberculosis. At Bedford they had 213 patients and 52 contracted influenza, about the same proportion as among the general population. They also found the mortality about the same among the tuberculous patients as among the general population. They found the age morbidity just as it was elsewhere, that was that a greater number of those under the age of forty years were affected, namely 98 per cent. of the cases were under forty years though they were only 84 per cent. of the population. The question as to what effect influenza was going to have on the further progress of tuberculosis he felt was one on which we ought to hold back our judgment for a considerable length of time. However, at the end of four months after the epidemic one of his assistants concluded from their records that there was no increase in the incidence of tuberculosis among their patients as a consequence of the intercurrent acute disease. Dr. Fishberg was to be congratulated on getting such a large amount of statistical material from so many different places. We were now in a position to say that the epidemic of influenza had had less effect upon the incidence of tuberculosis than might have been expected, *a priori*, on theoretical grounds.

Dr. THOMAS F. REILLY said the incidence of tuberculosis unquestionably was not affected by influenza this year, but it might be well to remember that influenza varied in different epidemics and that some of the salient features of this epidemic were different from those of thirty years ago. The epidemic of thirty years ago was followed by a large incidence of tuberculosis. At that time physicians did not see many of the cases with the large amount of pulmonary congestion such as were seen in the recent epidemic. It was difficult to lay down hard and fast laws for influenza that would hold good for ever and ever. The statement was made that the absolute tuberculosis mortality had been lower since the epidemic; that might be because this influenza killed off so many young people who in the nature of things would otherwise have succumbed to tuberculosis. Dr. Fishberg had also laid down as an easy problem the differential diagnosis between tuberculosis and the lung condition frequently following influenza pneumonia, but in practice it was not always so easy to differentiate the conditions. The *x*-ray was not much help in differentiating between tuberculosis and the lung conditions due to influenza. That was rather unfortunate, inasmuch as so many men depended upon the *x*-ray in making a diagnosis of tuberculosis. Most *x*-ray men acknowledged that it was impossible to differentiate the bronchial thickening following influenza from tuberculosis of the hilus. It was not so difficult to make the diagnosis when the lesion was located in the apex, but when the lesion was basal or at the hilus, it could not be so easily differentiated, and hilus tuberculosis was not so uncommon as the older textbooks might lead one to believe.

Dr. I. S. HIRSCH questioned whether any peristalsis could occur in the smaller bronchioles. He thought peristalsis might occur in a bronchiole having a diameter of one millimeter or more. The smaller secondary bronchioles had no musculature and hence were incapable of peristalsis. He thought the first action in the expulsion of fluids from the lung was that of the diaphragm and muscles of the chest wall, which forced the fluid into the bronchioles and smaller bronchi and then peristalsis, if it did occur, might force it further. He asked whether the wave of peristalsis was rapid or slow. He thought it must be rapid and would, therefore, be difficult to study in any but the major bronchi or the trachea. He asked what was the relation of the peristaltic wave to the cough. Peristalsis apparently was not a normal function, for the bronchi did not show this movement when the dog was in a natural position. The radiographic demonstration of the spasm of the bronchi and their narrowed lumen, under irritation of muscarine was interesting in connection with the work of Delafield, who believed that asthma was due to a contraction of the bronchi. He also agreed that adrenalin had no effect on the musculature of the normal pylorus or on normal bronchi, but when the muscles were in spastic contracture it then served to relieve that contraction.

Dr. MAURICE FISHBERG, in closing, said that in the paper he had not touched upon the question of quarantine, but he had paid attention to that problem. There were sanatoria which he had been able to learn of where no strict quarantine was maintained and not a single person was attacked by the disease. On the other hand, at other institutions, strong efforts were made to maintain strict quarantine but it was not entirely successful. Dr. Reilly spoke of the epidemic of 1891 as being different from the recent epidemic. A complete and reliable description of that epidemic was that of Lichtenstern, and as he described the disease it was similar to that seen during the recent epidemic. The reason they saw so much tuberculosis following the epidemic of 1891 was probably because they were not so careful in differentiating various conditions of the lungs, and any case with persistent cough was called tuberculosis. Now they were recognizing bronchiectasis, with or without the bronchoscope or the *x*-ray. It was also suggested that the reason the mortality from tuberculosis was low this year was because those that would have succumbed to tuberculosis ordinarily had this year fallen victims to influenza. With this view he could not agree. Influenza killed many between the ages of 15 and 40 years and that was the age at which tuberculosis was most common. On the other hand, if one looked at the army, notwithstanding the fact that so many had influenza, the incidence of tuberculosis was no higher than would have been expected had there been no epidemic of influenza, and it was even less, so we must conclude that so far no tuberculosis had developed as the result of influenza. He had not seen a case which could be unequivocally said to have started with influenza. It had been shown in every instance that cases that claimed to have started with influenza had shown symptoms of tuberculosis before the attack of influenza. The diagnostic problem at Montefiore Hospital had been greatly simplified following the principle that those who claimed to have been sick only since an attack of influenza last winter were not cases of tuberculosis unless tubercle bacilli were found in the sputum. And with but one exception, none of the post-influenzal pulmonary cases admitted to the Montefiore Hospital had expectorated sputum containing tubercle bacilli.

Dr. BULLOWA, in closing, said that he was happy to have seen Dr. Le Wald's pictures, as they revealed bronchial peristalsis. Dr. Friedman's remarks did not contradict their findings at all. Adrenalin did influence the contraction of muscles and the lantern slides showed relaxation from adrenalin after muscarine had been injected, though adrenalin seemed to cause contraction of the bronchi under some other conditions. The senior author was the first to recommend the injection of ad-

renalin for asthma in 1903. Hitherto our knowledge of the action of drugs on the bronchi was based on the oncometer studies of Brodie and Dixon in 1903, and this had been used also by Jackson, by Stewart, and by Januscke and Pollak. He thought this was the first time that the contraction and relaxation of the musculature of the bronchi under the influence of drugs had been visualized, and that the bronchial muscles might now be studied as the musculature of the intestines had been. Most of the animals injected a number of times were still living and apparently well after weeks. Of course animals subject to oncometer studies perished at the termination of the experiment. In reply to Dr. Hirsch, Dr. Bullowa stated that the peristaltic wave was observed in the trachea, the larger and smaller bronchi, as far as the bronchi of the second order, and it was much slower than the heart beat, but it was difficult to time by reason of the darkness, yet it was superimposed upon the respiratory cycle and independent of it.

Dr. CHARLES GOTTLIEB said that the peristaltic wave had no relation to the cough. While it was not directly upon the subject, he might mention that at Akron, Ohio, they had 400 men under absolute quarantine during the epidemic of influenza. They did not have a single case of influenza until after Thanksgiving, when the men went home on vacations; after that they had thirty cases.

SECTION ON PEDIATRICS.

Stated Meeting, Held December 11, 1919.

DR. MURRAY H. BASS IN THE CHAIR.

Some Remarks on Cranial Thrombosis in Children.—Dr. SEYMOUR OPPENHEIMER read this paper, in which he emphasized the importance of the early diagnosis of cranial thrombosis, though with the symptoms as they appeared this was often most difficult and many times impossible. In general the symptomatology of sinus thrombosis in the child was in a measure that of the condition in the adult. There were two recognized forms of sinus thrombosis—primary, or marasmic, and secondary, or infective, sometimes termed inflammatory. Marasmic thrombosis occurred much less frequently than infective, and was almost invariably located in the longitudinal, rarely in the lateral, and still more rarely in the cavernous sinus. It occurred in weakly people prostrated by exhausting disease, occurring often at the extremes of life. It was seen at times in conditions of infantile atrophy and sometimes occurred in the course of such acute infections as pneumonia, pertussis, diphtheria, and nephritis. The actual cause was a condition of lowered vitality leading to feebleness of the circulation, and an altered condition of the blood. The symptoms of marasmic sinus thrombosis unaccompanied by hemorrhage were few and uncertain in the majority of cases in which this lesion was found post mortem. The symptoms were those of meningeal and cortical irritation, and were indistinguishable from symptoms produced by more common conditions. In the chlorosis cases the head symptoms were marked as a rule. Children affected with marasmic sinus thrombosis were prone to convulsions, usually general, and accompanied by unconsciousness. The prognosis was bad in marasmic thrombosis, and the majority of cases died in a few days. In most cases the treatment was wholly symptomatic. Roborants and stimulants were indicated, and a position in bed should be assumed which was favorable to both arterial and venous circulation. The internal administration of potassium iodide and calomel had been recommended in the autochthonous forms, but no treatment was likely to prove of any avail. Secondary or infective thrombosis was much more frequent than the primary form. Its three causes might be stated as sepsis, damage to the vessel wall, and stasis. It occurred almost as frequently in children as in adults, generally affecting one of the dual sinuses, while marasmic thrombosis affected the single median or azygos sinuses. It was local in origin, secondary to some inflammatory lesion of infective character, and occurred in the sinus nearest the seat of the primary disease. By far the most frequent cause was a suppurative middle ear lesion. Sinus thrombosis affected males more frequently than females, the right lateral sinus more often than the left, probably because the right sinus was usually the larger and approximated the mastoid more closely. In infective sinus thrombosis the lateral sinus was most frequently involved. While infective sinus thrombosis might be a less frequent complication in children than in adults, a study of the statistics of institutions treating large numbers of cases of otitic disease showed that 15 per cent. occurred in children under ten years of age. The writer reviewed in a general way the gross anatomy and the pathological anatomy of the brain, directed attention to the differences between the brain anatomy of the child and the adult, and pointed out the various ways in which infection might gain entrance to the sinuses. The symptoms of sinus thrombosis were fairly constant, the most important general symptom being a rise in temperature excessively high. A perisinus abscess might cause a temperature of a very septic type. The mere presence of a high temperature in children was a less important indication for operation than in adults, but when its presence was persistent in conjunction with an acute mastoiditis and a pyelitis, pneumonia or influenza could be excluded, operation was justified even though a blood examination failed to show a bacteriemia. An important point in a case under suspicion was taking two hour temperatures in order to accurately note the varying oscillations. In older children there might be headache, pains in the occipital region, and tenderness upon palpation along the jugular vein due to lymph node enlargement. A diagnostic sign of importance was a unilateral enlargement of the lymph nodes at the junction of the facial vein with the internal jugular. The cordlike feel, however, along the anterior border of the sternomastoid was a symptom that the writer had seldom noted even in cases in which the jugular was markedly thrombosed. Other symptoms discussed were nasal hemorrhage, severe persistent headache, and local symptoms. Facial cyanosis and dilatation of the temporal and facial veins, with epistaxis, suggested an involvement of the superior longitudinal sinus. Attention was also called to a symptom which Dr. Oppenheimer said he believed he was the first to describe, namely, dysphagia. Upon examination of the throat there was found a unilateral enlargement of the lymphoid tissue along the posterior fold of the pharynx. In the later stages of the disease, edema about the orbit and a protrusion of the eye on the affected side indicated involvement of the cavernous sinus. These local signs could not be relied upon alone as a means of diagnosis, but their close association with a more definite general symptomatology placed upon them their dependable value. Among the diseases that might give a symptomatology like that of sinus thrombosis and which must be excluded before making a diagnosis of sinus thrombosis were pneumonia, typhoid fever, acute endocarditis, malaria, and certain cases of scarlatinal infection. The accurate diagnosis frequently demanded the closest cooperation of the otologist and the experienced pediatrician. In infantile hemiplegia, sinus thrombosis should be considered. In a series of 78 autopsies reported by Starr and Westcott in infantile hemiplegia, sinus thrombosis was found in five. Blood examinations furnished reliable data in many cases. In the early stages of thrombosis the blood showed as a rule an increase in the number of white cells, but rarely over 20,000. When the thrombosis was infected or suppurating a bacteriemia might be demonstrated by blood culture, but in many cases a clinical diagnosis might be positively made before the blood culture could be obtained. A negative blood culture did not necessarily mean that the sinus was not involved. In an experience dealing with practically 150 cases of sinus thrombosis, the essayist stated that he had never observed an infection due to any organism other than the streptococcus or the *Streptococcus mucosus*. This point had proven in many instances of great value in the expression of an opinion, and showed the importance of a culture from the pus contained in the mastoid process at the time of operation. The prognosis of sinus thrombosis in children depended upon the duration and extent of the disease and upon the stage at which its progress was checked by surgical interference. The earlier the operation the lower the mortality. After metastatic processes had developed in the lungs, brain, joints, or heart, the mortality was

extremely high. The treatment of sinus thrombosis was entirely surgical. The operative procedures were attended by the cure of a great many cases which would otherwise terminate fatally; hence the importance and the urgent necessity for early diagnosis, in which the pediatrician could cooperate to excellent advantage with the otolaryngologist, to whom of necessity fell the operative treatment.

Dr. HERMAN SCHWARZ said Dr. Oppenheimer had given a very clear picture of marasmic sinus thrombosis. He would like to know Dr. Oppenheimer's experience with otitic thrombosis in infants. With the exception of one case that he saw with Dr. Oppenheimer, he had never seen another in such a young child. This was important in diagnosing fluctuating ear temperatures in infants.

Dr. OPPENHEIMER said that the youngest case of sinus thrombosis that had come under his observation was the one to which Dr. Schwarz had referred and which he saw in consultation. Unfortunately that patient had many complications; in addition to the sinus thrombosis the child had a meningitis, diphtheria, and brain abscess. The child died. Last year he saw three children with sinus thrombosis, but up to that time he had never seen a case of sinus thrombosis in a child under five years of age. He had had the opportunity of studying about 150 cases of his own and possibly had seen 50 others in consultation with other men. Of these, there were about twelve cases in children under ten years of age. As to the relative frequency of sinus thrombosis as a complication of mastoid disease, he believed that about four per cent. of all cases of mastoid disease developed some type of intracranial complication, and probably 60 per cent. of these complications were in the nature of a sinus thrombosis.

Some Experiences with Malaria Among Children in Palestine.—Dr. SOPHIE RABINOFF read this paper, by invitation, in which she described her experiences as a member of a medical unit working among the civilian population of Palestine from July, 1918, to July, 1919. She stated that her first work was in a children's hospital of twenty-five beds in Jerusalem, where the service consisted of cases of malaria, dysentery, gastrointestinal conditions, pneumonia, typhoid fever, and influenza. The children's clinic in this city was filled to overflowing. They saw daily from one hundred to two hundred patients. Two months later, when Palestine was opened up by the spectacular advance of General Allenby, detachments of physicians were sent north to take care of the civilian population in the newly opened territories, and she was sent to Jaffa. Here an emergency hospital was opened and later a small children's hospital of twenty beds. Altogether they treated over 2,000 cases of malaria among children. Their clinical routine was as follows: Each patient on the first visit had a complete physical examination, a blood smear was taken, and if the child was under two years of age it was weighed. Notes were made of any abnormality, and the size of the spleen indicated in every case. The classical cases of malaria offered no difficulty in diagnosis, but they soon found that malaria presented every symptom and symptom complex conceivable, and simulated almost every disease known to pediatrics. Furthermore, cases of pneumonia, typhoid fever, and influenza caused a lighting up of latent malarial processes, often obscuring the entire picture. They soon found that there was a typical malarial facies, characterized by pinched, ashy blue or yellow color, blue lips, anxious drawn nostrils, and beads of perspiration on the forehead. In comparing the symptoms of malaria in children with those in adults there were several outstanding features. The chill was much less frequently an initial symptom. On the other hand there was a greater tendency to convulsions and other nervous manifestations such as restlessness, twitchings, fretfulness, or drowsiness. In addition, in children under two years of age there were very frequently gastrointestinal symptoms, such as vomiting, constipation, diarrhea, and occasionally bloody stools. Also the interval between the attacks was marked by a striking return to normal appearance. There was a much greater tendency to irregularity in temperature than in adults. The youngest patient was an infant only a few hours old. The mother had suffered from chronic malaria for several years, with acute exacerbations from time to time. She had received quinine hydrobromide together with morphine sulphate in very small doses since the seventh month of her pregnancy. This seemed to keep the fever in check, though her blood would from time to time show tertian organisms. Dr. Rabinoff cited a number of cases, among them being a case with gastrointestinal symptoms and recurrence, a case with gastrointestinal symptoms simulating an attack of appendicitis, and a case of cerebral malaria in a child of 11 years. She discussed a group of cases with pulmonary symptoms, which offered many difficulties, especially as the influenza epidemic appeared at the height of the malarial season, and one condition complicated the other. Many latent cases lighted up during the period of lowered vitality attendant upon the influenza. Cases of blackwater fever were not uncommon in the lower part of Palestine, though they had but four cases of this malignant form of malaria associated with hemoglobinuria. There was a tradition there among the laity and a good many physicians that quinine taken during the height of the fever would cause this condition. Enlarged spleens were noted in 70 per cent. of the children treated, varying in size from those that were easily palpable below the rib margin to those that extended into the pelvis. In some cases the rapidity with which the spleen increased in size and consistency was remarkable. The chronic cases all had tremendous spleens and were hard to treat. In the treatment of their cases quinine was given by mouth in all their simple cases. Where it was tolerated at all it could be given in fairly large doses. In a certain group of cases it upset the stomach when given in simple solution, but when made up with a simple syrup or with licorice, it was better tolerated. They had none of the more elegant preparations used here. A small percentage did not tolerate the quinine at all when given by the mouth, and in these it was given in suppositories or hypodermically. In all cases in which the attack was ushered in by convulsions, or the symptoms were very severe, and in all cases of malignant tertian or estivoautumnal malaria, the quinine was given hypodermically in doses of one-half grain. All the quinine preparations were very irritating when given in this way, although the hydrochloride and dihydrochloride were the best, but must be carefully given. In the majority of cases there was no difficulty in controlling the acute attack, when the quinine was taken regularly and attention was given to other measures such as rest, proper hygiene, and simple nourishing food. The writer felt certain that relapses would not occur so frequently if the proper treatment was instituted at the start and persisted in for a sufficiently long period. Often cases treated at home did not respond, but on admission to the hospital would clear up promptly. It was very difficult to make the patients continue the quinine after they were over the acute attack, and the result was that they continued to harbor the organisms somewhere until such time as their vitality was lowered and then a lighting up occurred. These quiescent cases acted as carriers of the disease. The chronic cases were very resistant to treatment, but some cases in which quinine by the mouth did not help at all and in which a course of six or seven doses was given intramuscularly, and then followed by quinine and arsenic given in the ordinary way, showed marked and rapid progress. In ten cases, Dr. Rabinoff said, she had used neosalvarsan intramuscularly, with apparent immediate benefit, but relapses occurred when they were not followed by quinine. Change of climate was found to be a very good adjuvant to quinine.

Dr. GAYLORD W. GRAVES asked what the effect of quinine was when given at different stages of the attack. He said it took several hours for quinine to saturate the blood plasma and it was customary for physicians to treat malaria by giving quinine every few hours. Dr. Tuttle at the Presbyterian Hospital had suggested that in the case of a patient who had passed through a chill one should wait until the next chill and at its height give ten grains of quinine. They did this in a case and the patient had no subsequent chill. The quinine was repeated but at such an interval that it was evident that the initial ten grains did the work. Dr. Graves related the history of another case of malaria in which it was evident that the large dose of quinine although given late had mitigated the severity of the chill one-half. The day following admission he had another chill, making it seem likely that there were two

broods of parasites. Quinine given at the height of this chill controlled the infection so that there was no chill two days thereafter. After several months this patient was seen outside the hospital for an illness diagnosed as influenza. Several days later the spleen was found enlarged and the temperature 104° F. At this point quinine was given and no further chill occurred, although blood examination revealed the malarial parasites. Dr. Tuttle, though giving no explanation of this, had suggested the theory that continuous administration of quinine discouraged the emigration of parasites from the corpuscles while if one waited until they were really out and then "hit them on the head," as the speaker interpreted the theory, the effect was more pronounced. He would like to know whether the psychological moment to administer quinine was at the height of the chill or before as was customary.

Dr. SCHWARZ asked Dr. Rabinoff what the mortality was in the cases she had seen. It was interesting that in Italy a great proportion of infant mortality was made up of deaths due to malaria.

Dr. HUGH CHAPLIN stated that in chronic cases of malaria they had noticed a slight, rather constant, rise in the evening temperature to 100 to 100.5 degrees, rarely over that. They had one case of malaria in a child, in the Orient, treated for about a month with quinine, and after that for a number of months the child had a slight rise in temperature in the evening. There might be other explanations of this rise in temperature, as possibly a slight indigestion, or a tuberculous family history, but neither seemed to account for the rise in temperature in this case. They did not find the organisms until later when the child had a chill and then the organisms were present. Was the chill in this case due to organisms that had been lying dormant during this period?

Dr. CHARLES HENDEE SMITH emphasized the importance of giving quinine in small doses for at least six months after the acute attack in order to prevent recurrence. He did not think that point had been sufficiently emphasized in the paper. Another point was that rest in bed prevented the recurrence of paroxysms as well as though quinine had been given. Then if one allowed the patient up he got another chill and one would find the parasites. The point he wished to bring out was that one got a great deal more good out of the quinine if the patient was in bed. For that reason it was advisable to put the patient to bed for a week on half doses of quinine and when he got up to keep on giving small doses of quinine for many months.

Dr. H. L. DOWD stated that bicarbonate of sodium and lemon juice had proved efficacious in malaria. It was said that the lemon juice, because of its citric acid, acted on the blood cells favoring absorption of the bicarbonate of sodium. They had used cacodylate of sodium as a preparation associated with hydrobromide, giving both hypodermically.

Dr. MURRAY H. BASS referred to a paper which he read some six or seven years ago in which he reported the case of an infant in whom the malarial parasites were found a short time after birth, and he had decided that in this instance the disease was of congenital origin. He would like to know what Dr. Rabinoff's experience was with reference to malaria in such young infants.

Dr. RABINOFF, in closing, stated that in a series of experiments in the literature it was shown that quinine by the mouth was mostly excreted in from three to six hours, and in giving large initial doses at the time of the paroxysm, one controlled the organisms in the blood but this had no effect on the spores developing later, and for that reason it was necessary to continue giving the quinine at short intervals. Her experience had shown that quinine must be continued for a long time after the acute attack was controlled. The spores were supposed to develop in five or six days and were responsible for subsequent relapses. In regard to the question of the mortality from malaria among infants, she herself had not seen any deaths due to the malaria itself, except in one case with convulsions, in which death occurred during the attack, and in this instance the pathologist thought there was a direct obstruction of the cerebral vessels which was responsible for respiratory failure. There were children among their chronic patients who ran a daily temperature of 100 to 101° F., and who gave a history of having had this temperature for weeks. Rest in bed was very important. Many cases treated at home without success, when admitted to the hospital and put to bed responded by a drop in the temperature within a day and there would be no further rise in the temperature while they were in the hospital. In regard to Dr. Bass's case of malaria in a young infant, Dr. Clarke of Johns Hopkins had examined the fetal maternal blood in cases of malaria in young infants and found that in these cases there had been some trauma in the placenta which permitted the organism to pass from the maternal to the fetal blood.

Health Classes for Children.—Dr. IRA S. WILE read this paper in which he said that localized health agencies for children of school age, including medical inspection of schools, school nurses, drafting of adequate educational laws, the formation of little mothers' leagues, were in a way types of health classes. To these might be added an increased stress upon the hygiene of teaching and the teaching of hygiene in public schools, although it was doubtful if these functions were performed as satisfactorily as might be desired. The general purpose of health classes was the accentuation of correct rules for living and also for the discovery of defects and handicaps. Health classes taught unity of body, mind, and soul, and placed in proper perspective their relation to the welfare not merely of the individual child but of the entire family taken as a unit, and in this way one was enabled to approach all problems relating to the child from a single center. This required an understanding of medical psychology, and of social and economic problems, which were so thoroughly interwoven with the development of healthy and healthful family life. There was such a thing as a healthy character and its formation should not be neglected in the ordinary method of conducting health classes. The single unit health class was preferable and segregation should not be permitted to develop. If a child in the health class required the care of a dentist, he was sent to the dentist and then returned to his class; in the same way, if a child was undernourished or had some other trouble that needed special attention, he should have such attention, but he should return to the general health class. At Mount Sinai health classes were being conducted, working through the family as a unit. They worked for health education without instilling fear of any of the diseases that might attack childhood. Work was not done through the stimulation of fear, for fear was practically an anxiety state and woefully bad psychologically and also a pretty low motive from which to act. The purpose of such classes was to elevate the family standards of living, to eliminate the two great curses, ignorance and poverty. In the matter of administration provision was made for thorough physical examination, the keeping of complete records, and follow-up work. In the keeping of records and the follow-up work the services of a nurse and a social worker were used, and there was also work for a certain number of volunteer aids. There was also a field for a domestic science expert and a psychologist. The physician made the examination but did not, as a rule, prescribe. Directions to the patient or to the nurse must be given in detail. For instance, one should not give the general direction, "to take exercise," but definite instructions as to the kind of exercise. They used cards of three colors, blue, yellow, and white. They patient on admission received a blue card and as he progressed was advanced to classes designated by blue and white cards. It had been found that such a system aroused competition and added greatly to the effectiveness of the work. The discipline in the classes was not formal. The room where the patients waited was very different from the ordinary morbid dispensary room. The walls were hung with charts, teaching food values, the proper kind of wearing apparel, methods of making a fireless cooker, or an icebox at home, etc. The patients were not compelled to be silent but were encouraged to talk, especially on health matters. Everything in the environment and attitude of the personnel was directed to creating a joyous and healthful atmosphere. In summarizing, Dr. Wile characterized health classes as an expression of humanized medicine, seeking through

medical psychology, educational, social, and economic means to build up generations of children who should be a credit to themselves, their families, and their nation. They should be powerful, but self-controlled; metally alert and without indolence; spirited but spiritual; capable of living in the fullest measure a life that should be rich to enrich their communities in all that accrued from health, which was wealth and happiness.

Dr. CHARLES HENDEE SMITH said there were so many different aspects of this subject that might be discussed that it was difficult to know what to start upon. One of the most interesting points was that one could get results at once in almost any child that came into the class. The child would gain in weight for several weeks and then as some one had said "Grow weary in well doing" and slump. A continuous gain depended entirely upon the boosting ability of the man in charge of the class. It was necessary to reach people from many different sides, social, economic, etc. This kind of a class reached the cause of ill health and malnutrition by educating mothers to take proper care of their children in the home. Caring for a child in the home gave much better permanent results than sending the child away from home for a short time, as when this was done the child very frequently fell back when he returned to his home. It was all right to send a child away to get a start, but that did not correct the cause of the trouble. One reached the cause of the trouble by educating the mother and improving conditions in the home. There could not be too many of these classes. There should be one in every hospital and in every school. Until they could get the public school teachers to attack this problem they could not expect to have the kind of people the country should have. Until the nation realized that the foundation of good health lay in education they would go on having hospitals and dispensaries which had to do what they could of this kind of work.

Dr. JACOB SOBEL said that the most significant thing in connection with this paper was that Dr. Wile had started something, and by that he meant that Dr. Wile was a pioneer in starting classes for children of the pre-school age in connection with hospitals. To show how little effect one pre-school age class had on this very large problem one had only to consider that there were approximately 475,000 children of pre-school age in New York City. It would require a large number of clinics and a large personnel to care for the children of this class. This was probably the most pressing question before the country to-day. The proper care of the pre-school child bore the same relation to the school child as the problem of prenatal care bore to the infant. How to care for these 475,000 children in New York was a serious problem. It was not a municipal problem alone because the municipality could scarcely handle it. There were from 275,000 to 300,000 children of school age physically examined annually in New York City and this required a large number of doctors and nurses. This being the case one could readily appreciate what a working force would be required to examine 475,000 children of pre-school age. The only solution of the problem was along the lines which Dr. Wile was working and in accordance with Dr. Smith's suggestion. In order to make any impression it was not only necessary to have municipal clinics and pre-school clinics, but these health classes must be associated with every hospital, dispensary, settlement, day-nursery, and school. Dr. Sobel said he did not know just what Dr. Wile meant by caring for the mental condition, but this should include the emotional as well as the mental make-up. It was true as Cardinal Newman had said, "If you give me a boy until he is seven years of age I care not who has him afterwards." The care of the child at this period of his life should not be overlooked. He hoped the time would come when the municipality would spend more money in this direction, for if they spent a large amount of money on the pre-school child they would not require so much for school medical inspection. The pre-school examinations should be carried on at community centers, and the child prepared for school entrance and to assimilate knowledge; this would mean a saving for the children, a saving of expense to the municipality, and a saving to the state and the nation.

Dr. WILE agreed with Dr. Sobel that public money could not be spent to better advantage than in giving proper attention to children of pre-school age. He also urged that private practitioners be more careful in looking for physical defects in children, and that this be also borne in mind by doctors treating children in public clinics. He felt that if they would all get together it would be possible to make a slight dent on the whole problem.

Butter Fat and the Child's Weight.—J. H. LARSON, secretary of the New York Milk Committee, made this presentation by invitation. He showed graphically the weights of ten children selected from a group of resident children at an orphans' cottage home at Rochester, N. Y., the records having been obtained during a recent survey of the Rochester milk supply under the direction of Dr. Charles E. North. The weights shown were recorded at six-month intervals during two years and a half previous to the end of 1918. Though the cottages had a population of about thirty children so few were taken because the population was constantly shifting through discharges and admissions and also because weight records were not taken from the histories of any children who were under medical treatment or for whom had been prescribed medicines or emulsions of any kind. In other words, the data was limited to those children who were sufficiently normal as to health and general physical condition to be considered as not needing medical supervision. From the table it was observed that there was a gain in weight for each six months with the exception of the fourth six-month period, namely, the period between January 1 and June 30, 1918. The explanation offered for this by the superintendent was that because of his desire and that of the governing board to comply with the request of the Federal Government for food conservation, particularly animal fats, that during the first six months of 1918 oleomargarine was substituted for butter in the diet of the children and the workers in this home. The table showed that nine of the twelve children lost weight during this period. One girl who was considerably above the theoretical weight and height of a girl of her age did not lose weight during that period, though her progress was slightly retarded as compared with her gain during the previous and succeeding butter periods. The superintendent of the home was authority for the statement that the oleomargarine contained no butter, and this statement was corroborated by the manufacturer of the product. The gain in weight during the last six months when butter constituted a part of the diet showed that the children not only experienced a normal gain, but that they made up the loss in weight they had suffered during the previous six months, or the oleomargarine period. In other words, they had a progressive increase in weight during the two and one-half years, upon which the influence of the oleomargarine period was insignificant.

Books Received.

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SHELL-SHOCK AND OTHER NEUROPSYCHIATRIC PROBLEMS. By E. E. SOUTHARD, M.D., Sc.D. 982 pages with illustrations. Published by W. M. Leonard, Boston.

THE PRINCIPLES OF GYNÆCOLOGY. By W. BLAIR BELL. 660 pages with illustrations. Published by William Wood & Co., New York.

GRUNDRISS DER PHYSIOLOGIE ZWEITIR TEIL: BIOPHYSIK. By Prof. Dr. O. WEISS. 454 pages with 170 illustrations. Published by Georg. Thieme, Leipzig.

PRAKTISCHE BAKTERIOLOGIE. By Dr. L. PANETH. 158 pages with 7 illustrations. Published by Urban & Schwarzenberg, Berlin and Vienna.

THE NUTRITION OF THE FETUS. By J. MORRIS SLEMONS. 49 pages. Published by Yale University Press, New Haven.

YEAR-BOOK OF PHARMACY. Editor of the Abstracts, J. O. BRAITHWAITE. 548 pages, with illustrations. Published by J. & A. Churchill, London, England.

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Original Articles.

APPLIED CALCIUM THERAPY:

A STUDY OF DEFICIENCY DISEASES.

BY JOHN AULDE, M.D.,

PHILADELPHIA, PA.

IN a study of the medicinal properties of calcium, or lime salts, it will be worth while to review briefly the function of minerals from both the physiological and chemical viewpoints—because the mineral constituents of the human body determine or decide the capacity and stability of the various structures, bone, muscle and nerve. Included also in this category we have the digestive apparatus, the urinary system, the glandular appendages and the reproductive organs. Although my studies extend over a period of more than twenty years, during which time I have published numerous papers, the subject of calcium therapy has received but slight attention—until within the past few years. In my early studies I found a considerable literature devoted to the scientific evaluation of calcium salts, but I had to work out the clinical applications without the aid of laboratory tests as a means of control. More recently, laboratory investigations relating to the dietary of humans, experimental studies to determine the effect of dietary restrictions upon animals, together with the gradually increasing number of favorable clinical reports bearing upon the empirical employment of the calcium salts, encourages me to make an effort to elevate this practice to the position it is entitled to occupy, that is, the scientific and practical.

The proposed study will naturally include an inquiry into the essential factors responsible for various diseased conditions which we know are traceable to dietary deficiency—although it would be impossible to cover the entire field even in a lengthy article. In addition to this, the item of infection should not be overlooked. Thus, it will be evident that we have to deal with a multiplicity of delicate and complex relationships involving both physiology and chemistry—as well as the personal equation, the psychological factor, not to mention the biological questions. Such a substantial foundation is demanded as a preliminary to the clinical demonstration that calcium deficiency in the blood and tissues is a common condition and a serious obstacle to recovery in all disease, acute, subacute, and chronic, infectious and noninfectious.

In order to maintain the reader's interest, and if possible secure his active cooperation in the laudable work, let me refer to a recent clinical report which shows how very near investigations may approach the actual solution of a mysterious or occult problem, but fail simply because they fail in persistence.

Thus, Howland and Marriott reported eighteen cases of idiopathic tetany (convulsions) occurring in children in which the calcium content of the blood serum showed a deficiency of approximately 40 per cent., and the administration of calcium chloride with the food proved efficacious. Their conception of the malady is, "that some factor, at present unknown, causes a reduction of the calcium content of the blood," and an editorial writer (*Journal, A. M. A.*, Feby. 15, 1919, p. 496), remarks that it is "this profound phenomenon that remains to be discovered" because "scientific curiosity . . . seeks the ultimate causes of disease."

Apparently, *this "profound phenomenon" had been completed explained* in the report of Dr. Rogers (*Lancet*, December 1916), a British medical officer, India service, in the form of a clinical record of 1,000 cases of uremic poisoning in the algid stage of cholera. Upon adding 4 grains of calicium chloride to the pint of physiological salt solution for transfusion the mortality was reduced 70 per cent.

For the benefit of the general practitioner who has not read up on experimental investigations and would be inclined to doubt the value of such a small dose of the calcium, it will be in order to analyze the situation, as follows: There are two types of uremic poisoning—one with profound depression, in which the output of ammonia is largely increased, but there are no convulsions; in the other the excretion of ammonia is retarded, convulsions being the dominant feature. In all cases, however, the calcium content of the blood is deficient, so we have a condition analogous to that found in convulsions in children, but the pathology still remains obscure.

It may be of some practical assistance in this connection to mention that Noël Paton some time ago advanced the suggestion that convulsions in children were brought about by or through "an error in the chemical exchanges of the organism," and he placed the responsibility on guanidine derivatives, but the writer is of the opinion that we can reach a more substantial basis, one that is susceptible of actual demonstration. For example, certain animals, deprived of the suprarenal cortex will die from convulsions similar to, if not identical with those occurring in uremia, and yet the blood urea in these cases is below normal, and besides, urea is not poisonous. As a matter of

fact, uremic poisoning is a myth, because it can be shown that calcium depletion interferes with glandular activity, and this is "the error in the chemical exchanges of the organism," and the evidence will be complete when we have demonstrated how calcium depletion is induced.

Laboratory investigations come to our aid here by demonstrating that an enzyme produced by the thyroid gland is responsible for converting ammonia from the systemic nitrogen, that another enzyme from the suprarenal cortex acts upon ammonia, changing it into a poisonous substance, and finally, a parathyroid ferment converts this toxic principle into the harmless urea. That is to say, the poison of uremia is an intermediate product between ammonia and urea and results from glandular deficiency. Will it be considered a gratuitous assumption that this explains in a measure "the error in the chemical exchanges of the organism?"

Of course, the evidence is not complete, but it will answer as a working hypothesis. Any tissue, muscular, glandular, or nervous, may cease to function owing to bacterial infection, traumatism, or chemical deviation, and it is the latter we are required to deal with in the cases under consideration. In all cases of illness, acute and chronic, infectious and noninfectious, there is an initial period of increased alkalinity—nature draws ammonia from the blood and tissues, and at times this is successful, as in the profuse sweating, free bowel movements, increased flow of urine, etc., but this effort has its limitations. Then follows an acid excess, the alkali reserve is reduced and the oxygen-carrying capacity of the blood is lessened, and this is substantially the condition we have to contend with in the case of convulsions in children—idiopathic tetany—and in the so-called uremic convulsions. There is defective glandular action due to calcium depletion, a condition which will be understood from a brief study of the physiology and chemistry involved.

Acid excess involves tissue change, and this deviation modifies function, the diminished mineral constituents in the blood being merely a symptom. The immediate effect is to deplete the calcium content, magnesium taking its place, but while calcium and magnesium are interchangeable and complementary in their action, they are also antagonistic. Calcium being the stronger base, combines with the acid, magnesium taking its place; normal nucleoproteins are converted into magnesium nucleoproteins, which lack the property of imbibition (absorption).* Function may be restored by the administration of calcium —to promote dissociation according to the law of mass action, and this is what is accomplished when calcium is administered for the relief of infantile tetany and the convulsions occurring in uremia.

*This fundamental fact has a direct bearing on Woodyatt's theory of "water retention" in febrile states. "Thirst fever" in edema is due to magnesium infiltration, an acid condition of the intracellular content giving rise to the colloid-chemical deviation. Glucose solution, *an emulsion colloid*, given intravenously, raises the temperature of a dog readily to 111° F., and even up to 125° F., simply because it interferes with the normal function of the intracellular *suspension colloids* of the protein molecule—this effect is entirely independent of any suppositious heat center.

To illustrate: I have a spring on my country place, the water of which carries, all told, 2.7 grains of mineral constituents per gallon, 60 per cent. of which is calcium. The remaining portion, 40 per cent., includes magnesium carbonate, 12 per cent., with sodium chloride 28 per cent., and yet this very small percentage of mineral content, owing to its proportions, enacts the rôle of an active and efficient diuretic, increasing both the urinary water and the solids.

Some ten or twelve years ago I had a chat with Dr. Meltzer regarding the remote effects of magnesium sulphate introduced into the spinal canal for the relief of tetanus. I asked him if it would be the proper procedure, in case evidences of collapse appeared, to administer calcium salts, to which he promptly replied that it would cause instant heart-block, so that accounts for the physiological antagonism.

Perhaps additional evidence will prove acceptable, and shed further light upon this rather difficult problem. During the past year I have administered thousands of intravenous injections of calcium salts, alone, and in various combinations to several hundred patients, and while my investigations are still under way, I may anticipate the final outcome by a very brief reference to some of the interesting and instructive results. In the early stage of typical cases of influenza the intravenous administration of 2 grains of calcium chloride in 10 c.c. of sterile water almost invariably produces profound shock. If the patient is placed in the recumbent posture recovery takes place in a few moments, and within five or ten minutes there are absolutely no subjective symptoms of the disease—and this freedom from the malady may continue for several hours. Other patients, suffering from subacute and chronic disorders showed the same sensitiveness, and to counteract shock in all cases of acid excess, indicated by the salivary and cutaneous reactions to litmus, and the reflexes, a small dose of strychnine arsenite (gr. 1/50), was administered a few minutes before the operation, the results being entirely satisfactory. Later, this flimsy expedient was discarded, substituting in its stead the conjoint employment of calcium and magnesium chloride in exactly the reverse proportions (9 parts to 1), which has been found to produce the optimum growth in plant life, and as a result there were no further untoward symptoms.

An interesting case of persistent insomnia will serve to illustrate the practical side of this question. The patient is a young man, aged 25, employed as a machinist, and aside from a rather sallow complexion gives no indication of disease, but he has been unable to sleep for several months. His appetite is capricious, the bowels are constipated, and he feels tired all the time, more so in the morning than at any other time in the day. The injection produced profound shock, but the patient recovered in the course of a few minutes and said he felt "first-rate." Internal medication included small doses of calcium phosphate, together with gr. 1/200 copper arsenite before meals, and at the end of the week, on a regulated dietary, he reported that he had slept well every night, his appetite was good and the bowels

regular, but the second injection produced precisely the same effect as the first.

This evidence confirms the theory of substitution or infiltration and dissociation, and at the same time accounts for heart-block, as stated by Dr. Meltzer, but the modus operandi of calcium efficiency is not yet exhausted, because it presents a singularly instructive scientific aspect. Both calcium and magnesium are proximate principles and possess several important properties in common—they are antacid, catalytic, and reconstructive. Whatever may be the chemical status in the course of distribution, we know that ultimately they become colloidal and that this is their intracellular condition. As colloids they acquire increased surface energy and enact the rôle of ferments—mineral ferments, but here the analogy ceases. Approximately, calcium constitutes 50 per cent. of the inorganic matter of bone; as compared with magnesium it is in the proportion of 1 part to 3 in muscular tissue and 1 part to 10 in the central nervous system, and this is probably true of the nerve structures throughout the body.

Now, suppose the calcium content of the blood stream is diminished 40 per cent., it follows that the tissues, including nerve tissue, are being drawn upon and unable to meet the demand. When the central nervous system or any part of its mechanism, the muscles, the bone structure, or the glandular appendages, including the ductless glands, are robbed of their essential chemical constituent, their normal function is arrested or destroyed, and this serves further to elucidate the pathology of infantile tetany and uremic convulsions.

Calcium depletion of the tissues, as stated, is brought about by chemical deviation, incident to disordered function, which gives rise to acid excess, and this harks back to dietary deficiency and coincident or consecutive impairment of the digestive capacity. There is substitution or infiltration, and as a consequence, or as a result, the uninterrupted transmission of nerve impulses is hindered, arrested, or destroyed. We have conclusive evidence of this in the successful employment of magnesium sulphate intraspinally for the relief of tetanus and in surgical operations, also in the relief afforded by calcined magnesia (magnesium oxide) in acute bowel troubles in both children and adults.

Perhaps, in the near future, modern laboratory technique will enable the physiological chemist to confirm my belief that oxidase is a factor in this transformation, that it combines with the colloid magnesium particles, forming magnesium oxide, the only known chemical which unites with organic colloids in alkaline solution, and that is my conception of "the error in the chemical exchanges of the organism" that is responsible, not alone for convulsions, but also for a long list of chronic ailments which have resisted the earnest solicitations of our most eminent physicians.

Dietary Deficiency.—To the layman dietary deficiency simply means a lack of food, but to the intelligent physician it has a far-reaching significance. For example, when the physicians connected with an orphan asylum in New York found scurvy making serious inroads on their patients with orange juice unobtainable they resorted to canned tomatoes, when it was demonstrated that the tomato juice answered every purpose—but these children would not have been susceptible to scurvy had their dietary been properly proportioned. At the present time there are probably a hundred thousand persons in the Southern States suffering from pellagra, a disease which has been a scourge in Southern Europe for more than a century, but competent investigators appointed by this government have shown that the disease does not penetrate the mountainous sections of the country, where the grain supply for the family is provided by the local facilities. In this instance, at least, disease can be traced directly to the use of refined and denatured food. Beriberi, a form of multiple neuritis which has been known to affect entire sections at a time, has been banished by providing what is known as a balanced dietary —and my personal observation shows that the dietary is the most important factor in the treatment of neuritis as seen in this climate. In the case of rickets, no one will hesitate to say the disease has been brought about by or through dietary deficiency, and as the all prevalent disease, tuberculosis, has shown a markedly favorable response to calcium medication, we cannot resist the analogy that here, also, dietary deficiency must be an important factor, producing a condition which makes the system especially susceptible to the infection.

It is not sufficient, then, that a person has all the food he wants—because we know that many such persons suffer from hunger. In other words, the body tissues lack something, and it is this sense that gives them a constant craving for something they know not what. The hunger sense has frequently been so pronounced in hospital patients that the medical attendants seriously considered sending them to an asylum, all because of the mistaken notion that starvation will cure disease—when the disordered mentality may be traced directly to dietary deficiency. This is well illustrated in the record presented by Dr. Graves (*British Medical Journal*, April 5, 1919, "Response of Calcium Shown in Maniacal States"). He found that the action became evident within twenty-four hours following its exhibition. "The acute mental symptoms were alleviated without the production of the stupor so commonly observed after sedative drugs, and the circulatory response was equally interesting. Instead of the rapid, at times almost uncountable pulse with its flaccid artery and low, variable systolic pressure, the pulse became slower, the artery normally constricted and the pulse-wave stronger, indicative of an improved action of the ventricular myocardium."

The foregoing record brings to mind a case submitted to me more than ten years ago for hypothetical treatment. The patient, a woman 39 years of age, living in very ordinary circumstances, had suffered three or four weeks from acute mania, requiring the constant attendance of a nurse, nourishment being administered by means of a tube passed through the nose. Two consultations by a reputable alienist had brought no results and the physician had reached the limit

of his armamentarium. Calcium carbonate, in substantial doses, was recommended, the powder to be added to the milk given through the tube, with the result that the patient was convalescent in two days and made an uneventful recovery, but the doctor had a large bump of skepticism and told me afterwards that he did not report recovery, being under the impression that relief was merely a fortunate coincidence.

Now, it must be perfectly clear to the most superficial observer that unsuitable food, no matter how it is prepared or eaten, will eventually disturb the digestive apparatus, say the stomach or the intestinal tract. Thus, we have decomposition of animal foods in the stomach and fermentation of the starchy foods in the intestine; and if the stomach is dilatory, or unable to perform its functions in digesting all the animal foods introduced, this partially digested and decomposing food is carried along to the lower bowel where microbian digestion takes place—it is under such conditions that patients complain of the fetid breath. In these circumstances, the liver is called upon to perform extra work in destroying or oxidizing the poisons thus formed, but after a while this organ also complains, and unless it receives better treatment, it rebels, in the form of inflammation or abscess. The pancreas is likewise intimately connected with these disturbances, the nervous mechanism of which is rather complicated, but there is no obscurity when diabetes supervenes.

Similarly we can trace the incipiency of such disorders as kidney affections, showing their relation to blood dyscrasias, and the same is true of disorders of the nervous system, because the fact is patent that derangements of this character are not of mushroom growth, they do not spring up over night.

Reference should be made here to disorders of the lymphatic system and their special relation to deficiencies in the ductless glands, for it must be apparent that the functions of both are closely related and interdependent. Take almost any class of dyscrasias, such as derangement of the central nervous system, heart affections, and even intestinal disorders, it must be apparent that physiological or chemical deviations in the blood-vascular system must produce a corresponding deviation in the lymph-vascular system. Thus, when the blood is deficient in calcium and is surcharged with acid the normal function of the lymphatic glands is hindered or destroyed, and in proof of this we have but to observe the increasing number of fatalities from what is clearly and demonstrably due to embolic infection. Indeed, it is not too much to claim that a sluggish lymphatic system is largely responsible for many if not most of the so-called chronic ailments, and there can be no question but that so-called catarrh stands at the head.

For the correction of dietary deficiency as a means of avoiding the pitfalls and disasters incident to chronic ailments, it is necessary that we should impress upon our patrons the importance of the dietary and use our best endeavors to advise them of the most practical methods of selecting the essentials. Thus, it is the first essential that the protein selected should be of good quality in order that the rebuilding process may be regularly and persistently maintained. This is a most important factor during childhood and adolescence, but it is none the less essential during the entire period of adult life, if it is desired to maintain health and promote longevity. What, then, is the outlook, if we are to judge the public by the "system" outlined in the following colloquy between two women in a department store—an actual occurrence: "We've just simply decided to do without meat altogether. I said to John—" "Oh, we have too, and instead of butter we're using—" "Of course we have to have milk for the children, but cream—" "Did you say you'd take the blue broadcloth, too, madam—" "Yes, all three. And John hates to give up his bacon and eggs, but—" "Harry never takes anything but a little toast and—" "Yes, madam, the three come to $245." "Very well; charge. Yes, dear, dear, everything so high."

When starchy foodstuffs are taken in abundance, with or without fats, the tendency is to create corpulency, but this is rather a disadvantage than a benefit, and in time it is bound to react, because the normal facilities for manipulatings fats, sugars, and starch are overtaxed and the artificial structure falls to the ground like a house of cards—along comes influenza, typhoid fever, erysipelas, a succession of boils or a carbuncle, or even a slight (?) ailment like tonsillitis, and it is like throwing a monkey wrench into the machinery.

Disease an Effect.—It is not necessary to discuss the negative side of this self-evident proposition, but an investigation of the various causes which contribute to produce the effect will prove interesting and instructive. Time was when it sufficed to state that the causes of disease were either extrinsic, like diphtheria, typhoid, scarlet fever and tuberculosis, or intrinsic, such as coccus infection, involving the teeth, the sinuses, the pleural cavity, the bronchial tubes, or the bladder. Even most cases of indigestion were regarded as endogenous. Now, we are compelled to correlate physiology, psychology, and chemistry as essential factors in the cause of disease, and this conclusion by no means excludes infection. However, it will be developed that infection, so intimately connected with, and dependent upon, chemical deviation, must be regarded as a physiochemical problem and treated as such.

For example, a person feels slightly indisposed; the following day he seems more depressed and decides to consult the doctor, who makes an examination and advises him that he is suffering from some minor ailment, which at the time is in its incipiency, tonsillitis, gastritis, intestinal indigestion, or influenza. Whatever the ailment, there is a physiological change, and coincidentally or consecutively sensation is affected. In addition, we must consider the probable chemical changes—in the blood and in the tissues, including nerve tissue—and, of course, the entire morbid complexus hinges upon impairment in nutrition, or lessened resistance, by or through the inorganic depletion incident to the chemical deviation. And the function of the ductless glands must not be overlooked in studying the pathology.

To illustrate in a general way the practical value of calcium medication the following records are presented:

Miss S., aged 19 and the picture of health, has been compelled to give up her course of study to become a nurse. There is pronounced spondylitis, the entire spine is exquisitely tender; there is a well-marked pyelitis and anuria has reached the danger point, not over six ounces of urine being voided in the twenty-four hours. The most forbidding symptom, however, is an inflamed left ovary; at the menstrual period the external tumor is half the size of an orange, and is attended with excruciating pain, the menses being irregular and scanty, with profuse leucorrhea.

Medication included substantial doses of calcium sulphide and calcium phosphate together with eight to ten glasses daily of the spring water mentioned along with a regulated dietary—with the result that the urine was promptly increased in quantity, the pus disappeared, pain along the spine became less acute, and the ovarian pain gradually subsided, so that the third menstrual molimen appeared without warning and was apparently normal in every respect.

Mrs. P., aged 39, of medium height, but very thin—weight has been reduced from 140 pounds to about 90—has been under treatment for abdominal pain for over a year, first with the local physician, then with specialists. She was for six weeks in a sanatorium, where treatment was conducted for tuberculosis, because there was continued elevation of the evening temperature—100° to 102.5° F. Last November she consulted a well-known local surgeon, who pronounced her malady cancer, adding that she would not live beyond the following February, and it would be far better that she died sooner, because of the continued pain incident to the progress of the disease.

The psychological factor in this case was predominant. The lady's husband called upon me the latter part of May, gave me a complete history, and from his description I was of opinion that it was a clear case of mebranous enteritis. There was almost constant pain and tenderness in the right hypogastric region with recurrent attacks of severe pain, and following these attacks the stools were charged with shreds, and this experience had been almost constant from the earliest history of the case. The gentleman said his wife had given up all hopes of recovery and had positively refused to see another physician; she was persistent in her belief that if eight doctors had utterly failed to relieve her sufferings it was useless to make any further effort. However, I offered to take a chance in order to effect a reconciliation, and as a result of the employment of calcium sulphide conjointly with copper arsenite she began to improve, but she was not able to stand the journey to the office.

On June 15 this patient came to the office, when the diagnosis of membranous enteritis was confirmed, about ten inches of the transverse colon, including a portion of the hepatic flexure, being involved. The temperature was 100° F., the pulse 120, and the patient appeared to be so frail that she was advised to remain in bed, or lie on the sofa during the day, returning when she had gained sufficient strength. On August 7, the patient returned, much improved, reporting that the temperature was normal most of the time, that no more shreds had shown in the stools, and that she had a good appetite, and was conforming as far as possible with the dietary instructions; but the pulse was still rapid, 108 per minute, and there was considerable tenderness over the affected area on percussion. At this visit she had an intravenous injection of colloid copper arsenite, 3 c.c. in 10 c.c. of sterile water, and apparently this proved the turning point in the treatment, as she returned a week later greatly improved. At this visit she had a second intravenous injection, and from that time forward recovery had been persistent and uneventful—weight, October 1, 107 pounds. The menses, arrested for six months past, have reappeared, normal in every respect.

It remains to be added that the disorder was clearly an effect, the cause being traceable to unsuitable dietary, giving rise to intestinal indigestion, acid excess with calcium depletion, and along with this we had a disordered liver function which, of course, received careful attention, but coccus infection cannot be excluded.

Too much stress is liable to be laid to the infection while the physical condition of the patient is neglected, as the following case will show. It should be passed as a concrete illustration of deficiency disease.

Mrs. M., aged 26, and six months pregnant, presents every symptom of physical exhaustion. Her oldest child is three years of age and another is nine months, and for the past five months she has suffered continually from nausea and vomiting. Besides, she has tuberculous infection and her physician has told her husband that it would not be for the safety of the unborn child to take treatment, so that no medication has been advised for either condition.

Physical examination discloses infiltration involving the left apex anteriorly, with moist râles, together with prolonged expiratory murmur posteriorly involving the right apex; the temperature is 98° F., the pulse-rate 84, and aside from some puffiness of the feet and ankles there are no untoward symptoms.

Treatment was begun on Friday, one and one-quarter grains of calcium sulphide together with 10 grains of calcium carbonate to be taken before meals, and along with this a regulated diet. The patient reported on Monday that the nausea and vomiting had subsided, that she had a good appetite and had eaten freely; also, that the cough had almost disappeared, being noticeable only in the morning and on lying down at night and that the expectoration was much diminished. She also brought a specimen of the sputum which the chemist examined and sent the following report: "Soft mucus, moderate amount of pus; no blood and no streptococci; tubercle bacilli are not numerous."

On receipt of this report, hypodermic injections of nuclein charged with a small percentage of formalin, every other day, were added to the treatment, with the result that improvement was perceptible from day to day—the apex infiltration area improved, the prolonged expiratory murmur disappeared, the swelling left the feet and ankles, the patient slept well, the appetite improved, and to all appearances she was in perfect health. A second sputum examination two weeks later showed, "Not many tubercle bacilli," and I feel confident that the infection will be cleared up completely in the course of a few weeks.

There is a densely populated and rapidly expanding twilight zone situated midway between heart disease and neurasthenia which supplies us with a vast number of variations illustrating deficiency disease. The men included in this catagory drop off suddenly, at the dining table, on the street, or in their office chair, but the women, for the most part, are carted off to the sanatoriums, where they are treated with dialectics and subjected to foolhardy dietary restrictions, all of which are of slight practical benefit, simply because they do not aim to correct or relieve the paramount defect, the mineral deficiency which has developed gradually as a result of the long continued acid excess. The following characteristic cases are offered in evidence:

Mr. B., aged 46, is apparently well nourished and "looks" it, although his weight has been reduced from 170 to 156 pounds, but for the past two or three years he has suffered from "nervousness," and since his business requires that he employ considerable help, the uncertainty in prices has not contributed to his comfort. He has consulted several physicians without benefit, and that, together with the conflicting diagnoses, leads him to believe he is a very sick man. One gave him dilatation of the heart, and this along with the occasional attacks of dizziness, has created not a little alarm, because he reads the newspapers.

Physical examination shows slight valvular incoordination, pronounced intestinal indigestion, and, in addition to this, we have an inactive liver. The salivary reaction is normal, the knee-jerk exaggerated, the pulse-rate is 72, but there is increased arterial tension with the second sound of the heart accentuated.

In the treatment of this class of cases it is of first importance to counteract the substitution or infiltration, and in the case under consideration it is possible to do this, when the "nervousness" and cardiac derangement will disappear. The treatment for the emergency is of permanent value, and collateral treatment for the indigestion, the inactive liver, or the sluggish condition of the lymphatics may be instituted at the same time. In the present instance it seems that the liver function received first attention, while my record shows that the emergency treatment included calcium iodide and phosphate, one and a quarter grains of each together, before and midway between meals, that is, five times a day. At the end of a week the "nervousness' was completely under control, the patient said he felt greatly improved and encouraged, but the valvular incoordination was still present, and for the relief of this symptom, collateral treatment was discontinued for the liver and calcium sulphide substituted, under the impression that this would "stimulate" the lymph-glandular system—and it proved a success. It is sufficient to add that this patient made a complete recovery.

Mr. L., aged 49, is an executive official in a large corporation. During the war he says he acted on as many as a thousand telephone calls in one day, but he finds it difficult to get away from himself, introspection seems to have gotten the better of him. He has consulted several physicians and become discouraged. It is practically impossible for him to concentrate his mind for any considerable time upon even the most important business problems which are coming before him for decision from hour to hour. One physician thought he had a dilated heart, another that he had only valvular trouble, and a third was under the impression that he had prolapsus of the transverse colon and an operation was the only certain remedy. There were no complications in the way of liver trouble, lymph stasis, or indigestion, but the dietary was wrong, beginning every morning at the breakfast table. If this patient had been a woman, "go away, seek the mountains or the seashore," or "the only place for you would be a sanatorium where you can secure rest, rest, long continued and repeated," would have been the professional advice. This would have been a capital case for Dubois' "educative efforts," or Payot's "meditative reflections," because it was apparently purely psychological. On the contrary, it was purely chemical, the psychological element being directly traceable to the physiological imbalance, while the whole symptom-complex rested on the chemical deviation.

Treatment consisted in the administration of calcium iodide and phosphate, one and a quarter grains of each before and midway between meals, and as a means of conciliation, he was advised to secure a supply of effervescent sodium phosphate, to be taken in case the bowel movements were not satisfactory. A week later the patient returned highly elated, with the announcement that I had proved a true prophet, that he was another man, and he had taken the phosphate of soda but once, as the bowel movements were all that could be desired.

Mr. S., aged 36, employed in secretarial work in a large corporation, suffers from "nervousness" and cystitis, dating his indisposition back to the influenza epidemic last autumn, when he and his entire family were under the weather, although he never gave up his regular work and spent most of his time at home looking after the welfare of his family. The present weight is 156, although last summer he weighed 180 pounds; says his work bothers him, that he is unable to give it proper attention because he feels so "nervous," and getting up a dozen times at night to empty the bladder robs him of much needed rest.

Physical examination shows some intestinal indigestion, owing, probably, to an unsuitable breakfast; the heart action is "quick," the characteristic "boom" often found in such cases is absent, but the second sound is accentuated and the pulse-rate is 120 per minute. The digital tremor is marked, but the reflexes are normal.

This is almost a typical case of "The Magnesia Heart," later referred to, originally designated "The Irritable Heart of Soldiers," by DaCosta, and more recently called "Effort Syndrome," also "Neurocirculatory Asthenia." The case has been brought forward at this point for the reason that the three cases can be viewed or surveyed at the same time, since they represent the variations liable or likely to be present when calcium depletion is the dominant factor in deranging the mechanism of the nervous system. Thus, the first case is attended with complications requiring medical attention as well as dietary instruction; the second case presents what may be termed a disseminated infiltration, while in the latter case the cardiac nerve supply is impaired—at least, that is the most conspicuous feature.

Medication was first directed to the cystitis, one and a quarter grains calcium sulphide, together with one-twentieth grain strychnine arsenite, before meals, the latter being added to steady the circulation and improve the musculature of the bladder. At the end of a week the cystitis had subsided, but the tremor and rapid heart action remained unchanged, when the treatment was changed to one and a quarter grains each of calcium iodide and phosphate, this dose to be taken before and midway between meals and at bed hour. At the expiration of one week the tremor had disappeared, the heart action being reduced in frequency, 96 per minute; the patient said he felt much more comfortable, and there had been no bladder trouble, so that he secured a comfortable night's rest. Internal medication was continued and, in addition, the patient received two intravenous injections of calcium iodide, seven and one-half grains each, one week apart, with the result that at the end of three weeks the pulse-rate was 72 per minute, the heart action normal in every respect, and there were no tremors. It remains to add that the patient's weight had been reduced ten pounds during the four weeks while under treatment, due in part to the restriction of liquids with meals, and partly to alterative effect of the medication, but he said he felt much better than when his weight was 180 pounds.

Typical Chemical Deviations.—This paper has already far exceeded the limits mapped out for it, and yet I am of the opinion that it will be worth while to put on the record a limited number of ordinary clinical cases for the purpose of demonstrating "the error in the chemical exchanges of the organism," which is responsible for the so-called deficiency diseases. I had in mind to take up and present quite a collection of cases, including arthritis, paralysis from infectious embolism, arteriosclerosis, and skin diseases, the latter with especial reference to acne and psoriasis, but they must be postponed for future consideration.

Neuritis.—Mr. W., aged 46, is employed in office work in a large manufacturing plant, and although he is rather spare in build, he is not emaciated, but he has suffered from neuritis, involving the legs, for the past six years. Intestinal indigestion is pronounced and he admits that he is regularly awakened about three o'clock every morning, also that he experiences fre-

quent jactitations which wake him up—but his rest is unsatisfactory, owing to the persistent pain in the legs. During the first four years of his suffering he consulted different physicians without benefit, and for the past two years he has attended a hospital clinic regularly every week, and says he is worse than when he began, although he has had the advice of twelve different physicians. At the first visit he was asked particularly if he had pain and its location, when he stated that he had pain all the time, and located the areas.

Treatment consisted in the exhibition of calcium sulphide, together with small doses of copper arsenite, before and midway between meals, and in addition he received an intravenous injection of calcium iodide, 5 grains in 10 c.c. of sterile water. Five minutes later, he said the pain had vanished. A week later, he reported that the relief from pain had continued for about one and a half hours, but it had not returned as severe as before and he had experienced one good night's sleep. Subsequently, there was no material change in the treatment, progress was uninterrupted, and at the end of three weeks all unfavorable symptoms had disappeared and he had gained 14 pounds in weight.

Mrs. M., aged 55, housewife, has suffered for over a year from neuritis, involving the right sciatic nerve. Her husband, who is under treatment, says he wants her to go to a doctor, but she persistently refuses—and he would appreciate the courtesy if I would give him the medicine with directions. Treatment consisted in the employment of calcium phosphate and iodide, one and quarter grains of each, together, before and midway between meals. A week later, when the gentleman called, he reported that his wife had made a complete recovery.

Mrs. S., aged over 60, writes that she has had a return of the neuritis for which she was treated five years ago, but she does not feel able to make the journey to the city, and would like to have a supply of the medicine sent to her with directions. Treatment was substantially the same as that recommended above, except that the medicine was also to be taken at bedhour—six times daily.

A few days later, a letter was received, stating that the package had arrived in the morning, that she had taken the medicine during the day and experienced the first full night's rest in four months.

Neurasthenia.—Mrs. H., aged 22, weight about 100 pounds, is a semi-invalid, and has been under medical treatment for some time past, but without apparent benefit, as she still suffers from parphobia. Her husband is in France, and, of course, that is a cause for worriment, but she has other ailments—acne, eczema, dysmenorrhea, gingivitis, goiter, arthritis, scoliosis, and constipation, and practically, the entire morbid complexus is traceable to dietary deficiency. The salivary reaction is acid, the knee-jerk exaggerated, and the pulse-rate 96 per minute. Taken as a whole, this was an exceedingly unpromising case, and as she resided at some distance from the office in an adjoining State, she could not afford to make visits oftener than once a week.

Treatment consisted in the employment of the calcium iodide, five grains in solution intravenously, and along with this the internal administration of calcium iodide and phosphate, one and a quarter grains of each, to be taken together before and midway between meals—and as in all such cases, special stress was laid upon the dietary. In addition to the above, it should be stated that measures were taken to relieve the constipation, and as a result, the patient reported four days later greatly improved—the salivary reaction to litmus and the knee-jerk were normal, but the pulse-rate was 108 per minute. The treatment was varied from time to time to meet the special conditions presenting, but progress was uninterrupted—the acne and eczema disappeared, the dysmenorrhea was relieved, normal menstruation was reestablished and with it the goiter was reduced; both arthritis and gingivitis were conquered, and the discomfort incident to the scoliosis subsided. This patient came under observation April 1, treatment was discontinued early in June, about the time her husband returned from abroad, and when she called again, the latter part of July, I was able to inform her that pregnancy had taken place.

Golter.—Miss M., aged 19, weight about 100 pounds, learning the millinery business, came under treatment a year and a half ago suffering from "sore throat," but examination showed that she had enlargement of the thyroid, the affected area being confined to the right side. The history developed the fact that she had been under treatment for two years preceding for this ailment, and in the furore existing at that time for the removal of focal infection, the tonsils had been removed. As a matter of fact, removal of the tonsils had produced no apparent effect upon the thyroid enlargement, so that the "nervousness" had rather increased than diminished.

Treatment for the local irritation was followed by the usual medication, one and a quarter grains each of calcium iodide and phosphate, to be taken before and midway between meals—five times a day, special attention being directed to the dietary, by cutting out the sloppy breakfast. In the course of a few weeks all symptoms subsided and so far as I can learn there has been no return.

Judging from the numerous articles appearing in current medical literature on this subject, together with the increasing number seen on the streets and in the every-day conveyances, we are warranted in assuming that this affection is almost universal throughout the country, that it is epidemic. Instead, therefore, of advancing my personal views regarding the etiology of goiter, I prefer to quote the following extracts from a letter dated March 6, 1918, from the late Dr. W. C. Whitwell, of Salmon, Idaho, a highly respected and well-known physician in that section of the country. He says:

> The longer I practise medicine along the line of the principles laid down in your book, "The Chemic Problem in Nutrition," the more satisfaction I derive from the treatment of disease. I am simply enthusiastic over the success I am having in treating the various forms of chronic ailments. I am now treating successfully more than twenty-five cases of goiter. Usually, within ten days or two weeks the thyroid gland begins to soften and gradually reduces in size until all enlargement disappears. I first correct the digestive troubles and insist upon a suitable diet, and I depend upon calcium iodide and calcium carbonate to do the work.
>
> We have so much alkali in the soil here, which contains a large percentage of magnesium, that I feel confident this is the cause of the large increase in the number of cases of goiter. Before so much of the land was put under cultivation and the crops irrigated, we had but few cases of goiter. Now, hundreds of cases have developed within the last few years. . . . In this country especially, so many ailments are undoubtedly caused by magnesium infiltration that I hardly know of any disease that cannot be cured or greatly benefited by this line of treatment.

In a previous letter Dr. Whitwell had advised me that the water supply of the Salmon River Valley was derived from the melting snow on the western slope of the Bitter Root Mountains and "gathered" none of the essential mineral salts, the geological formation being principally slate and granite—and that seems to dispose of the antiquated theory that goiter is brought about through an excess of lime or calcium in the drinking water.

"*The Magnesia Heart* is the name I have employed provisionally to cover practically all functional derangements dependent upon disordered innervation arising from magnesium infiltration and involving the cardiac nerve mechanism, together with the disturbances due to organic changes in the circulatory apparatus from the same cause."*

Like many other names and terms, it conveys

*Quoted from "The Chemic Problem in Nutrition—Magnesium Infiltration," p. 169.

a double meaning; it denotes a physical condition, while it reflects or implies (coordinates?) a physiological or pathological significance—denotation and connotation. The name is descriptive, technically correct, and incidentally of therapeutic value, calcium being the antidote.

The present would seem to be an opportune moment for directing attention anew to this peculiar and, so far, unrecognized pathological condition which has baffled physicians for more than fifty years. In studying the symptoms, objective, subjective, and associated, I have taken every possible precaution to consider the question from every available angle and have determined definite measures for solving the occult problem—in other words, I have developed a program. Thus, problems are founded upon premises, they deal with theories; programs are determined from scientific data, they are based upon facts. The following cases are submitted in evidence:

Mr. S., aged 53, weight 125 pounds, is employed in general work about a railroad station, and has been rather debilitated for nearly a year. Medical treatment has not proven of permanent benefit and he is compelled to lay off from time to time, thinking he may be able to recuperate through rest. There is a constant feeling of depression and he is unable to stand continued exertion because of shortness of breath—even walking upstairs requires a strenuous effort. The pulse-rate is 108 per minute, small, but not receding, and it is regular. The heart action is typical of magnesium infiltration—there is a systolic "boom" with a metallic sound, the second sound of the heart being accentuated. There is some intestinal indigestion and the bowel movements are usually costive. Patient has a poor appetite and he has lost 15 or 20 pounds in weight; says he feels "nervous," and the digital tremor is well marked.

Treatment for the first week was limited to the calcium iodide and phosphate, one and a quarter grains of each together before and midway between meals, that is, five times a day; and along with this a combination to act as a mild cholagogue, special instructions being given as to the dietary. At the expiration of this period the patient reported that he was improved, not being willing to admit all of the evidences manifested from the examination—for example, the pulse-rate was reduced to 90 per minute, the characteristic systolic "boom" had disappeared and the accentuation of the second sound was greatly improved.

During the second week the same treatment was continued, and at this visit he received an intravenous injection of seven and a half grains of calcium iodide in 10 c.c. of sterile water. The injection was repeated at the beginning of the third week, and as the time had arrived for restoring the muscular tone, the treatment was modified to include calcium iodide, one and a quarter grains together with strychnine arsenite, 1-20 grain, to be taken together before each meal. At the expiration of two weeks this treatment was further modified to correct the sluggish lymphatic system, one grain of calcium sulphide being substituted for the calcium iodide.

Under this treatment the patient made rapid recovery, the pulse-rate was reduced in frequency and improved in character, the heart action was restored to normal, the appetite improved and he gained in weight, so that on the sixth visit, five weeks after beginning treatment, the original medication was resumed. Two months later this man sent his wife for treatment, and she brought a message to the effect that her husband could not be any better, and that he was able to attend to his work without difficulty and had gained considerable weight.

Mr. M., aged 51, weight 135, is engaged in the automobile business, but he says he has lost his "pep," and is unable to carry on his work to advantage, as he feels tired all the time. Examination shows the typical magnesia heart, and as a complication, there is interstitial hepatitis, and besides, there is well marked evidences of intestinal indigestion, so the vicious circle is clearly apparent.

Preliminary treatment was directed to the liver condition, special directions being given in regard to the proper diet, and the patient returned ten days later feeling better, but said he still lacked the "push" required to put the "punch" into his business. At this visit he received the intravenous injection of the calcium iodide, 5 grains in 10 c.c. of sterile water, and internally the usual medication, calcium iodide and phosphate, one and a quarter grains of each to be taken together before meals and at bed-hour. A month or six weeks later, when I met him on the street, he told me he felt all right; that the last medicine had fixed him up in good shape.

The reader who has made a critical study of the foregoing reports will observe that there are three important landmarks to be considered, namely, intestinal indigestion, a sluggish lymphatic circulation and an inactive liver, but they all hinge upon the resultant acid excess, and in most instances this will correct itself with proper attention to the dietary. While functional disorders of the heart are readily amenable to calcium medication, we must not lose sight of the fact that organic changes are likewise susceptible of improvement, as the following records will show:

M. M., aged 10, is slowly recovering from an acute "rheumatic" attack, extending over a period of six weeks, this being a recurrence of an attack a year previously, when she was confined to bed for nine weeks. This patient was a typical cereal victim, she was reduced in flesh, unable to get up in the morning for breakfast, and the joints were so involved she had to be dressed by an attendant. My attention was called to the right hand, which was swollen, stiff, and exquisitely painful, and the feet were similarly affected. The appetite was poor—for oatmeal. It should be stated that this patient had a gross mitral lesion (insufficiency), as a result of the original attack.

Preliminary treatment consisted in the administratino of calcium sulphide, one grain every two hours, and a hot Epsom salt bath to be given at bed-hour. The patient was better the next day, when the treatment was changed to calcium iodide and phosphate, one and a quarter grains of each together before and midway between meals and at bed-hour—six times a day. Improvement was immediate and marked; three days after treatment was begun the little patient got up of her own accord, dressed herself and came down to breakfast, and a month later the mitral murmur was scarcely perceptible, since which time treatment has been discontinued. Seen on the street, romping and playing with other children, this patient has apparently made a perfect recovery. I met the parents on the train one day and they told me the little girl had an acute attack of ptomaine poisoning, when they called a local physician, who pronounced her perfectly sound.

Mr. M., aged 73, weight 162 pounds, is employed in one of the municipal supply sections, where he collects materials and fills orders, the room in which he works being under ground and usually kept very hot. Says he has been in failing health for some time past, but a vacation of two weeks last summer did him a great deal of good. Thinks his present difficulty is serious, as he cannot walk far, not more than across the street, without stopping to get his wind, and frequently he has to sit down on the pavement. His memory is failing, he is unable to recall where he has laid things, and not infrequently he gets lost himself, thus showing defective orientation. Neuritis, involving the right musculospiral nerve, seriously interferes with his rest, and he also says his appetite has been very poor for a long time, although he has not lost much weight.

Examination shows acid salivary reaction to litmus, knee-jerk impaired (limited), well-marked intestinal indigestion; the heart is what DaCosta termed "tumultuous," and the pulse-rate is not countable, there

being but one full beat in five to eight in time—it was regularly irregular.

Technically, this patient was suffering from arteriosclerosis, and especially hardening of the coronary arteries, which interfered with the nutrition of the heart, and in addition there were evidences of aortic stenosis.

Treatment, begun September 19, 1919, included calcium iodide, seven and a half grains intravenously, the calcium iodide and phosphate to be taken internally, one and a quarter grains of each together before and midway between meals and at bed-hour, special directions being given as to the dietary. Internal medication was continued, the injections being repeated on the 27th and on October 2, 7 and 11, when the pulse-rate was found to be 84 per minute, although one-half or more of the beats were rather indistinct. The knee-jerk was still impaired, but the man walked without difficulty, and he expressed himself as being much gratified because of the improved mental coordination. This treatment was slightly modified; to improve the muscular tone and at the same time stimulate the lymph-glandular apparatus, the patient took one-twentieth grain strychnine arsenite together with one grain calcium sulphide before meals, and seemed to be making good headway, but unfortunately he had a bad cold during the last week in October. The cold responded to treatment, so that the latter medication was resumed early in November—without the injections—and on November 11, at the date of writing, the patient's condition is nearly normal. The neuritis has disappeared, the patient has a good appetite, the bowels are regular, and he also sleeps well; he has no trouble whatever in walking, even in going up a rather steep incline; the pulse-rate is fairly regular at 78 per minute, and it does not intermit.

Mr. M., aged 29, weight 140 pounds and well built, says he has a languid feeling which he is unable to throw off, and for a year past he has felt an indisposition to exert himself. He claims it is not due to laziness, because he has always been active and energetic. His work, as an office employee, does not afford much outdoor exercise; he has no recollection of any rheumatic symptoms, nor does he recall any unusual effort which would be likely or liable to cause heart trouble, but the indisposition may be traced to valvular incoordination. The salivary reaction is alkaline, the knee-jerk limited, showing impairment in nerve conduction, and the pulse-rate is 84 per minute.

Treatment included regulation of the dietary, and for medication calcium iodide and phosphate, one and a quarter grains of each before and midway between meals—five times a day. The patient reported at the office seven days later with the pulse rate 78 per minute, no valvular trouble, and he said his appetite had improved, that he slept well and felt again like his former self; what he wanted now was to go ahead and get things done.

Mrs. S., aged 70 plus, rather light build, not employed, has suffered for many years from cardiac embarrassment. Says she can hear the "squeak" in her left ear when she lies down. In addition to this she has Raynaud's disease, affecting the middle finger of the left hand. This has been present for several years and it is so long since she had rheumatism that she cannot remember. This patient has consulted quite a number of physicians within the past ten years, and has been under treatment long enough to give many of them a chance to demonstrate the efficiency of medical science, but in no instance has any improvement followed, immediate or remote. She thinks that usually digitalis was prescribed, because she has had it explained to her that digitalis was the only available remedy, and she says all the medicines taken tasted alike. Fortunately, she escaped with her life.

Treatment consisted in the administration of calcium phosphate and iodide, one and a quarter grains of each before and midway between meals and at bed-hour. A week later the patient reported that she could walk up an incline without difficulty, that the numbness in the finger had mostly disappeared within the preceding few days, while the mitral insufficiency had practically subsided. The pulse-rate was 66 per minute.

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BLOOD TRANSFUSION IN OBSTETRICS.*

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Since the advent of the various methods of indirect blood transfusion it has been suggested at one stage or another for almost all the ills that man is heir to. There are, however, certain definite indications for its use and the foremost of these is to supply blood lost after acute hemorrhage. In no branch of the practice of medicine do large hemorrhages occur more often than in an active obstetrical practice and I believe it is considered one of the most frequent causes of death in pregnancy and labor. I grant that serious hemorrhage occurs very rarely in the practice of the well trained and careful obstetrician but this type of practitioner is still in the minority and emergencies are quite occasionally admitted to the hospitals intra-partum and post-partum in a serious condition from loss of blood. Now if these patients can be carried through the critical period of air hunger and collapse by the prompt administration of 500 to 1000 c.c. of blood, complete recovery will be assured in most instances.

The introduction of the indirect technique and of the more rapid method of determining the compatibility of the donor's blood for the recipient has made the operation of blood transfusion more accessible for emergencies and absolutely without danger of accident. The infusion of normal saline in hemorrhage is quite temporary in its effect because it soon diffuses through the vessel walls leaving the circulation again depleted, whereas blood cells and plasma when injected, remain in the vessels and no doubt begin at once to carry on their function just as if they had not been transferred. Muscilage of acacia solution has been administered intravenously for hemorrhage or shock on the theory that it remained in the vessels and did not immediately diffuse into the tissues like normal saline. More careful inquiry, however, has shown that the effects and results have been rather unsatisfactory and in some cases disastrous as many of us would expect.

Before there was any knowledge of the presence of iso-agglutinins or isohemolysins in human blood certain definite clinical reactions occasionally took place in the patient during transfusion which were characterized by severe symptoms and sometimes death. The cause of these reactions has been shown to be due to the presence of isohemolysins or iso-agglutinins or both in the plasma of the recipient and donor. Until recently the technique for the identification of isohemolysins and isoagglutinins *in vitro* has taken at least three hours and often longer and although in 1909 Epstein[1] and Ottenberg simplified this method somewhat it was still unsuitable for emergency work. Brem[2] following Moss's hypothesis that isohemolysis is probably always preceded or accompanied by iso-agglutination both in health and disease, developed a technique for the identification of iso-agglutinins by microscopical examination which can be done in less than one-half hour. By this method he places all individuals into four groups according to the Moss classification. Since Brem's publication Moss[3] has developed an

*Read at a meeting of the Society of the Sloane Hospital for Women, October 24, 1919.

even more rapid method and now there is no emergency so great but that the operator can be reasonably assured that he is transfusing a patient with campatible blood. By some observers an additional test for isohemolysins is also required, but it has been my observation in performing comparative tests that both methods have coincided exactly in the examination of patients acutely ill from hemorrhage and even in toxemia. On the other hand inasmuch as isohemolysis is said to be a pathological phenomenon, it is well to make the additional test in patients suffering from chronic diseases.

Donors.—As far as possible donors should be strong, healthy, muscular individuals without a nervous temperament, otherwise the operation may be terminated earlier than is desired on account of an attack of syncope. A Wassermann test and a physical examination are made on all donors before each transfusion regardless of the fact that they have been examined on previous occasions. Syphilis has been transmitted more than once in this way and in the examination of 150 donors I have obtained six strongly positive Wassermann reactions.

It has been the practice of the Laboratory during the past three years to have on file a number of donors in each group and when the emergency arises the patient is grouped and a suitable donor is reached by telephone or telegraph. On his arrival he is again tested for iso-agglutinins and a Wassermann is made if time permits. Very often in the hospital service patients are admitted in a serious condition after hemorrhage and prompt action must be taken. The patient, her friends, and hospital porters are grouped while the necessary preparations are being made for the operation. As far as possible only individuals of the same group are transfused and when this cannot be done a group four donor is selected. Inasmuch as the serum of group four agglutinates the cells of groups 1, 2, and 3, and since it has been shown by Ottenberg[4] that the serum of the donor is so diluted by the serum of the patient that no agglutination takes place, group four has been used as the universal donor in emergencies without reactions, for the cells of group four are not agglutinated by the serum of any other group. No doubt this fact is largely responsible for the few reactions which formerly took place when no preliminary tests were made. The amount of blood taken from the donor depends upon the weight and condition of the patient, the weight of the donor and the indication for which the operation is performed. It is always well to watch the donor of such symptoms as yawning, sweating, and a lowering or elevation of the pulse rate, as under such conditions it is advisable to stop. Occasionally a donor may go into collapse from which he recovers in a short time under appropriate treatment but this is not a pleasant feature and can always be avoided by carefully observing him when the amount of blood transfused approaches 1000 c.c. At the present time professional donors are repeatedly submitting themselves for transfusion when they are physically unfit, but their condition can be readily determined by reading the hemoglobin and by bleeding them into a test tube and estimating the relative volume of solid and fluid constituents of the blood. The blood of one who has been repeatedly bled and is suffering from secondary anemia shows a much larger proportion of serum than cells and this type would not be the most beneficial.

Methods.—Physicians interested in transfusion differ widely in their opinions as to the relative value of modified and unmodified blood. The citrate method has gained its popularity on account of the facility with which it is performed, but there is no reason to believe that it is as beneficial to the patient as the unmodified blood which is not subjected to any chemical change and which is out of the body such a short time. It is indeed quite true that citrated blood is entirely efficient in patients suffering from acute hemorrhage when volume only is needed, but with patients who have had a severe anemia for sometime or some form of toxemia and are in poor physical condition, the method which will accomplish the best results with the least possible tax on the already poorly functionating organs of the patient is the one to select. The syringe-cannula method, the Unger method, or the paraffin-tube method of Kimptom and Brown may be used at the discretion of the operator for the transfer of unmodified blood from the donor to the recipient. The selection often depends upon the means at hand and whenever possible unmodified blood is to be preferred because it is the best method we have of injecting the same kind of blood that is already circulating in the vessels of the recipient.

Reactions.—Drinker and Brittingham[6] have reported several transfusions using different methods and make the impartial statement that it would seem that both the syringe cannula and the paraffin-tube methods offer fewer reactions than the citrate. A severe reaction with all the classical symptoms of hemolysis occurred early in my experience after an emergency transfusion, but before which no examination for isohemolysins or iso-agglutinins was made. In no other case has there been any reaction due to hemolysis or agglutination and I attribute this to the care with which the donors have been selected. I am surprised after ready the protocols of some of the later articles in which serious reactions are described, for these probably have been due to careless laboratory work and a lack of knowledge of the serious consequences which happen under such conditions. A few mild reactions characterized by slight chill and rise in temperature have occurred in a small percentage of the series but these were all transitory and passed off in twelve hours. The more perfect the technique of the syringe-cannula method the less often will these so-called mild reactions occur. The care and thorough washing of the syringes, the filling and emptying of the syringes and the length of time the blood is outside of the body are small details which if not carried out may give rise to these reactions and establish a platelet and anaphylotoxin hypothesis.

Report of Cases.—Since the introduction of indirect transfusion I have performed the operation 78 times on 70 patients suffering from the complications of labor. Sixty-one were done by the syringe-cannula method and seventeen by the citrate method. There were fourteen deaths in this series and all but one was undoubtedly due to the disease from which the patient was suffering. The latter, which may or may not have been due to transfusion, occurred early in the series, was an emergency, and no preliminary tests were made.

I have classified the indications for transfusion in obstetrical cases into four groups. There were thirty patients on whom the operation was performed for hemorrhage or hemorrhage and shock, twenty-nine who were suffering from post-partum hemorrhage and localized pelvic sepsis, seven who had either bacteriemia, septic thrombophlebitis of the pelvic veins, or general peritonitis, and four with toxemia of pregnancy of the pernicious vomiting type.

Of the thirty patients suffering from acute hemorrhage due either to placenta previa, post-partum hemorrhage, premature separation of the placenta, ruptured ectopic, or ruptured uterus, thirty-two transfusions were performed and six patients died. Many of these patients were in exceedingly poor shape and no doubt would have died in a few minutes had they not received a large quantity of blood intravenously. I recall a case of spontaneous rupture of the uterus in the fifth month who, when the transfusion was started, was breathing six to eight per minute and no blood was present in the median basilic veins when the cannula was inserted. After the injection of 1250 c.c. the color and pulse returned, breathing became more regular and recovery was uninterrupted. Another case with post-partum hemorrhage and inversion of the uterus was breathing occasionally when the operation was started and after 200 c.c. were injected breathing ceased and the house surgeon reported no heart sounds audible with the stethoscope. Transfusion was continued on the grounds that the heart muscle was still contracting weakly and probably needed a larger volume of fluid. After 400 c.c. were injected the heart sounds were again heard and breathing was reestablished. At this stage in the operation the donor, who was the husband, and in poor physical condition, fainted and the infusion was carried on with normal saline. This procedure kept the patient alive until another donor was secured three hours later and a second transfusion of 800 c.c. carried the patient out of the immediate danger of death and she was discharged in three weeks. A case of placenta previa and another of ruptured ectopic were also in the air hunger stage when they were relieved by the intravenous administration of blood.

I mention these few cases merely to show that they were undoubtedly snatched from the jaws of death by blood transfusion. Many others in this class were also in a serious condition and whether they would have recovered without transfusion it is impossible to say. No doubt some would and others would not have done so, but why wait to perform the operation until the patient is dead or nearly dead, for it is a harmless operation with the present technique. Williams[6] has recently informed us of the large amount of blood the lying-in woman can lose, but patients differ and we are not always sure that we are dealing with a patient that can lose 2400 c.c. of blood without a serious result.

I have occasionally seen patients suffering from ruptured ectopic or rupture of the uterus who were either bleeding very little or had entirely stopped, begin bleeding again after the transfusion of 500 to 600 c.c. of blood; therefore it is advisable either to tie off the bleeding points, or be prepared to do so before the transfusion is begun.

There were twenty-nine patients with anemia secondary to post-partum hemorrhage and localized pelvic sepsis on whom thirty transfusions were done. They all completely recovered although some of them seemed critically ill on admission. By localized sepsis I refer to all infections of the genital tract from lacerations of the vagina to the pelvic peritoneum.

Some of these patients were admitttd with red blood cells as low as 1,200,000 and a hemoglobin of 20 per cent, while one had red blood cells numbering 500,000, 10 per cent hemoglobin, 31,000 leucocytes with 89 per cent polynuclears. This patient was admitted sixteen days post-partum with a history of retained placenta and a curettage six days after delivery. She had continued to bleed during the puerperium, had some fever and on the fifteenth day there was a chill and sudden rise of temperature to 104°. On admission she was in delirium, temperature of 104°, rapid weak pulse, marked subinvolution of the uterus and the outlook was unfavorable. A blood culture was taken at once and reported sterile after seventy-two hours. A second blood culture was also sterile. Two hours after admission a citrate transfusion of 950 c.c. of blood was made from two relatives who were at hand and within one hour the temperature had risen to 107° with a chill. This temperature receded to 102° in five hours and the following day the geneneral condition of the patient was somewhat improved with a blood count of 1,460,000 red cells, 20 per cent hemoglobin, 21,000 leucocytes, and 91 per cent polynuclears. On the second day after transfusion it was noticed that the blood count was again falling and there was a continued rise of temperature with chill. Another transfusion of 800 c.c. of unmodified blood was given without reaction and on the sixth day after admission the temperature reached 102° and remained there with slight fluctuations for the following three weeks when it suddenly reached normal. Three days after the second transfusion the red blood cells were 2,060,000 25 per cent hemoglobin, 15,000 leucocytes, with 85 per cent polynuclears. Thereafter the blood count was never less than two million cells and she was discharged fifty days after admission with 2,900,000 erythrocytes and 25 per cent hemoglobin. Transfusion improves the general condition of these patients and places them in a position to combat the infection; and whereas in this type of case the procedure is not life saving, although it appears to be, it does shorten convalescence, it has some economic value and it is rational therapeutics.

The treatment of general sepsis (bacteriemia and septic thrombophlebitis of the pelvis veins) by blood transfusion has again been mentioned in a recent periodical. This treatment has been tried before on many occasions even to the extent of immunizing a donor with autogeneous vaccines but with almost universally poor results. Other than acting as a supportive measure there are no scientific principles as a basis for such treatment because human plasma is very slightly, if at all, bactericidal. Patients with post-partum bacteriemia due to hemolytic streptococcus or *staphlococcus aureus* are suffering from a fulminating infection and in the majority of instances succumb to the disease in from seven to ten days.

Very occasionally a patient is seen with a blood stream infection due to a moderately avirulent organism, or a patient may have considerable natural immunity and she recovers under the usual treatment after a prolonged clinical course. I have transfused only two cases of streptococcemia and both promptly died in a few days, therefore my experience has been limited.

In septic thrombophlebitis of the pelvic veins without metastases we have more opportunity to try the effect of blood transfusion as a supportive measure for they usually live longer than the cases of bacteriemia; but even here we are not directly combating the infection. I recall two cases in this group, one of which died and the other was associated with a transitory bacteriemia and recovered in six weeks after three transfusions at weekly intervals. Again my short experience does not permit me to make a definite statement as to the results which may be obtained.

Four cases of toxemia of pregnancy of the pernicious vomiting type have been transfused with two deaths but here again it is only a supportive measure.

Hemorrhage of the new-born is a disease which is seen in obstetrical practice and which calls for prompt treatment. Blood transfusion is the method of treatment because it not only checks the bleeding by supplying the organism with all the substances of the plasma, cells and platelets but in the more serious cases it also treats the anemia. Here the operator is confronted by considerable mechanical difficulty on account of the size of the superficial veins.

It is true that the superior longitudinal sinus is a popular route for intravenous administration of medication in infants, but it is also very easy to puncture its side walls and the blood is forced beneath the dura and therefore it is not without danger. With due care, however, and the use of small instruments, the median basilic and cephalic veins can be successfully entered with much less danger of injury to the infant.

Conclusions.—1. Serious hemorrhage complicating pregnancy and labor has been successfully treated by indirect blood transfusion.

2. In anemia, secondary to post-partum hemorrhage and pelvic sepsis, transfusion is definitely indicated and produces satisfactory results but it has little or no effect on patients suffering from bacteriemia or septic thrombophlebitis.

3. Inasmuch as indirect blood transfusion in obstetrics is often a life-saving procedure obstetrical institutions should be prepared to perform the operation instantly and at any time.

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REMEDIAL MEASURES CONSERVATIVE IN MOST ACUTE INFECTIOUS DISEASES;

IN PARTICULAR FOR ADULTS AND DURING INFLUENZA.

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THE urgent dangers during acute infectious disease would seem to be, in adults especially, proportional to the character and force of their mental reactions. Perils due to fluctuations in the affective realm, the impulses, feelings, emotions, preferences, conceptions of duty, vary as to the form which these take. The element of fear or of indifference deserves the first consideration; next the obscuring effects of environmental influences, of family urging, of habit, of custom, of tradition, and of example.

One phenomenon, characteristic of all acute febrile processes and one too often disregarded, is disturbance of self possession, sound reasoning, or judgment. The mind is then at the least, cloudy, the sense of values, of proportion, of nice discrimination, is uniformly impaired. A patient when confronted with the need for surrendering self guidance is then rendered irritable, recalcitrant, obstinate, unreasonable. We can never be sure whether a mild delirium has begun, or enough to compromise judiciality.

To what extent fear, anxiety, suspense, tend to lower resistance can never be known in advance, but the whole history of clinical medicine is full of graphic instances of individual and group fatalities due to anxiety depression. This is especially cogent during epidemics.

In the majority of those in whom an acute infection is recognized or adequately inferred, the adviser is met by an overmastering sense of duty which drives them to rebel, to refuse to believe the patent facts, especially while no sense of weakness is felt. Of course such persons demand to remain at the post of duty. We physicians ourselves do this; our sense of obligation to duty is that of a rescuer of others. We can only be rescued through a combination of mass persuasion and force. Many of us have done our most important work in saving lives while our own temperature was higher than that of any case we met. I recall myself disregarding recurrences of chills, of the characteristic sense of detachment, of vague miseries and, when intercepted by a vigilant young medical protégé, my temperature curve was at the apex before being forced to bed. I was then, and have several times been similarly, unable to realize my state. Many physicians thus come to die in their tracks, due chiefly to our delusion that *we* know when an illness is present. For ourselves we don't.

A professional colleague in my office during a "flu" epidemic upon my remarking that he was looking ill and demanding to take his temperature and to examine him, it was found to be 105°, one lung being solid, and the other nearly solid, with pneumonia. Even then it was some job to get him to bed. If doctors can be so pardonably obstinate or reckless when their own minds are acutely out of commission, how much more pitiful is the delu-

sion of a fever-beclouded layman. Of course the Captain of Industry who is absolutely well *may* admit this point academically, but when he is infected his habit of domination leads him to then rebel.

How often during an epidemic of (say) influenza do we hear substantially this reply: "Of course *you* cannot understand (*sic!*) but it is quite imperative that *I* must have at least two or three days to fulfill this or that *really important* obligation, to finish this or that task; after that I will consider going to bed if necessary." If there is one fact we know to be most near a fundamental truth it is that protracted exertions during the first two or three critical days of an infection, of rapid weakening of the defense energies, encourages depletion of the factors of safety, precipitates complications, and often seals one's fate.

The physician should preach in season and out of season till it becomes an automatic reaction: the most economic act of one's life is to go to bed at once at the onset of an infection—no appeals so much as *heard*.* Thus we may assume that the crux of conservation is instantaneous rest in bed, also equally that the utmost caution and obedience shall be maintained during the convalescence, when the heart muscle is depleted, the energies all confused, the repair powers out of gear.

The next precaution is to revise and rectify dominantly the false mental reactions of the domestic circle. All sorts of dangerous and erroneous habit reactions or complexes are exhibited by members of the family or by associates. These are the products of half baked notions on hygiene, based on sound rules misinterpreted. The tendency is for sympathetic or meddlesome friends to offer all sorts of fussy, silly doings, takings of drugs, of foods "to keep the strength up," and numberless futilities, many of which are positively dangerous.

One of these false mental (fool) reactions is to give a purgative, just when the gastrointestinal nerves and mucosa are most sensitive, the normal defenses most disordered, the structures most vulnerable. The surgeon has had a recent life-saving change of heart. If healthy rabbits, guinea pigs, and other laboratory prey show grave irritations of the intestines after purging, should not our patient, all upset during the first phase of self readjustment to infectious agencies, be rescued from a purge? To be sure many who take them do survive; and then again many don't.

An enema, or colon irrigation would serve all, or most, indications, especially if to it is added a little salt and more soda, in order to furnish an alkali for absorption while the alkaline content of the blood is disturbed. A full irrigation is advisable immediately, and a smaller one on each following day for two or three days. Diuresis will be greatly assisted, acid infarcts in the kidney being washed out. (See Martin H. Fischer.) As to calomel or a mercurial, that is a wholly different matter, one for the physician to decide. Small doses of calomel enhance oxidation in the intestinal juices.

The third precaution I submit will be stoutly opposed by the family. That is, give no food for at least three days—except water and fresh fruit juices, orange or lemon or apple, etc. There is then rarely appetite; there is *never a real hunger*, or an organic *need* for food. This anorexia is nature's notice to quit, to allow the organs of digestion and especially the mechanisms of elaboration and metabolism, a *chance to rest*. Let them alone; aid them to extrude all the half elaborated, the readily vitiated food elements and permit secondary products the opportunity to withdraw quietly. Do not burden these mechanisms with fresh burdens; remove the load from an overburdened organism. Release the oxygenating mechanisms from the task of working overtime to burn up *newly introduced* complex nutritive substances.

Finally let me commend a measure which, while it has not received the endorsement of many authorities, is employed with deep satisfaction by a multitude of those best friends of humanity, who are too busy to tell in print of their convictions, *i.e.* country doctors, nurses, self constituted ministers of health in small communities, and others whose mental reactions are sound and fortified by experience. This remedy is heat and pressure applied to the whole back.

It may count for something to relate personal experiences in many hundreds of cases, results to be obtained by no other means known to me; at least none are so readily secured by agencies so simple and so available. Heat, *along with graduated and distributed pressure*, over the surface of the back, will relieve a host of vague as well as harassing discomforts, stresses, distresses, miseries, pains, aches, tendernesses, tonic protective spasms, rigidities, and the like deterrents to serenity, ease, or sleep. It will do much more. It will stimulate vasorelaxation, hence tend to induce sweating when the skin reaction is suspended. This vasorelaxation induces varied and most beneficial effects.

This means of releasing stress, pain, vasohypertonicity will prove so wholly satisfactory that any one who will give it a fair trial must concur in my enthusiasm. Of course it must be well done; it is something of an art, which even every expert blanchisseuse (washerwoman) does not possess. I claim some personal skill and insist on myelf applying the (not too) hot flatiron, over a thick bath towel (or other fabric) *dry* in some cases, *damp* in others, *i.e.* in order to excite the sweat glands. If space permitted I should like to elaborate a few artistic points.*

In addition to the explanation therein given of the vasomotor and other reactions, let me refer here to statements by Dr. C. T. Sharpe in a paper on "Edema of the Brain in the Infectious Diseases," especially the "Interrelationships Between Cutaneous and Spinal Pressure." In speaking of the cerebral type of the infectious diseases, he cites his earlier observations which tended to show the possibility of the involvement of the cerebro-

*It is most unfortuate—for the patient—that the physician is endowed with no adequate authority. Upon the slightest offense he can be dismissed. If he had mandatory powers he could multiply his life-saving efficacy a hundredfold. This deficit in potential is mainly due to the idiotic custom of paying him by the visit. Most patients gloat on saving a dollar.

*See article by author in *Boston Medical and Surgical Journal*, October 9, 1919, "Cardiovascular Regulation by Other Means than Drugs."

spinal axis and the nervous system generally, as opposed to the viscera and the skin, and remarks "that in the infections and contagions, the central nervous system may be involved by the bacteria or their toxins to such an extent that this involvement may far outweigh and mask the involvement of the viscera and the skin. It may be that we are justified to go farther and state that the primary involvement may be that of the central nervous system and that when such primary involvement does occur the other manifestations may be wanting or so atypical as to be deceptive. In scarlet fever, measles, and diphtheria, edema of the brain exists in some cases to a very marked degree," And later, "If the cerebrospinal pressure is high, so high that a child lies in an almost comatose condition with his eyes rolled up out of sight and is only partially relieved by lumbar puncture, and there should occur an intense urticarial rash covering the whole body followed by a restoration of the cerebral functions to normal within a few hours; if a temperature of 103° F. or higher should at the same time fall within twelve hours or less to normal and remain down thereafter; and if this phenomenon has been observed not once but many times, sufficiently often, in fact, to enable one to prognosticate the course of the temperature and the end—results of the illness every time—is one justified in stating that there is a balance of pressure between the two, the increase of one automatically reducing the other and favoring the absorption of the exudate? The brain and the skin are developed from the ectoderm. Sweating was a notable feature of some patients, and was particularly marked in several very severe cases. The sweat glands act as safety valves. If, then, the rash strikes in, as it was expressed by our grandmothers, we would expect to find this edema in that portion of the body that has an interrelationship as to pressure with the skin."

Let me outline again certain recommendations I offered and sent to the newspapers, at the outbreak of the influenza epidemic in 1918, with the statement that much could be done by an informed laity to aid and abet the work of the physician. The suggestion was made that many persons would be thus encouraged to consult a physician much earlier and obey him more implicitly. These simple hints were copied widely and apparently did good, possibly some lives were saved thereby. Anyhow the efforts of physicians were thus supplemented.

In the case of influenza, poliomyelitis, and some other epidemic and exanthematic diseases, no uniformity has been reached as to the drugs to be relied on, except as modifying symptoms. Fair agreement should be made as to rational procedures, items of conduct, cooperation, and personal regulation. They are based on just as much *science*, physiological, pathological and therapeutic certitude, as is the action of drugs.

The evidence seems to show that closely similar toxic manifestations occur in all acute infections, however much they may vary in detail. Let me mention here as a powerful evidence of the value of conservative measures one instance of phenomenal results from military discipline where prompt isolation, strict quarantine, and systematized and adequate measures from start to finish were followed and *no death occurred among* 3,500 *young men* of a students' army and navy corps. At Princeton, New Jersey, the command was vested in Admiral C. F. Goodrich. Under him were the army unit, his own naval unit, a civilian group, an aviation school, etc, a total of 3,500 young men. Briefly, the Admiral adopted the plan of strict vigilance on the part of his surgeons, the immediate isolation at the athletic field, surrounded by a high fence, guarded by sentries, and equipped with ample beds, etc., the regular "training quarters." Here much the same precautions were employed as I recommend.

Restatement of Points.—1. In every instance of infection individuals may safely be assumed to be no longer capable of judging for themselves what to do and not to do. In many instances (I think most) the mind is clouded and confusion states pass readily into a mild delirium. Hence gentle coercion as to conduct is in order. 'Tis a thousand pities the physician is not endowed with mandatory powers.

2. Absolute rest in bed (isolation preferred), at the earliest moment the malady can be recognized or reasonably inferred, and maintained so long as may be deemed necessary.

3. Return to activities should be made with extreme care in view of the shocks suffered by the control mechanisms, especially shown by the weakened myocardium and other vital structures.

4. For the first two or three days it is best to give no food but plenty of water, preferably hot, adding some sodium bicarbonate and salt (20 grains of each), to eight ounces water, weak tea or coffee if craved, and plenty of fruit juices (for the contained alkaline carbonates and vitamines), also fresh clam or oyster juice (for the lime they contain). Cold water or even ice may be craved when the temperature is high. Usually there is no real hunger in these early days, a plain indication that the digestive tract, liver, and other eliminating organs need complete rest, also the laboring heart, blood vessels, and kidneys demand relief from work. The primæviæ should be relieved of labor, so that the products of fermentation and of putrefaction, and body formed toxins and all the coarser food or chemical residua be allowed to pass out expeditiously.

Abstention from food promotes changes of body wastes into the more eliminable forms of end products. In short, a brief fast tends to expedite "the cleaning up of the house of man." The circulatory reflexes deserve to be no longer excited by aiding in active nutritive processes. The burden upon the cardiovascular renal cycle is reduced to safe proportions. A tendency is encouraged for the whole organism to sink into a serene, comfortable state of ease, tranquillity, peace. So soon as the natural demands for food return they may be supplied. Even then care should be exercised so long as the febrile process continues high, in order that this hunger be not confused with the cravings of suggestion, of habit, or taste or whim. The foods when allowed should be supplied with due regard to whatsoever organic disturbances are prominent or determinable. Uranalyses and blood studies will go far toward making these clear.

5. No purgatives should be given, not even

salines which greatly irritate the intestinal and renal mucosæ. Calomel in broken doses may be of great use to stimulate oxidation. An enema or colon irrigation, however, is desirable every day for three or four days and then at intervals till full convalescense.

This enema should contain salt (NaCl, gr.xxx) and sodium bicarbonate (ʒi) to the pint in order to act as an alkaline diuretic. The blood in infections tends to lose its alkaline equilibrium, to become acid, hence the alkaline enema is distinctly beneficial, and the free diuresis produced gives much comfort.

6. Sweating, unless active, should be encouraged by simple means. The measure which serves me best is to lay the patient face down, place a slightly damp (not wet) bath towel over the whole back and pass a moderately hot flatiron up and down for five or eight minutes till the skin reacts and the whole body sweats freely. Should the hot iron prove suddenly painful lift the towel instantly from the surface and lay it down again and proceed, keeping the iron in motion and not allowing it to rest on any one locality but be kept moving about.

This ironing will usually relieve all backache, and other aches, belly aches, many headaches, chest pains, also reduce dyspnea, cough, throat tickling, etc. It also promotes tranquillity so that thereafter the patient can take a nap immediately. The throat and nose demand local treatment also, especially where there is cough.

7. Diverse symptoms accompany the infection, due to a multiplicity of disturbances, most of which are due to toxic irritations of the more delicate reflexes. Among these are tonic spasm in muscles, the unstriped as well as the coarser, especially in the static muscles of the back, limbs, scalp, or eyeballs. These may require medication, but in my experience most of them can be better disposed of by the use of heat or cold, of tactile applications, manipulations directed to nerve points or to the erector-spinæ muscles, the paravertebral structures, etc. This is notably true to relieve localized distresses, gaseous distention, tonic protective spasm, cramps in the hollow viscera, even of the heart and great vessels, or kidneys or uterus or testicles. The centers in the back offer a plain, definite surface for applying curative touches, by any one who knows how. (Those who don't had better learn or perhaps their reliance may be upon drugs. These are liable to fail, not to react as expected. Biokinitic remedies are surer and safer.*)

8. At the oncoming of a pneumonitis rest must be immediate and absolute; no tampering, no postponing, no modifying. A chill—other than that inevitable to exposure to sudden or unusual cold—portends some serious perturbation in functional balance; it must not be disregarded. A chill or chilliness is the characteristic portent of pneumonitis. Any one who experiences a chill disregards it, and survives (as I did), will have learned a valuable lesson. Rest must be complete. *During the active stages of a pneumonitis, no sitting up should be allowed, not even for examination.* I have seen men otherwise perfectly vigorous and healthy die from rebelliously making this exertion alone.

Posture is most significant in pneumonitis. The side chiefly affected is down and the competent side up, but this attitude should be changed occasionally for short periods. Lying constantly on the back should be discouraged. The *head* of the patient (protected) should be toward the light but *not facing a window.* Constant glare in the eyes is a severe strain. Only in this attitude and with the eyes protected, can the patient be so free to assume conservative postures. The reasons for avoiding upright or sitting postures are many and absolute and based on biophysics. Among them are the condition of the blood, which is overviscid; stagnation in and extra weight of the viscera, hence the drag caused by dependent overloaded and weakened organs upon the diaphragm; irritation of the splanchnic branches of the vagus; the weakened heart (myocardium) being seriously overburdened, peripheral resistance is often so compromised as to inhibit circulatory distribution.

9. Revulsion is of great importance, as all experienced clinicians know through a certain and reliable knowledge. The long discarded poultice or mustard pack served excellent purposes, but better means are now at hand. The best form, in my judgment, is ironing the back. In pneumonitis there is often much disturbance of the vasomotor system and sweat glands.

Dry cupping is efficacious and strongly endorsed. A much simpler method of achieving local hyperemia and revulsion is by subdermal traction, a lifting and pulling of the skin on the back by the hand from the underlying structures all up and down the back, especially from the fourth to the ninth thoracic vertebræ, and all over the lateral areas, stimulating subsidiary sympathetic (vasomotor) subcenters. This, while painful at first, soon ceases to be so, and can be repeated to advantage every hour or two by the nurse. The effects are just as emphatic as those of Bier's hyperemic cupping. It will often promptly reduce or check cough.

10. When mental confusion is recognized, then quieting measures are required. One of the most efficacious measures is the neutral immersion bath, or tepid soaking in water at 100° F. for twenty minutes or so long as comfortable. I believe many a life would be saved by observing so simple a measure, accompanied by a saline enema and hot drinks; this will transcend any sedative medicament. A chill is due to a profound perturbation of function, and calls imperatively for external heat, and the best and most available relief is a warm full bath or hot foot bath. Trypsin, in order to carry on oxidation, must be fortified by heat. When delirium persists with low temperature repeated warm or hot affusions are indicated, tepid sponging or hot packs or the heat and pressure of the flatiron over a damp blanket along the bare back. The violently delirious, struggling patient often dies, and this fatal result in pneumonitis is more often than not due to the intense overexertion. Thus psychogenic perturbation comes to be recognized as of the deepest significance and peril.

This significant fact should always be considered,

*See article by author, "Backache or Tenderness," *Int. Clinics*, vol. 1, series 29, March, 1919.

that the sodium chloride loss in pneumonitis is enormous (often 50 ounces in 24 hours) and should be resupplied. This is best done by adding salt in the proportion of normal salt solution to all drinks at all times.

11. Convalescence is a most critical period in which the whole of previous wisdom (or luck) may be nullified. The fatalities or secondary decrepitudes or disasters are, in my opinion, due chiefly to errors committed by the patient, in which the adviser may be equally at fault.

The patient must be made to realize that expert guidance during convalescence is the prime duty of the medical adviser, and the obligation of the patient is to cooperate faithfully and consistently.

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PROGNOSIS IN PULMONARY TUBERCULOSIS.*

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In discussing this subject I have no intention of enlightening anybody regarding any scientific phase of the field. However, there are scientific aspects which are interesting as well as worth knowing. For instance, there is a nuclear count originated by Arneth which is very valuable in prognosticating pulmonary tuberculosis. We know there are on an average about so many nuclei in white blood cells. Some have one, others two, while many have three and occasionally four and five nuclei. When we find this nuclear count in one hundred white blood cells is below an average normal we are convinced the resistance of that person is lowered. When repeated similar counts show a constant decrease we know the prognosis is grave. When a constant increase is shown, we know the prognosis is more favorable. I try to make a monthly nuclear count on my patients and derive much satisfaction in prognosticating.

Again it is very common to think and say that a patient has a better chance for recovery when we see an increase in weight, a lessened cough, a lowered temperature, a better color, a better appetite, and a more wholesome optimism. It is easy to show the patient that he is improving and has a splendid chance for recovery when the foregoing things obtain.

There are many other conditions which are often mentioned and upon which a prognosis is based. For instance, unilateral infection compared with a bilateral involvement gives us another reason to assure a patient that he is going to get well. We look upon a case which has a more or less sudden onset with the deepest gravity and consider a case of insidious onset or a type of extreme chronicity with more hopefulness.

Men of good surgical judgment know that a patient with active pulmonary tuberculosis should not be operated upon unless it is absolutely necessary and then under some anesthetic other than ether. This attitude will go far toward lessening regrets. Students of tuberculosis over the country are teaching men who do obstetrics that, as a rule, tuberculous women should not bear children and that in such cases an early abortion is not only justifiable but a right procedure.

Complications nearly always add to the gravity of a case, especially such as tuberculous laryngitis, tuberculous enteritis, or tuberculous otitis media. There is nothing added to our zeal when we find our invaded field is extensive, but when a small lesion is discovered, all things considered, we do not hesitate to say the case is curable. On the other hand we look upon the complications of gout and certain heart lesions with a more favorable prognosis.

Thus far there have been mentioned a few of the many things discussed under the head of prognosis. Your attention might be called to many more things of a similar nature which are usually discussed in medical literature, but I am convinced that there is too much attention paid to science and not enough paid to the so-called common things in tuberculosis.

It is not our intention to discredit science or depreciate the efforts of our research men and other writers in this field of medical literature, for their services have been invaluable in bringing us to our present status in this great work. My purpose is to endeavor to show that prognosis in pulmonary tuberculosis might and should be based upon quite a different line of thought which I believe is neglected and which is very necessary to bring about actual results. I have reference to what physicians say to patients. Up to within the last few years the term "Dark Ages" might be applied to tuberculosis with as much meaning as it was in the early centuries relative to civilization. When a physician is consulted concerning any complaint it is always the patient's desire to know what the diagnosis is. There seems to be no good reason for discriminating against any disease, regardless of what it may be when the physician attempts to say what the disease is. It should be assumed that the patient has intelligence and should have what services he asks for and pays for, regardless of whether he has typhoid, diphtheria, pneumonia, erysipelas, measles, or tuberculosis. Lying to patients who have tuberculosis has cost many a life.

After the diagnosis is made the physician should appoint an hour to go over the whole situation, in a general as well as a detailed manner, with the patient, giving him an insight into what is called "The Tuberculosis Problem" frankly, honestly, and clearly. All questions should be answered and all phases taken up looking toward the enlightenment of the patient, so that he may go away feeling that there is a way out of his trouble without a doubt.

The tuberculosis problem may be put up to the patient after the following fashion: "After conducting my examination which, as you know, included a physical examination of your lungs, a tuberculin test, a family and personal history, a blood test and stereoscopic *x*-ray plates, I find you have tuberculosis. I assume you want to know the truth about the matter or you would not have come to me. Tuberculosis, as you know, is infectious, as are most diseases, and is communicable. There are now two things to do;

*Read at the 20th annual meeting of the Ohio Valley Medical Association at Evansville, Ind., November 11 and 12, 1919.

one is to get well and the other is to make every effort to prevent anyone from becoming infected from you. Your case is absolutely curable and, if you want to get well and are willing to do the things necessary to recover, there is no question about the outcome.

"The cure is much simpler than people know. Formerly it was thought that one must get on a train and go away somewhere where a cure was assured. In addition to this it was thought that the cure lay in a drug store. It was also thought that long walks and vigorous exercises promoted a cure. Up-to-date methods have changed these misdirected notions and substituted new ideas.

"The newest thing in the treatment of your disease is absolute rest. You will find by taking your temperature accurately it will be below normal early in the morning and gradually rise throughout the day until a fever stage is reached some time in the afternoon. We do not feel that fever is good for one, and consequently try to avoid it. In this disease we do not give fever medicine because we have found a better and surer remedy. You know that by walking and exercising you can produce heat in your body. You also know that by resting you can reduce this same heat. This rule applies to sick as well as well people. You can readily see then how the temperature problem is solved. Rest does not only reduce a temperature but lessens the cough which annoys you. Formerly people with your disease took cough medicine. Exercise will also cause one to lose weight. You have already lost weight and are slowly losing more. Rest will increase your weight. It may not seem reasonable to you, but it is a known fact that rest in your condition will improve digestion and a poor appetite.

"Another thing that will go far toward getting you well is fresh air. This is not very new but very important. Some people talk about it but do not get it. Fresh air contains 20 per cent. oxygen, which is very necessary to keep your blood in the very best condition. We have a way of testing blood to see whether or not it is 100 per cent. efficient. In my examination I find your blood measures 95 per cent. in hemoglobin, which is the property of the blood responsible for carrying oxygen from the lung cells to all of the cells of the body, and which keeps the blood to a normal red color. That one thing alone tells me you have not been getting sufficient fresh air. This 95 per cent. can be raised to 100 if you will sleep with your windows open wide and remain in fresh air throughout the day. Each month I will make this test and will find an improvement, provided you follow my instructions. There is another blood test called a nuclear count which I will make each month and which will tell me whether you are improving or not. Some time I will explain this test to you.

"There is quite a little attention paid to food in the treatment of tuberculosis but, for fear I am telling you more than you can remember, I will just mention two things. You must omit any food which you know does not agree with you. Maybe later it will not hurt you. Suppose you do not eat any fried foods, because they are more difficult for you to digest than foods cooked other ways. I mention this because so many people in your condition develop stomach trouble sooner or later. Now, remember, we will discuss the food problem from time to time and later I may have more to tell you.

"Tuberculosis nowadays is considered a sanatorium disease. I mean, that people with this disease should be in a sanatorium, where all rules and regulations looking toward a cure can be carried out. Sanatorium treatment is, or should be, ideal treatment. There you are under orders in regard to rest hours, ventilation, food, hours for reading and many other things that may come up during your cure-taking period. Of course, when I mention sanatorium you have in mind a large building in some far-off State with the word 'Sanatorium' in big gold letters over the front door. Let me give you a new idea about this. This sanatorium, about which I will speak, may be anywhere in the country. It may be your own home. It matters not whether it is a shack, a cottage, a two-story residence or a big stone building. To you it is a sanatorium. Regardless of its structure or locality it is your home until you get well. Your physician will be your superintendent and will tell you what to do, answer your questions, and keep a definite line on your condition at all times. If you are going to stay at home and make your house your sanatorium, I will call and tell you how everything should be arranged. I want you to know that you can take sanatorium treatment at home or away as you choose.

"I can remember when it was almost universally thought that people with tuberculosis must go West. Many people now feel that they must go to North Carolina, while still other thousands feel that Northern New York is the place to go. I find many people have the idea that they cannot get well unless they go Southwest. I want you to know that the exact place for getting well is not agreed upon by people who study the tuberculosis problem. However, there is one thing agreed upon, and that is that there are certain things for the patient to do. We believe that it is not where patients go, but what they do. The proof of this lies in the fact that people get well in every State in the Union. So, instead of worrying about where to go we should make up our minds whether or not we are going to follow advice. If you want to take the rest and fresh-air cure in California, that is your business. If you want to take it in Texas, North Carolina or New York, that is also your business. If you want to take it at home, that depends wholly upon you. There are advantages and disadvantages in staying at home and in going away from home. People who go away from home are not worried by ignorant neighbors constantly telling them that rest in bed will make them weak and hurry them to the cemetery. This, I think, is one of the most detrimental things with which you will have to deal. On the other hand, staying at home keeps one in closer touch with people for whom one cares. This relationship is very necessary to some people, because I do not believe homesick people ever get along very well.

"Now I have told you something of the tuberculosis problem, and hope you appreciate it. You must remember that your disease has been coming on very slowly, and no doubt, for several months. You must expect it to leave slowly. This means you have a long fight, and you must not become discouraged or impatient. You have a will and you must exercise its power. I have seen a great many people recover from tuberculosis by following such advice as I have just given you. I have known many people to die who have not followed this same advice. Take your choice and begin to-day. It is up to you. I shall continue to teach you to rely upon your own efforts for a cure. I may be able to help you myself along the line of scientific treatment, about which we have learned a great deal the last few years. But remember, the fight is yours."

The foregoing is merely a suggestion looking toward proper advice to patients. It is utterly impossible to cover the whole ground in this paper because there is a great deal to say. To start a patient out properly should require at least an hour of the physician's time, discussing things in a simple way such as I have illustrated above. I firmly believe that such advice and such a beginning of the cure-taking period will change the prognosis of many cases that otherwise will end fatally. Too many of our profession want to know how to give tuberculin. Too few know how to talk to a patient. If the interest shown can be reversed, prognosis in pulmonary tuberculosis will be very noticeably and favorably changed.

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LOCAL ANESTHESIA IN THE RADICAL CURE OF HERNIA.*

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THE relative importance of the radical cure of hernia can be appreciated when we realize that six per cent. of the adult male population suffer from some form of hernia. Nearly three million people in the United States are or have been sufferers from hernia in its various forms. A radical surgical operation, properly performed by a skilled surgeon, will cure from 95 to 98 per cent. of those so afflicted. In the hands of less skilled operators a recurrence in 10 per cent. of the cases may be expected.

Preparation of the Patient.—The bowels may or may not be emptied by physic, as pleases the individual operator. A thorough cleansing bath should be given the night before the operation and in the case of unclean patients we may add a 20 minutes warm bichloride bath (75 grs. to the usual tub of water) the night before the operation. The field of operation should be carefully shaved, including the area likely to be covered by adhesive straps to retain dressings. On the table the patient may be prepared as when general anesthesia is to be employed, except that great care should be used not to cause burning from iodine, benzine, or alcohol. None of these agents should be allowed to run down into the groin and to burn the skin over the scrotum or the legs.

Preoperative Medication. — One hour before operation the following preliminary medication may be given: Morphine, gr. ¼; atropine, gr. 1/150. Morphine also tends to counteract any toxic effect of cocaine or novocaine, should a patient have an idiosyncrasy with reference to these drugs. I have not encountered this in any case. Other preparations may act as well, but the above has answered in all cases in my work.

Solutions to Produce Anesthesia.—The following solutions have been used with success for the induction of local anesthesia:

1	Procaine	gr.xii
	Adrenalin chloride, 1-1000	♏xv
	Distilled water, sterile	℥iii
2	Novocaine	gr.xii
	Adrenalin chloride, 1-1000 sol.	♏xv
	Distilled water, sterile	℥iii
3	Cocaine hydrochloride	gr.i
	Adrenalin chloride, 1-1000	♏x
	Saline solution 6/10 per cent	℥i
4	Quinine and urea hydrochloride	gr.vi
	Adrenalin chloride	♏xv
	Distilled water, sterile	℥iii

Operating Table.—Probably the most important single factor, aside from the anesthetic agent, is a comfortable table. It is little short of criminal to expect a patient to remain quiet when on a hard table. Any table will answer provided it is covered by a heavy mattress, four to six inches thick, and wide enough for the arms to rest comfortably. There should be a comfortable pillow for the head and something under the knees. In other words, the patient should be so comfortable that he will not want to move for an hour.

Feeding, Laxatives, Postoperative, Vomiting, Etc.—The patient need not miss any meal, but is less apt to have nausea when only coffee is taken for breakfast on the morning of the operation. Light diet may be continued after operation until the bowels have moved. A cathartic is usually given at end of 72 hours. An enema may be used daily if preferred, or if there is any trouble from gas in the bowel. Vomiting has been present only in cases in which a strangulation existed in which there was handling of intestines, or in which some degree of peritonitis was present. When such conditions exist all food should be omitted.

Incisions should parallel the normal folds of the skin, as nearly as possible, in both inguinal and femoral hernia. The vertical or nearly vertical incisions are followed by more prominent scars.

Suture Material.—Silkworm gut or horse hair for skin. No. 0 catgut, plain, for ligature; No. 2 twenty-day chronic, for suture, in the plastic work proper. Hemostasis must be very complete and perfect.

Operations.—My general preference has been for operations of the Bassini type. The Ferguson operation ranks second, most of the other methods being less worthy or less prominent.

Technique.—After careful preparation of the field, outline a diamond-shaped area with the long

*Paper, with lantern slides showing the technique, read before the Ohio Valley Medical Association at its twentieth annual meeting, in Evansville, Ind., November 11 and 12, 1919.

axis parallel to Poupart's ligament, beginning one inch above and one inch internal to the anterior superior spinous process of the ilium, and ending at the pubic spine; about 5 inches long and 3½ inches wide; 2½ inches above and one inch below Poupart's ligament at its mid portion. Infiltrate all sides of this double triangle with the solution, using about 20 to 25 c.c. Now pass the needle down to the external oblique muscle and, when the point is felt to pass through the apponneurosis of the external oblique, infiltrate the internal oblique, and the cremaster in its portion between the internal and external rings. By this procedure the ilioinguinal and the iliohypogastric will always be bathed in the solution. About 20 c.c. of solution will be ample for all the deep infiltration. As the nerve supply of this region passes through the internal oblique above the internal ring, by infiltrating this area we get perfect anesthesia lower down, where the operative work is carried out. The ten-minute wait before beginning the operation is most important.

Success Depends on this Procedure.—One may then proceed as in general anesthesia, except that great gentleness is essential to perfect success. Sharp dissection with knife or scissors gives the best results. A perfect knowledge of the anatomy is essential to success in this operation.

When the sac is freed and ready to remove it is sometimes necessary to inject a little anesthetic at the neck, where there is pain. This is rarely necessary.

Postoperative Care.—Infection has been no more frequent with local than with general anesthesia. in fact, it has not occurred in any of my cases in which local anesthesia has been employed.

Dressings are changed on the sixth to the eighth day, and skin sutures are removed. The patient remains in bed fourteen days, and should do no heavy work under three months. A light diet is given for four days, regular diet thereafter. The bowels are moved at end of one hundred hours, or earlier, if patient so desires. The patient may assume any position he desires in bed at any time after operation.

I have used local anesthetic in all types of hernia, and at all ages from 14 to 84 years, and in no case have I had to change to general anesthesia. Aged patients are especially good subjects for local anesthesia. The degree of relaxation is even greater, it seems to me, than where ether is used.

Intestinal anastamosis has been accomplished without difficulty.

Conclusions.—1. Local anesthesia in hernia is not the choice of anesthetics for the amateur.

2. With proper knowledge of the regional anatomy, the technique of nerve blocking and infiltration, any of the classical operations for hernia may be completed under local anesthesia.

3. Extreme gentleness in handling the tissues is one of the prime requisites for success in local anesthesia.

4. The nerves are readily identified and need not be cut when proper dissection is made.

5. Tension on sutures should never exceed that necessary for the approximation of the tissues.

6. Every possible detail to promote the comfort of the patient should be utilized.

Suite 43, The Groton Building.

DREAMS.

By H. LAVESON, M.D.,

NEW YORK.

Dreams are very largely the expression of unfulfilled desires. Where, as in children the waking experience and the sleeping differ from each other by very little, the dream, or sleeping experience, readily takes the form of the ungratified desires of the day. But as the mind grows older the dream expression of a desire gets more intricate. Dreams are a part of every one's normal experience, yet they are shown here to be of the same tissue, of the same mental nature, as other phenomena that are undoubtedly morbid.

Let it be granted that a person has undergone a strongly emotional experience—for example, a sudden shock or fright. If the person is highly nervous the shock may result in some degree of dissociation. This may take the form of a loss of memory for certain parts of the experience. By some process the painful experience disappears from conscious memory, but it doesn't cease to exist. It may lie dormant, or it may work subconsciously, and throw up the emotional bubbles that continue, without a known reason to excite the ordinary consciousness (complex).

Dreams can be divided into three classes according to their relation toward the realization of desire. First come those which exhibit a nonrepressed, nonconcealed desire; these are dreams of the infantile type, becoming ever rarer among adults. Second, dreams which express in veiled form some repressed desire; these constitute by far the larger number of our dreams, and they require analysis for their understanding. Third, these dreams where repression exists, but without or with but slight concealment. These dreams are invariably accompanied by a feeling of dread which brings the dream to an end.

Professor Freud has constructed empirical laws out of his masses of material. The dream as it appears to the dreamer he calls the manifest dream ideas. But as these are too absurd to form a coherent reality he gives ground for believing that they represent latent dream ideas. The manifest dream is a mass of symbols representing elements in the latent dream ideas. How the latent dream ideas generate the manifest dream is discovered by psychoanalysis, the translation from the latent to the manifest is the effect of the dream work. The dream work is the very core of the difficulty. It is around this that Professor Freud's greatest subtleties of method are focused. He shows that every dream is linked to something that occurs on the previous day, some recent experience, but the experience emerges in the dream as part of the current panorama of the subjective life, and there is no date to the beginning of the panorama—it may go back to any point in the individual's history, even into the preconscious days of early infancy. The day's experience and the life's experience flow in a single stream, and the images that appear in dreams are but the symbols of all the latent ideas of that experience. How, by displacement of this element or that, compound symbols are formed; how, by the foreshortening of experience and the linking of the past with the present in a single idea, masses of

old memories are clotted into a single point; how, in the freedom of the dream world, where the tension of the waking life is relaxed, where the exacting stimulations of the day are reduced, where the consciousness of duty to be done in the highly organized conditions of social conduct is lowered, where, in a word, the *censor* is drowsy or asleep, where the dream symbols shape themselves into dramatic scenes of endless variety—these it is that Professor Freud's theory endeavors to set forth.

The Dream-Mechanism.—Compression or condensation: It is not at first easy to form an opinion as to the extent of the condensation. The more deeply one goes into analysis, the more deeply one is impressed by it. There will be found no factor in the dream whence the chains of associations do not lead in two or more directions; no scene which has not been pieced together out of two or more impressions and events. The scenes are composite, made out of events that occur at different times and of two or more pictures. The scenes in the dream lead to a whole group of reminiscences, each one of which contributes to the dream content. The stuff of the dream thoughts which has been accumulated for the formation of the dream scene has one or more common factors. The different elements are put one on top of the other; what is common to the composite picture stands out clearly, the opposing details cancel each other. This process of reproduction partly explains the wavering statements, of a peculiar vagueness, in so many elements of the dream. *When there is nothing in common between dream thoughts, the dream work takes the trouble to create a something* in order to make a common presentation feasible in the dream. The simplest way to approximate two dream thoughts which have as yet nothing in common, consists in making such a change in the actual expression of one idea as will meet a slight responsive recasting in the form of the other idea. The process is analogous to that of rhyme, when consonance supplies the desired common factor. Through condensation of the dream certain constituent parts of its contents are explicable.

Displacement.—The dream thoughts which have a claim to the greatest importance are either not present at all in the dream content, or are represented by some remote allusion in some obscure region of the dream. There is no other process which contributes so much to concealment of the dream's meaning, and to make the connection between the dream content and dream ideas, unrecognizable. The psychical intensity, significance, and emotional nature of the thoughts become transposed in sensory vividness. In these dreams not a bit of the dream idea has retained its own psychical value; everything essential in these dream ideas has been replaced by unessentials while every kind of transition between these conditions can be found. The more obscure and intricate a dream is the greater is the part to be ascribed to the impetus of displacement in its formation. The content has a different center of interest from that of the dream ideas.

Before leaving the question of dream displacement let us consider the remarkable process in the formation of dreams in which condensation and displacement work together toward one end. In condensation we have already considered the case where two conceptions in the dream having something in common, some point of contact, are replaced in the dream content by a mixed image, where the distinct germ corresponds to what is common, and the indistinct secondary modifications to what is distinctive. If displacement is added to condensation, there is no formation of a mixed image, but a common mean which bears the same relationship to the individual elements as does the resultant in the parallelogram of forces to its components.

Regression.—The dream thoughts which we learn from the analysis exhibit themselves as a psychical complex of the most complicated superstructure. Their parts stand in the most diverse relationship to each other; they form backgrounds and foregrounds, stipulations, digressions, illustrations, demonstrations, and protestations. It may be said to be almost the rule that one train of thought is followed by its contradictory. No feature known to our reason while awake is absent. If a dream is to grow out of all this, the psychical matter is submitted to a pressure which condenses it extremely to an inner shrinking and displacement, creating at the same time fresh surfaces, to a selective interweaving among the constituents best adapted for the construction of these scenes. Having regard to the origin of this stuff, the term regression can be fairly applied to this process. The dream's means of expression must therefore be regarded as meager in comparison with those of our imagination, though the dream does not renounce all claims to the restitution of logical relation to the dream thoughts. It rather succeeds with tolerable frequency in replacing these by formal characters of its own.

Intelligibility.—These dreams properly made up are the result of an elaboration in every way analogous to the psychical action of our waking life. The dream content is thus secured under the pretense of certain expectations, is perceptually classified by the supposition of its intelligibility, thereby risking its falsification, while in fact the most extraordinary misconceptions arise if the dream can be correlated with nothing familiar. Such dreams are usually short, and, as a general rule, do not seem very noticeable, because everything remarkable or exciting surprise is absent. All signs of a lowered or subdivided psychical activity are wanting. Yet we never raise any objection to characterizing them as dreams, nor do we confound them with the products of our waking life.

Distortion.—These dreams are void of both meaning and intelligibility; they are incoherent, complicated, and meaningless. The overwhelming number of our dreams partake of this character.

Repression.—Viewing the dream content as the representation of a realized desire, and referring its vagueness to the changes made by the censor in the repressed matter, it is no longer difficult to grasp the function of dreams. This conception of repression once fixed together with the distortion of the dream in relation to repressed psychical matter, we are in a position to give a general exposition of the principal results which the analysis of dreams supplies. We learn that the most intelligible and meaningful dreams are unrealized desires; the desires they pictured as realized are

known to consciousness, have been held over from the daytime, and are of absorbing interest. The analysis of obscure and intricate dreams discloses something very similar; the dream scene again pictures as realized some desire which regularly proceeds from the dream ideas, but the picture is unrecognizable, and is cleared up only in the analysis. The desire itself is either one repressed, foreign to consciousness, or it is closely bound up with repressed ideas. The formula for these dreams may be thus stated: They are concealed realizations of repressed desires.

We hold that our psychical apparatus contains two procedures for the construction of thoughts. At the borderland of these two procedures, where the first passes over into the second, a censorship is established which passes only what pleases it, keeping back everything else. That which is rejected by the censorship is, according to our definition, in a state of repression. Under certain conditions, one of which is the sleeping state, the balance of power between the two procedures is so changed that what has been repressed can no longer be kept back. In the sleeping state this may possibly occur through the negligence of the censor; what has been hitherto repressed will now succeed in finding its way to consciousness. But as the censorship is never absent, but merely off guard, certain alterations must be conceded so as to placate it. It is a compromise which becomes conscious in this case—a compromise between what one procedure has in view and the demands of the other.

511 East Eleventh Street.

HUNTINGTON'S CHOREA.*

REPORT OF CASE.

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Huntington's chorea is a disease of the nervous system and is said to be hereditary and of marked chronicity. It occurs usually between the ages of 30 and 50. The etiological factors are known to be hereditary. The factors of interest are age, motor disturbance, and mental defect.

Symptoms.—The onset is insidious. There are slight changes in character, and irritability; also jerky choreic movements which cease during sleep. All movements are involved. There is an explosive speech. After several years the patient becomes weak and is confined to his chair. Mental changes often develop independently, perhaps in childhood, such as excitability and eccentricity. These show at the time of development of the choreic movements irascibility, mental instability, and despondency. Emotional deterioration follows.

Diefendorf speaks of a group of Huntington's chorea in which mental symptoms develop and simulate the hebephrenic type of dementia præcox. These suffer from insomnia, malaise and develop ideas of self-reference, anxiety, suspicions, ideas of infidelity, and impulsive tendencies.

Course.—There is often great unrest, mental signs get suddenly worse and patient dies from exhaustion in 5, 10, or 15 years.

Pathology.—There is thickening of the meninges. Others show brain atrophy (loss of cells of the 3d layer). There is a neurogliar increase. Some show arteriosclerosis in which the frontal areas are often involved. In some cases there is rubrothalamico-cortical extension of the cerebellar pathways. Many find changes in the lenticular region as well as in the putamen.

The *prognosis* is bad—the patient dying of exhaustion.

Therapy.—Nihil.

J. C., male, age 34, came to our clinic at the Post Graduate Hospital on Dec. 9, 1918, with the complaint that he has "shaking of the various parts of his body," partial loss of function of the left arm, that he cannot use it very much. Claims this came on after hurting his arm 4½ years ago when it got jammed in between the door and wall. Six months after the accident, he became very shaky, with nervous twitchings of the shoulders, both arms, and legs.

The family history shows the father died at 60, cause unknown; mother living at 62 and well; one brother and one sister living and well. There is no history of any one in the immediate or remote family having had such a condition. The personal history is negative except for the accident described above.

Status præsens: The patient is an adult male, appears his age. Shakes all the time while being examined. Has various grimaces, snorts, smiles at times without any cause. The examination is negative except for the fact that the patient has bad teeth. There is also some irregularity of the heart. There is atrophy of the left forearm with an extensive contracture of the left elbow joint. The patient is well oriented, answers to the point, and so far does not show mental clouding.

The interesting features of this case are the facts that there is no history of any one in the family having had this form of disease and that the patient was apparently without any symptoms of the disease until six months after the accident in which he suffered severe trauma of his left arm. At the present time he works in the local Navy Yard at a skilled vocation in which a certain finesse is required, thereby earning a livelihood. He cooperates exceedingly well and is quite optimistic as to his apparent improvement and as to the progress of his case. He was referred to his dentist for attention to his teeth, and was put on cod liver oil and iron as a tonic, with increasing doses of Fowler's solution.

The question which comes to one's mind is whether or not the injury that the patient suffered was the factor which precipitated the onset of this disease, taking it for granted that there was a neuropathic tendency latent in the patient.

I am indebted to Professor Graeme Hammond for kind permission to report this case.

Hotel Grenoble, Seventh Ave. at 56th Street.

*Presented at a meeting of the Yorkville Medical Society, March 17, 1919.

Typhus in Poland.—The total number of cases of typhus in Poland since January 1, 1919, is given as 170,000 up to about October. The last month available for statistics, September, presented 13,508 cases with 1,192 deaths for the civil population. Among the military for the same month the morbidity was 1,412 cases and 62 death, the combined mortality rate being 8.2 per cent.—*La Presse Médicale.*

Diuretic Action of Ouabaine.—Dufour and Semelaigne presented a case of an alcoholic with cirrhotic ascites, the latter condition reappearing promptly after each tapping. Half a milligram of ouabaine injected into a vein was followed in 24 hours by a profuse diuresis, the quantity rising from 1 to 4 liters for the day. The injections were repeated every second day. At present the ascites has ceased to reform.—*La Presse Médicale.*

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE DIAGNOSIS OF ENCYSTED TUBERCULOUS PLEURISY OF THE APEX.

THE data now in our possession lead to the conclusion that the diagnosis of encysted tuberculous pleurisy of the apex will always be a matter of no little difficulty. Numerous affections may simulate it and therefore should be considered. A pneumonia of the apex may be suspected because of the percussion dullness and absence of the respiratory murmur in the upper lobe, and throughout the area of the fluid collection the voice sounds will have a greater resonance than elsewhere. Now these phenomena are also found in consolidation, while the pain usually complained of at the onset of a pleurisy may be totally absent. A mistake is all the more easy because a certain number of cases of pneumonia of the apex—especially in children—have a single physical sign, namely, dullness, the stethoscopic signs usually being absent. However, the dullness is less distinct in pulmonary consolidation than in fluid collections and does not offer resistance to the exploring finger, and these are the best signs to go by when a radioscopic examination cannot be had. Radioscopy will reveal in pneumonia a shadow extending over the entire apex, but, as Weill and Mouriquaud have recently shown, it is triangular in shape with the base in the axilla and the apex at the hilum, while in encysted pleurisy the lower border of the shadow offers an upward convexity. If doubt remains as to the diagnosis exploratory puncture should be resorted to.

Tuberculous infiltration of the apex, tracheobronchial lymphnodes with congestion of the apex and unilateral pulmonary and lymphnode tuberculosis offer analogous symptoms—dullness and a respiratory souffle with or without râles. In children particularly the research for vocal vibration is often impossible so that the diagnosis may be most difficult. Radioscopy is unquestionably useful because a tuberculous infiltration will give rise to an opacity far less marked and much more diffuse than an encysted fluid collection, while the lower border does not show an upward convex line.

The two other affections which may simulate encysted pleurisy of the apex are hydatid cyst and cancer, both of which give rise to symptoms similar to those of the pleurisy, namely, dullness, decrease of the vesicular murmur, or bronchial souffle. Hydatid cyst usually occupies the middle portion or the base of the apex, while puncture and examination of the fluid withdrawn will settle the diagnosis in doubtful cases. Pulmonary cancer, when extensive, may involve the entire upper lobe, and puncture may not always clear up the differential diagnosis, for in one instance of malignant disease a thick yellow fluid was withdrawn.

Finally, an anterior or posterior mediastinal pleurisy may assume the clinical aspect of encysted pleurisy of the apex. However, one of the anterior mediastinum, whether a purulent or serofibrinous tuberculous pleurisy, is accompanied by more marked pain and dyspnea than that occurring at the apex. The physical signs are found lower down than those at the apex, while the dullness will be more prone to simulate a pericarditis with effusion. On the other hand, the heart will be displaced, but the beats will not be dull so that pericarditis can be eliminated. The radiological examination will reveal an enlargement of the cardiac shadow which is not animated by any beat. Empyema of the posterior mediastinum gives rise to dyspnea, spasm of the glottis, dysphagia, and hoarseness due to paralysis of the left recurrent nerve, all of which are absent in pleurisy of the apex. On the other hand, the physical signs are only to be found in the paravertebral region and radiology reveals a longitudinal opacity filling the clear median space when the thorax is examined obliquely. After all, the best means for arriving at a correct diagnosis of encysted tuberculous pleurisy of the apex is by resort to radiography and exploratory puncture.

ÆQUANIMITAS AND INFLUENZA.

FOR a people so often hard to rouse, we are certainly very easy to throw into a panic. We feed with relish upon the "menaces" served up by the lay press, among the latest of which is influenza, which we seem to have frequently with us. Until we forget the autumn of 1918, the papers will have no difficulty in getting us excited about that baffling disease. We of the profession need not think that we are too imperturbably scientific to be affected by the panic of the multitude. We cannot help it. Our attitude is important; and it is important that we should have an attitude, especially in the early days of an epidemic. Not a few medical men become as panicky as any of their lay brethren and urge their patients not to venture into a world where the pestilence walketh in darkness. Those of us who become thus worried will in all probability report every case that bears any resemblance to "flu"—will take "special precautions," no matter how cumbersome the precautions may be—will accept the disease as dangerous from the start and act accordingly.

Contrasted with those who take the attitude of the alarmist are those who pooh-pooh the whole affair, like the man who, when the flood began, thought the rain would not amount to much. Doctors of

this persuasion will probably let many cases go unreported, rather than add to the startling numbers already published. Health Departments may insist that the disease be reported, but doctors still "use their judgment" in the matter, and means are not at hand to prevent their getting away with it. Many of them do it from motives that are higher than carelessness or indifference, *i.e.* the difficulty of saying just when a "grippy cold" stops and "influenza" begins; or again, reluctance to provide material for the newspapers to start an epidemic of their own.

That cases should be reported as soon as the diagnosis is made is too obvious to require repetition to medical men. The question is: When are we to make a diagnosis? Clearly the lack of a uniform conception of just what influenza is has swelled the totals enormously. Doctors who immediately report a case of fever, malaise, and "cold," will naturally have a higher figure than those who wait a few days to see whether the fever remains high, whether there is persistent leucopenia or marked prostration. Should we diagnose early, on questionable evidence, and arouse the public? Or should we wait till the facts (and often the patients) are all in, and create only warrantable alarm?

For the purposes of proper quarantine (known to be of value against the complications, if not against the disease itself) the early diagnosis, even with a greater percentage of mistakes, has every advantage over the "slow and careful" attitude. In such times alarming the public may be more a virtue than a crime. In fact, the public has a way of disregarding all efforts for its own protection until it gets really scared. The therapeutic measure known to be of the greatest value in this disease is early rest in bed. The first essential to this is acquiescence, a giving in on the part of the patient. And, as nearly all of us are obstinate, fright is essential to acquiescence. Tell a patient that he has the dreaded "flu," and he may obey orders. Tell him that he has a cold or the grippe, and he will go down the street to a movie.

Equanimity is, next to honesty, the greatest virtue a medical man can have. It is in greatest demand in time of epidèmics. But, if carried to the extent of harmful procrastination and optimism, it smacks too much of lethargy to be virtuous. A public worried about disease is far more likely to be healthy than a public indifferent to disease, Mother Eddy to the contrary notwithstanding.

DYSPNEA AND EARLY DEATH IN ARTERIOSCLEROSIS.

In subjects in advanced years presenting arteriosclerosis nocturnal paroxysms of dyspnea, related manifestly to the patient's diet, are common. The attacks take place at a regular time, from two to four hours after the evening meal, at a time when the stomach is still filled with food. This dyspnea and the insomnia which often goes with it are about the only functional disturbances met with in these patients who have aortic lesions and a high blood-pressure. They come to hospital with the most varied diagnoses on the part of the attending practitioner. The antecedents do not reveal any major infectious disease in their past, but an intoxication, a chronic infection, and often overwork will be noted. Although these subjects may at a given time present anginal attacks and pulmonary edema, and although they have an emphysema, and the pain and respiratory distress may be increased from this fact, nevertheless the paroxysms of dyspnea are directly dependent upon the diet. They are produced by the food toxins and rapidly give way to a milk diet which has the advantage of being only slightly toxic and facilitates the elimination of the poisons, while at the same time the volume of food is reduced.

The paroyxsms of dyspnea may terminate favorably, and the patient progressively returns to his normal state, but he will always be menaced with the return of the accidents the moment he gives up the diet. If this is exactly followed, extremely long remissions will be noted. The prognosis of these paroxysms of dyspnea is all the more serious, the further the arteriosclerosis is advanced. They may result in rapid death, which also is dependent on the intoxication. In order to forestall these accidents, or at least to diminish their frequency, it is absolutely necessary to subject the patient when he is convalescent to a special diet and follow the case closely thereafter. By so doing the physician may keep the patient in a fair state of comfort for some time.

PROGRESS IN OUR KNOWLEDGE OF VARIOLA.

FEW medical men realize the advances recently made in our knowledge of smallpox, largely because we have had little experience with the disease in recent years. An article by Söbernheim in the *Correspondenz Blatt für Schweizer Aerzte* for December 4, 1919, xlix, 49, calls attention to the possibilities of diagnosis by laboratory methods. The various serological and microscopical tests have been shown to be worthless, but Paul's inoculation test on the rabbit's cornea has more than made good, although negative results are inconclusive. In a typical behavior the presence or absence of Guarnieri's corpuscles, which alone would be of no practical value, may be invoked. The preliminary work in Paul's test is simple, for it is only necessary to send suspicious pus, which has been smeared on a cover glass and dried, to the nearest laboratory. The cornea of the rabbit is scarified and the pus rubbed in, whereupon in 36 to 48 hours characteristic macroscopical appearances known technically as epitheliosis may be studied by the lens. The eye is afterwards enucleated and studied at leisure. It is of extreme interest to note that only smallpox virus and vaccine matter can cause this reaction, a proof apparently of identity of virus. We have also recently learned that in smallpox the greatest danger from contagion may be through the secretions of the nose and nasopharynx, which can transmit the disease at an early period. Paul's test has also shown that the sputum is infectious, and these discoveries make it easy

to understand how the disease may be air-borne within a short radius. Finally Paul's test has given us the comforting assurance that in all probability there is no such person as a healthy smallpox carrier. The theory of the contagion of the pustules late in the disease is not attacked, for there is no reason whatever to doubt this fact, crusts having been used for centuries for inoculation of variola.

Influenza or Epidemic Sepsis.

Saxorrafos of Athens asks this by no means novel query in *Le Bulletin Médical* for January 3, 1920, xxiv, 1. The author was reminded in these cases of fulminating influenzal sepsis of the same phenomenon as witnessed in scarlatina and mixed infection of diphtheria—in other words, of streptococcemia *per se*. The fact of renal participation was as potent as any in suggesting this analogy, nephritis being a common lesion in sepsis but rare in ordinary influenza. A syndrome common in his experience was as follows: initial headache, coryza, angina, and fever, all mild; coated tongue, anorexia, nausea; then after 12 to 14 hours sudden rise of temperature to 104° or so, with a very irritable cough like pertussis, and dyspnea; this development seemed to mean invasion of the lobules of the lung. The patient, thus far in satisfactory general condition, becomes restless and the urine is found to be loaded with albumin and to have a sediment of casts and renal epithelia. Oliguria may be added. Headache becomes intensified and the patient becomes acutely septic. Upon this background asphyxia develops and death follows from acute edema of the lungs. The sputum contains the strepto- and pneumococcus. By legitimate expansion of this syndrome most of the phenomena of the late pandemic are covered and the various clinical types correlated into a picture of acute sepsis. Whether or not typical bronchopneumonia was present need make no essential difference. In arguing for a dualism between the late pandemic and that of 1890 the author stresses the renal complications, but in the older episode there was a wake of albuminuria which made it difficult for insurance companies to do business for a couple of years; so much was this the case that the medical director of one of the large old line companies felt obliged to visit personally some of the leading provincial examiners to arrange a *modus vivendi* to meet these numerous postponements for post-grippal affections.

Vitamines in the Urine.

It has been shown in the case of pigeons that they can thrive on a diet of whole rice, but when this article is changed to polished rice there appears after an incubation of 15 or 20 days fatal polyneuritis or artificial beriberi. Gaglio, who represents in part his colleague Roseo, who carried out the experiments, was able to show that by giving a few cubic centimeters of human urine daily one can prevent this catastrophe, whence it appears that the urine of healthy human beings contains vitamines (*Il Policlinico*, November 23, 1919, xxvi, 47). Even a few hours after 3 or 4 c.c. of urine previously concentrated on a water bath have been administered, the animal revives and makes abortive attempts to walk and fly. Complete recovery follows the use of the remedy two or three times daily over a short period. If polished rice and urine are given together the animal does well for several days, but later develops a mild type of polyneuritis. The experiment appears to show that the surplus vitamines formed daily from the food are eliminated by the kidney. There are also substances which may be derived artificially from pyridine and pyrimidine and their congeners, and from xanthin derivatives, which if not entitled to be called vitamines at least behave in similar fashion in connection with artificial polyneuritis of birds.

News of the Week.

Osler Memorial Meeting.—A meeting in memoriam of Sir William Osler, M.D., will be held at the New York Academy of Medicine on Saturday evening, February 21, at 8:30 o'clock. Addresses will be made by Drs. Welch of Baltimore, Craig of Philadelphia, Cushing of Boston, and Shepherd of Montreal.

Physicians in New York, New Jersey and Connecticut.—The Medical Directory of New York, New Jersey, and Connecticut for 1919, compiled under the direction of the Medical Society of the State of New York, has recently appeared. It contains the names of 14,446 physicians in New York State (8,100 of whom are in New York City), 2,767 in New Jersey, and 1,421 in Connecticut.

Mortality Statistics for 1918. —The Census Bureau's annual compilation of mortality statistics for the death registration area in continental United States shows 1,471,367 deaths as having occurred in 1918, representing a rate of 18.0 per 1,000 population. This rate, the highest on record in the Census Bureau, is due to the epidemic of influenza. Of the total deaths, 477,467, or over 32 per cent., were due to influenza and pneumonia (all forms), 380,996 having occurred during the last four months of the year, during the influenza pandemic. The next most important causes of death were organic diseases of the heart, tuberculosis (all forms), acute nephritis and Bright's disease, and cancer, which together were responsible for 391,391 deaths, or nearly 27 per cent. of the total number. Next in order of frequency were apoplexy, diarrhea and enteritis, arterial diseases (atheroma, aneurysm, etc.), whooping cough, diabetes, bronchitis, diphtheria, typhoid fever, and measles.

Red Cross Aids in Thirty-nine Disasters in 1919. —According to recent announcement, the Red Cross spent approximately $421,000 during the past year, aiding victims of thirty-nine of the most serious disasters in the United States. These disasters resulted in 650 deaths, injury to 1,800 persons, and property losses of $25,000,000 to about 50,000 persons.

Impertinent Advice to Practitioners of Medicine.—During the recent regional conference of the W. C. T. U., with delegates from fifteen States, resolutions were introduced protesting against the use of whiskey, the "discredited drug," in influenza. Also, William H. Anderson, of the Anti-Saloon League, in a recent address, had the impudence to impeach the honesty of physicians who

prescribe whiskey for influenza, holding that "the doctor who defends alcoholic liquor as medicine argues from his appetite or his prejudice instead of from his judgment or any scientific knowledge."

Strike Among Insane Patients. — According to press reports, the patients at the territorial hospital for the insane at Honolulu, who have been working in the tailor shop, making clothes for themselves and other patients, have gone on strike, refusing to work unless paid for their labor.

Dr. Seymour Oppenheimer of New York City has been appointed by Gov. Smith a trustee of the State Institute for the Study of Malignant Diseases.

Charged with Violating the Harrison Law.—Dr. Ernest S. Bishop of New York City was arraigned before Federal Judge Hough on February 10, and held in $5,000 bail, charged with violating the Harrison Drug Law. The indictment charges the defendant with prescribing morphine, heroine, and cocaine in excessive amounts and contrary to the legitimate practice of medicine, to habitual users of narcotic drugs. When arraigned the defendant pleaded "not guilty," and was released on bail pending trail. Of course, no one who knows Dr. Bishop can for a moment believe that his offending was other than technical, and the trial when it comes off will without doubt make this clear to the dullest or most prejudiced mind. The charge is, however, a very serious one, and Dr. Bishop's friends will sympathize with him in his trouble and wish for him a speedy trial and triumphant acquittal.

Junior Red Cross Activities.—During the war the school children of America, through the Junior Red Cross, produced 15,722,078 relief articles to an aggregate value of $10,152,461.

Austrian Birth and Death Rates.—During the past year, according to reports from Vienna, there were 50,000 deaths in Austria, while there were only 18,000 births. In 1913 there were 36,000 births and 33,000 deaths.

American Red Cross Nurses in Europe.—Miss Alice Fitzgerald, recently appointed chief nurse to the League of Red Cross Societies, gave the number of nurses in Europe on November 1, 1919, as follows: France, 30; Italy, 7; Palestine, 7; Near East, 60; Balkans, 61; Russia proper, 2; Siberia, 139 to 160; Poland, 10; Greece and Serbia, 6; Persia, 1. From now on only very few specially trained nurses with unusually high qualifications will be sent abroad.

Cholera at Brest-Litovsk.—In consequence of the impure water supply and the large number of prison camps situated at Brest-Litovsk, this has long been recognized as one of the most unsanitary localities in central Europe. Cholera has broken out there, and Brest is under quarantine, as is also Kowel, a railroad center on one of the main traffic lines to Brest. The Polish Ministry of Health immediately requested the cooperation of the American Red Cross in the institution of precautionary measures. Within a few hours laboratory material and apparatus for cholera diagnosis were assembled from the American warehouses, and a thoroughly equipped vaccine coach was on its way, behind a special locomotive, to the scene of the threatened epidemic. American pathological experts made supplies of vaccine and conducted analyses in their railway-car laboratory unit, pending the arrival of Polish bacteriologists.

Natality Division of Ministry of Health of France.—President Poincaré issued a decree on January 27 creating a Council of Natality of the Ministry of Health, the duty of which is to deal with the need of France for more children. The decree provides that the council shall consist of thirty members, and must meet once a month. Among the duties imposed upon this body are "to examine all measures which may combat depopulation, increase the birth rate, develop puericulture, and protect and honor large families." As soon as possible it is to recommend laws which will put their findings into effect. In the meanwhile it is gratifying to learn from the press despatches that Paris maternity hospitals are filled to overflowing, and are asking the government for more funds with which to take care of the hundreds of cases for which they now have no room.

War Prisoners in Siberia Succumb to Smallpox and Typhus.—According to dispatches to the International Red Cross headquarters at Geneva nearly 375,000 of the 500,000 Austro-Hungarian prisoners of war taken by Russians have died in Siberia from smallpox and typhus. The rest are kept alive only by the efficient work of Japanese, American, and English physicians assigned to towns along the Trans-Siberian Railway.

Medical Fraternity Meets.—The Phi Delta Epsilon Fraternity held its sixteenth annual session in Philadelphia January 2 and 3. Officers for the ensuing year were elected.

The Medical Section of the American Life Convention will hold its tenth annual meeting at French Lick, Indiana, March 10-12.

League of Red Cross Societies.—The first general council of the League of Red Cross Societies will meet at Geneva, March 2. Delegates from each national society have been invited. It is proposed at this meeting to map out a program for the advancement of health, prevention of disease, and alleviation of distress throughout the world.

Spotted Fever in Galicia.—According to advices from Switzerland January 22, there were more than 100,000 cases of spotted fever in Eastern Galicia and more than 10,000 deaths have resulted.

Medical Society Elections.—The RHODE ISLAND HOMEOPATHIC SOCIETY, at its seventieth annual meeting, held January 9 at Providence, re-elected the officers who had served during the past year. These are: *President*, Dr. William M. Muncy; *Vice-President*, Dr. James H. Prior; *Secretary*, Dr. Martha Boyce Bates; *Treasurer*, Dr. Marion Albro Gleason.

THE WASHINGTON COUNTY (R. I.) MEDICAL SOCIETY, at its annual meeting, held at Westerly January 8, elected the following officers for the ensuing year: *President*, Dr. P. J. Manning, Wickford; *First Vice-President*, Dr. Henry L. Johnson, Westerly; *Second Vice-President*, Dr. William Veal, Stonington; *Secretary-Treasurer*, Dr. W. A. Hillard, Westerly; *Auditor*, Dr. Samuel C. Webster, Westerly.

THE NASHVILLE (TENN.) ACADEMY OF MEDICINE

and the DAVIDSON COUNTY MEDICAL SOCIETY, at a joint meeting held in Nashville January 6, elected the following officers for the two societies for the coming year: *President*, Dr. W. C. Dixon; *Vice-President*, Dr. S. M. Bloomstein; *Secretary* (re-elected), Dr. Jack Witherspoon.

THE COLUMBIA (S. C.) MEDICAL SOCIETY, at a meeting held January 12, elected the following officers for the ensuing year: *President*, Dr. George H. Bunch; *Vice-President*, Dr. LaBruce Ward; *Secretary-Treasurer*, Dr. Floyd D. Rodgers.

THE KNOX COUNTY (ME.) MEDICAL SOCIETY elected the following officers for the ensuing year: *President*, Dr. Walter M. Spear; *Vice-President*, Dr. J. G. Hutchins; *Secretary-Treasurer*, Dr. D. North.

THE SPARTANBURG (S. C.) MEDICAL SOCIETY, at its annual meeting held December 20, elected the following officers to serve during the coming year: *President*, Dr. D. L. Smith; *Vice-President*, Dr. W. E. Lyles; *Secretary*, Dr. J. E. Edwards; *Treasurer*, Dr. Oscar B. Wilson.

THE SOCIETY OF AMERICAN BACTERIOLOGISTS, at a meeting held December 31, at the Massachusetts Institute of Technology in Cambridge elected the following officers for the coming year: *President*, Dr. Charles Krumwiede of the research laboratory of the New York City Health Board, succeeding Professor S. C. Prescott of Massachusetts Institute of Technology; *Vice-President*, F. C. Harrison, President of MacDonald College, Montreal; *Secretary-Treasurer*, Dr. A. Parker Hitchens (re-elected). Dr. L. A. Rogers of the Bureau of Animal Industry, Washington, D. C., was made delegate to the American Association for the Advancement of Science.

THE YORK COUNTY (MAINE) MEDICAL SOCIETY, at its ninety-ninth quarterly meeting held January 7, elected the following officers for the ensuing year: *President*, Dr. F. D. Smith, York Village; *Vice-President*, Dr. Paul S. Hill, Saco; *Secretary*, Dr. A. L. Jones, Old Orchard; *Treasurer*, Dr. Carl G. Dennett, Saco.

THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST, at the close of its fifth annual session, held at El Paso, Texas, elected the following officers for the ensuing year: *President*, Dr. Warner Watkins, Phoenix, Ariz.; *First Vice-President*, Dr. James Vance, El Paso, Texas; *Second Vice-President*, Dr. M. K. Wilder, Albuquerque, N. M.; *Secretary-Treasurer*, Dr. J. R. Van Atta, Albuquerque, N. M. The next annual meeting will be held at El Paso.

THE CUMBERLAND COUNTY (ME.) MEDICAL SOCIETY, at its annual meeting held in December elected the following officers: *President*, Dr. Francis J. Welch; *Vice-President*, Dr. Daniel Driscoll; *Secretary-Treasurer*, Dr. E. E. Holt, Jr.

Obituary Notes.—Dr. THOMAS F. CONNEEN of Portland, Me., died suddenly January 21 from cerebral hemorrhage, in his forty-fifth year. He was graduated from the Medical School of Maine in 1901. He was a member of the American Medical Association, Practitioners' Club, and other organizations.

Dr. LEWIS WHITE CALLAN of New York City died of pneumonia January 21, at the age of 42. He was graduated from the Medical Department of the University of Pennsylvania in 1901, and specialized in ophthalmology. He was connected with the New York Eye and Ear Infirmary, and was ophthalmologist to the Lying-In Hospital. He was a member of the American Ophthalmological Society and the American Medical Association.

Dr. JOHN D. KELLY, New Haven, Conn., died suddenly from cardiac disease January 11, at the age of 73. He was graduated from New York University Medical College in 1880.

Dr. JOHN AUSTIN KANE of Brooklyn, N. Y., died of pneumonia January 23, at the age of 41. He was graduated from Harvard Medical School in 1902. He was a member of the American Medical Association.

Dr. FRANK B. FULLER of Pawtucket, R. I., died suddenly from cardiac disease January 23, in his sixty-seventh year. He was graduated from the Medical School of Harvard University in 1878. Dr. Fuller was a member of the American Medical Association and of various local organizations.

Dr. PATRICK J. HUGHES of Lawrence, Mass., died January 26, at the age of 42. He was graduated from University and Bellevue Hospital Medical College in 1902.

Dr. JULIUS S. CLARK of Melrose, Mass., died January 27, at the age of 81. He was graduated from the Georgetown University School of Medicine, Washington, D. C., in 1869. Dr. Clark was a veteran of the Civil War, and a member of the Massachusetts Medical Society, and other organizations.

Dr. M. G. OVERLOCK of Worcester, Mass., died January 30, at the age of 54. He was graduated from Baltimore Medical College in 1896. Dr. Overlock made a special study of tuberculosis, and was instrumental in securing legislation requiring the maintenance of tuberculosis hospitals in cities and towns of Massachusetts.

Dr. GEORGE VICTOR GENZMER, Lieutenant M. C., U. S. N. R. F., of Albany, N. Y., died of pneumonia at Verona, N. J., on January 30, at the age of 29. He was graduated from Albany Medical College in 1913.

Obituary.

ELMER ERNEST SOUTHARD, M.D.,

CAMBRIDGE, MASS.

Dr. ELMER ERNEST SOUTHARD of Cambridge, Mass., Assistant Professor of Psychology at Harvard University and Bullard Professor of Neuropathology at Harvard Medical School, died of pneumonia at the Prince George Hotel, New York City, February 9. He had come to New York February 1 to deliver two lectures, and had spoken before the New York Neurological Society February 3, and the Association of Mental Hygiene on the fourth. He became ill the following night, succumbing to the disease on the third day of his illness.

Dr. Southard was born in Boston, July 28, 1876. He was graduated from Harvard University in 1897, and from Harvard Medical School in 1901, receiving the degree of Master of Arts from the university in 1902. He served as interne and assistant in pathology in the Boston City Hospital, and later as visiting pathologist in the same institution. In 1904 he became instructor in neuropathology in Harvard Medical School, and was

made Bullard professor in the same department in 1909. From 1906 to 1909 he was assistant physician and pathologist to the Danvers State Hospital for the Insane, and from 1909 to the time of his death he was pathologist to the Massachusetts Commission on Mental Diseases. Since 1912 he had been a director of the Boston Psychopathic Hospital, and at the time of his death he was a director of the Massachusetts Psychiatric Institution. In 1917 he received the honorary degree of Doctor of Science from George Washington University.

Dr. Southard's literary activities were varied and extensive. He was assistant editor of *The Journal of Nervous and Mental Diseases*, *The Psychiatric Bulletin*, and *The Journal of Clinical and Laboratory Medicine*. He was the co-author with Dr. H. V. Solomon of "Neurosyphilis," and of the "Weekly Research Papers," with Dr. H. E. Fernold. His "Shell-Shock and Other Neuropsychiatric Problems" appeared quite recently. He contributed to many periodicals.

During the war Dr. Southard was major in the Chemical Warfare Service, at the same time serving as chairman of the Committee on Psychiatry and Neurology of the National Research Council.

He was a director of the Bedford Hills Laboratory Bureau of Social Hygiene, a member of the American Academy of Arts and Sciences, the Association of American Physicians, the Massachusetts Medical Society, the American Neurological Association, the American Association of Pathologists, the Society of Experimental Biology, the American Psychopathological Association, and other local and national organizations.

Correspondence.

SOME TUBERCULOSIS QUESTIONS.

To the Editor of the Medical Record:

Sir:—For the sake of eliciting discussion, and to stimulate thought and study of a very important subject, allow me to submit the subjoined tenative answers to the unanswered questions in Dr. Stephen J. Maher's illuminating article, printed in your issue of January 10, just received. He states that the war has emphasized nothing concerning the cause or cure of tuberculosis: may not this be due to the fact that causes are myriad, and cures rare? Does tuberculosis always begin in childhood? Yes, in nearly every human being; the weak develop it, the vitally resistant do not. Can one contract the disease in adult life? No, adults do not contract, they develop it. Why more tuberculous men than women? Because of outdoor work, alcohol, and tobacco; women as women have far greater resistance to disease than men have. Why does sunlight therapy help bone and gland tuberculosis, and fail in the pulmonary form? Because bone and gland tissues can renew and repair themselves, while lung tissue, once destroyed, is never renewed. This answers also the question next in order in Dr. Maher's list, on this point.

Are all tubercle bacilli born of other tubercle bacilli. They are. What is the relation to tubercle bacilli of other acid-fast bacilli? None of importance to this inquiry, so far as we know at present. How dangerous to adult human beings is the milk of tuberculous cattle? Sufficiently, if taken as a habit, to aid in developing disease from a latent condition of early infection, especially in congenitally weak constitutions. Are tuberculous cattle always infected by other tuberculous cattle? No doubt they are so infected, though unfavorable conditions may contribute to prepare the soil for the seed. Non-tuberculous cattle would be apt to become ill, if subjected for any length of time to the unsanitary conditions specified in Dr. Maher's next question; whether they would develop tuberculosis or not would depend upon the possibility of previous infection, in each case, except that one developed case would endanger the others. As for the vaccinating power of avian, bovine, or other acid-fast or nearly acid-fast bacilli in human tuberculosis, the answer is they would have none of importance, so far as we now know.

The relation between tuberculosis and measles, or exanthemata in general, is this, that all these diseases, some to a less degree than others, tend in their results to contribute to the development of tuberculosis at a later or earlier period, if the subject be weak constitutionally. Especially measles, whooping-cough, gonorrhea, and syphilis, pave the way directly for the future manifestation of a latent infection, in a tuberculous diathesis.

The explanation of immunity, in large measure, is the absence of these contributing conditions, and the fact that in many cases an early infection acts, or appears to act, quite like a vaccination. Grinders' and miners' tuberculosis is referable first to an early infection, rooted by a congenitally subnormal resistance, and later developed through constant irritation of the respiratory organs by inbreathed dust. The same is true of workers in cotten, woollen, and silk mills, to which may be added the effects of long confinement in ill-ventilated or damp places of work, with monotonous and wearing toil, too many hours a week.

It is of interest to remark here that workers in dry and dusty materials, such as metals, cloth, paper, wood, grains, and articles made of the same, appear to be much more liable to develop tuberculosis than workers in oils, fruits, vegetables, meats, fish, and moist materials in general.

In conclusion, patient inquiry into the probable genesis of tuberculosis, among thousands of cases, has convinced one student that the inherited weakness, whatever be its cause or causes, and their name is legion, is by far the largest factor in the development of tuberculosis. Poor nutrition in childhood, carelessness of one's health in adolescence, and disregard of ordinary rules of hygiene in adult years, together with insanitary environment at any time of life, combine to prevent the individual from throwing off the latent infection, or carrying it successfully to the grave.

Edward H. Cleveland, M.D.,
Superintendent, Hospital and House of Rest.
Inwood-on-Hudson, New York City.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, Jan. 30, 1920.

National Compulsory Insurance and the Medical Profession in Great Britain.—On July 15, 1912,

the Act for National and Compulsory Sick Insurance came into operation. The entire industrial population of Great Britain was brought within the scope of this scheme, whatever the earnings of individual workers, together with all employed persons, whatever the value of their occupation, whose earnings did not exceed £160 ($800) a year. There were certain exceptions. Under the scheme the necessary funds are raised by contributions from the employer and the employed, and by direct grant from the state. An Insurance Fund of £20,000,000 ($100,000,000) was formed and nearly 14,000,000 persons were brought into insurance in the first week in October, 1912, the total number of societies involved in the payment of sickness benefit and maternity benefit to their members, operating in England, which had applied for approval was 2,391, of which 2,161 had been approved. According to a return for the quarter ending October 13, 1912, the total number of insured persons in England was given as 10,862,021. Of this number 10,325,000, of whom about 7,000,000 were men and the remainder women, were insured in friendly societies, trade unions, and employers' societies and industrial companies, amounting to 95 per cent. of the whole. The remainder of the injured resided in Scotland and Wales. On the question of the medical treatment provided under the Act, one point even so long ago as April, 1913, stood out clearly and that was that the then arrangements could not by any means be regarded as final. Controversies galore took place between the medical men and the commissioners. On April 14, 1913, it was stated that there were over 18,000 doctors on the panel, or between 80 and 90 per cent. of the total number of medical practitioners engaged in industrial practice. At that time it was found that the "free choice" of doctors which had been one of the great attractions of the Act when explained on the political platform, had been considerably watered down in practice, and even a change from one practitioner to another, when both were on the panel, could be effected only with great difficulty by the insured person; and as might be expected there has been an official fixity about all the arrangements which has led to a good deal of minor hardship and friction. One point has been made abundantly clear, and that is that many insured persons prefer to employ doctors of their own choice at their own expense rather than be attended by those on the panel and so enter into the class of panel patients.

The Act provided that for each patient on one panel the doctor should receive a sum of nine shillings per annum, about $2.25. A mileage fund of £300,000 ($1,500,000) was also founded for England and Wales to compensate for the greater work and outlay of the rural practitioners. Some other benefits accrued to panel medical men, but it would take a volume to explain fully all the ins and outs of the Act, with respect to medical attendance. It will suffice therefore to say that speaking broadly the panel practitioner received for each patient the sum of $2.25 a year, and that while this may appear a somewhat ludicrously small amount, it was at least double the sum that he received yearly from contract practice with the approved societies. So far as the panel doctors themselves were concerned, there can be no doubt that up to the time of the outbreak of war, the Act had been on the whole markedly beneficial to their incomes, especially to the incomes of those who worked in industrial districts. It is doubtful if the quality of the treatment given to the insured was always what it should have been. Perhaps, it not infrequently savored somewhat too much of the rough and ready variety. It has been stated that some doctors had more patients by far on their lists than they could possibly attend to. This is doubtless true. For instance, after the Act had been in working order for a year and a half or so, figures showed that out of 300 panel practitioners in Manchester, one had an income of £1,980 ($9,900), thirteen incomes between £1,000 ($5,000) and £2,000 ($10,000), eleven incomes between £800 ($4,000) and £1,000 ($5,000), thirty-two incomes between £500 ($2,500) and £800 ($4,000), and forty-seven incomes between £300 ($1,500) and £500 ($2,500). A similar state of affairs prevailed in Leeds and no doubt in all industrial centers.

The British National Insurance Act in its relation to the medical profession has not altogether fulfilled the gloomy predictions which were so freely made concerning it, and generally speaking it might perhaps appear that medical practice in Great Britain under the Act has not proved so irksome or so laborious as had been expected. But the working of the Act has been only partially satisfactory so far as the administration of medical benefit goes. A certain number of medical men have benefited pecuniarily by the new legislation. It seems to have but continued or intensified the old abuses of contract practice. In some parts of the country it works in a sufficiently satisfactory manner, while in other parts it has at least effected no improvement upon the older methods. It has certainly greatly emphasized and aggravated the hospital question by increasing the demand for that kind of treatment which the hospital alone can supply. With regard to the organization and administration of sanatorium benefit, the Insurance Act has been rather a drawback than an aid. As a rule, institutional treatment is available for tuberculosis only, provided that the sufferers are both curable and insured. There is no treatment for incurable cases, even if insured.

At the time the war broke out the defects of the Insurance Act may be summarized briefly as follows: The objectionable features of club, that is contract, practice have reasserted themselves. The greater part of insurance work is not evenly distributed or anything like evenly distributed, but tends to fall into the hands of a relatively few popular practitioners with the evil result for their patients that they may and do undertake more than they can adequately manage. Perhaps a certain amount of cleavage has arisen between panel and non-panel doctors, tending towards the creation of class, that is rich men's and poor men's doctors. It has led probably to some malingering, as sickness is found to be suspiciously high in many places. Lastly, the pecuniary strain on the hospitals has been intensified and over-pressure has occurred amongst medical men.

In a broad sense this was the situation at the outbreak of war. Of course, the war caused so great

an upheaval in every way that panel medical service was to a great extent disorganized. Since the armistice the cost of living has advanced by leaps and bounds, and although the proud practitioners have resumed to some extent the even tenor of their ways, they have naturally discovered that they are unable to live properly on the same incomes as before the war. Consequently, they have asked for an increase of yearly capitation fee from nine shillings ($2.25) or thereabouts to thirteen shillings and sixpence ($3.37). As the result of a conference between Dr. Addison, Minister of Health, and the Insurance Acts Committee of the British Medical Association, a provisional arrangement has been arrived at on the subject of the remuneration of insurance medical practitioners. Dr. Addison informed the deputation that waited upon him that the Government was prepared to seek the authority of Parliament for the provision of funds necessary to pay insurance doctors an increased yearly capitation fee of eleven shillings ($2.75). The doctors' representatives stated that as their conference had resolved on thirteen shillings and sixpence ($3.37), they would feel bound to recommend their constituents not to accept the eleven shillings ($2.75) capitation fee, but they were empowered to ask for arbitration, which they did. Dr. Addison acceded to this request. There is to be an independent board of arbitrators to fix the fee, and its award will apply as from April 1, 1920. Meanwhile for the first quarter of this year the rate is eleven shillings ($2.75).

A few days ago Dr. Addison received at the Ministry of Health, a representative deputation from the British Federation of Medical and Allied Societies in regard to the National Insurance Act. Dr. Arthur Latham said they were there to emphasize the fact that National Health Insurance did not permit the insured person to receive all that the science of medicine had to give, and that under the regulations the panel practitioner was not able to do the effective work he was willing and anxious to do. They had before them the lessons of five years' experience during the war of the most gigantic experiments in health services that the world had ever seen. The public and medical conscience had been deeply stirred in health matters and the public and profession had learned what medicine had to give to the community. The insured public asked for bread and were given a stone; they asked for health, and were given regulations which seemed to be chiefly designed to catch the erring doctor in some fault. The tendency of the regulations was to impair the efficiency of health services. There must be regulations, but if they were not to hamper efficiency, they must be elastic and interpreted in the interests of the health services. The deputation suggested it would be well to institute a public inquiry into the working of the medical provisions of the Insurance Act. In the course of his reply Dr. Addison said that if he thought any advantage could be gained by a public inquiry, he would not hesitate to recommend it. They wanted to get a better coordinated service which would be acceptable to the medical profession and more useful to the public. It was not possible quickly to evolve a health system which would be sound and efficient. The complexities of the problem of the health service were immense and it involved the biggest administrative rearrangement in the public services of the country that had confronted any department in this generation.

The Insurance Act of Great Britain as it concerns the medical profession, judged by the two years or more test of experience before the war, is on the whole satisfactory neither to the panel practitioner nor to the insured person. By it the abuses of contract practice have reasserted themselves and on account of the flocking of patients to certain men, these men have not the time to do their work properly, while other panel men are left out in the cold with little to do. It appears that at the present time as much objection is raised to the numerous and tiresome regulations as to the inadequate pay. The point has been raised on several occasions recently that the Insurance Act is obviously copied from Germany, and in its essence and principle is directly opposed to the genius of the English speaking race for individuality and initiative. According to accounts before the war, the National Insurance Act of Germany as regards both medical men and patients, had not been a conspicuous success. If in disciplined Germany with its bureaucratic ideals, it had not been distinctly successful, how could the system be expected to thrive among independent freedom-loving Britishers? Moreover, it is thought by some that the Act may be employed as a lever by the almost omnipotent approved societies to take away the independence of the medical man. The medical profession is practically impotent politically. It may be the thin edge of the wedge to open the way to a State Medical Service, and the day may be coming in Great Britain more rapidly than is imagined when the medical man will be the servant of the State and his duty will be rather to prevent than treat disease. In the meanwhile it may be said that National Insurance from the doctor's and patient's standpoint is susceptible of much improvement, and it is hoped that the Government and medical profession will pursue a policy of give and take, with the main object of caring for the health of the community in the best possible way.

Obituary.—The death has just taken place at the age of 60 years of Dr. Cecil R. C. Lyster, who has fallen a victim to this self-sacrificing devotion to the work of *x*-ray research. He received his medical education at Charing Cross Hospital, where he afterwards acted as assistant medical officer and obstetric officer. For a time he was medical superintendant of Bolingbroke Hospital and in 1902 went to the Middlesex Hospital to take charge of the electrotherapeutic department. He was a pioneer in *x*-ray investigation, particularly in relation to the treatment of cancer, and latterly carried out much valuable research on the use of radium as a remedial agent. In the earlier periods of his work little was known concerning the properties of *x*-rays and the means for preventing their harmful action on the operator, and Dr. Lyster sustained serious injuries. He might have recovered, perhaps, had he ceased to experiment when his trouble began, but to him his work was every-

thing, and to it he gave first his health and then his life. Last November he was compelled to relinquish his post at the Middlesex Hospital. His last service to the work and hospital he loved so well was to induce the Government to loan to the Middlesex Hospital 5 grams of radium which had been collected by the Ministry of Munitions for military purposes during the war. It may be truly said that Dr. Lyster was a martyr to science and to duty, and that it is through him and such men as him that science is enabled to triumph over disease.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 29, 1920, clxxxii, 5.

1. The Calorie as a Unit in Figuring Milk Modification. Tracy Jackson Putnam.
2. An Experience with the Schick Test and Toxin-Antitoxin and a Plea for Their Use in the Extinction of Diphtheria. Thomas E. Lilly.
3. Psychoses Accompanying Influenza: Clinical Features and Prognosis. Egbert W. Fell.
4. The Treatment of Gonorrhea in the Male. Arthur H. Crosbie.

2. **An Experience with the Schick Test and Toxin-Antitoxin and a Plea for Their Use in the Extinction of Diphtheria.**—Thomas E. Lilly, physician to the Industrial School for Boys at Shirley, Mass., bases his opinion of the value of the Schick test and the toxin-antitoxin as a means of exterminating diphtheria upon his four years' experience, during which time he has immunized more than one thousand persons, everyone of whom, when available, has been given the Schick test after periods varying from three months to three years from their initial dose of toxin-antitoxin, and practically everyone of whom, especially after the longer periods, give a negative Schick reaction. From this experience he holds that in institutions, schools, or communities where diphtheria has been prevalent for a considerable period of time, the universal taking of cultures, excepting in clinical cases of sore throat, is practically useless. A non-virulent bacillus is often found to be persistent in the throats of so-called chronic diphtheria carriers. Repeated passive immunization with diphtheria antitoxin does not protect families, schools, or institutions, and such immunization lasts less than three weeks. Immunity to diphtheria is both absolute and comparative. Toxin-antitoxin gives absolute immunity to diphtheria when more than one month has elapsed after its administration, causing no such troublesome and alarming reaction as antitoxin often does, the immunity persisting indefinitely. Toxin-antitoxin has no curative properties and does not immediately protect against diphtheria. In clinical cases large doses of antitoxin should be used instead of toxin-antitoxin for both patients and contacts. The Schick test is not rapid enough to be of immediate use in cases exposed to clinical diphtheria and should be used only to separate immunes from non-immunes. The Schick test and active immunization should be used in schools, camps, institutions and communities where diphtheria persists and where there is no immediate demand to protect life. The writer expresses the opinion that it is unquestionably the duty of those who have an opportunity to do so to investigate this method of immunization, and to educate the profession and the public, with the end in view of obtaining legislation compelling the administration of this prophylactic to all children upon entering school and later in life, if necessary, to obtain permanent immunization to this disease.

New York Medical Journal.

January 24, 1920, cxi, 4.

1. Results of Fracture of the Femur Caused by Gunshot Wounds. Sir Anthony Bowlby.
2. Uncorrected Factors Perpetuating Stomach Symptoms After Surgical Work. James C. Wood.
3. Essentials of Success in Prostatic Surgery. John H. Cunningham.
4. The Eye in Pregnancy. Luther C. Peter.
5. A Clinical Analysis of Influenza. A. S. Blumgarten and Fred H. Voss.
6. Röntgen Therapy in Gynecology. William H. Meyer.
7. The Value of Inhalation of Certain Gases in the Prevention nof Influenza. Beverley Robinson.
8. Some Extragastric Causes of Gastric Symptoms. M. B. Kuntsler.

4. **The Eye in Pregnancy.**—Luther C. Peter asks whether the eye symptoms in pregnancy shall be regarded simply as a part of the syndrome, which a given patient may manifest, or whether these symptoms may be utilized to measure the extent of damage done to the system. In other words, may not the eye phenomena be used as a guide to the future handling of a case? He answers the question in the affirmative. Nephritis of pregnancy may be a toxemia *de novo*, superinduced by pregnancy, or it may be an acute exacerbation of a chronic interstitial nephritis precipitated by pregnancy in a nephritic patient. As the eye is one of the most definite indicators of the general progress and gravity of chronic interstitial nephritis and often one of the earliest signs, its careful study in pregnancy is equally illuminating and will help to clarify many doubtful cases. One can decide, with a fair degree of accuracy, the prognosis in a case of chronic nephritis by studying the eye grounds of the patient. This applies with equal force to the nephritis of pregnancy, but calls for the clear differentiation of the two clinical types. In the chronic variety, with an acute exacerbation brought on by or during pregnancy, the eye evidence of an old trouble is unmistakable. Some of the symptoms found are hemorrhages, retinal edema or detachment, and white stellate areas so often found in the macula in advanced cases. When the eye grounds show these marked changes, the gravid uterus, almost without exception, in the writer's opinion, should be emptied of its product of conception and promptly, without regard to the stage of the pregnancy. When, added to the other signs of chronic nephritis, there are acute toxic symptoms, diffuse retinal edema, massive hemorrhages, neuroretinitis, and swelling of the disc, a rapid termination of life is indicated unless the uterus is promptly emptied. The second type of nephritis of pregnancy is perhaps less serious in its consequences, but in some instances is just as fatal as the first. The eye symptoms are not always so pronounced, but when present they are just as easy of interpretation as in the chronic variety. Blood pressure is not so high, but it always shows some increase over what may be assumed as normal at any given age. Whether it is necessary to induce labor when the milder symptoms are present in the fundus depends largely upon the stage of the pregnancy, the blood pressure and the uranalysis. When the milder types of retinal changes are present and the blood pressure shows a moderate increase, eliminative and dietetic treatment is indicated. Kidney activity, blood pressure phenomena, and eye grounds should be watched, and a tendency to increased toxemia, as indicated especially by increased blood pressure and eye ground phenomena, should decide the question of whether to allow the patient to go to term or to interrupt pregnancy. It is to be borne in mind that marked eye ground changes may be present without the patient's knowledge or consciousness; the patient's statements or symptoms, therefore, do not always serve as guides. Not infrequently uremic blindness may suddenly be precipitated without any demonstrable eye ground changes, and eclampsia may or may not be developed. If convulsions supervene, the course of action is perfectly clear, but if they do not follow promptly there may be a desire on the part of the physician to postpone radical treatment, and eliminative measures may be tried. The writer cautions against such a course. If hysterical blindness can be excluded and a diagnosis of uremic amaurosis is evident with or without demonstrable eye ground changes, whether convulsions have already set in or are in abeyance, there can be but one line of treatment indicated, namely, prompt termination of labor. The decision as to how long one shall wait for the termination of labor, therefore, is one which can be made only by a careful weighing of evidence, the evidence of greatest value in a fair proportion of cases being that which is derived from a study of the eyes. Other symptoms which may be of assistance are puffiness of the eyelids, dimness of vision, and chemosis or edema of the conjunctiva.

Journal of the American Medical Association.

January 31, 1920, lxxiv, 5.

1. The Social Trend in Medicine. George Dock.
2. Effects of Typhoid Fever and Typhoid Vaccine on Pulmonary Tuberculosis. E. E. Clovis and G. E. Mills.
3. An Improved Test for the Detection of Glucose, Especially in Urine. Walter S. Haines, Gilbert P. Pond, and Ralph W. Webster.
4. Tuberculosis: A City Plan. C. V. Craster.
5. The Selection of Operation for Exophthalmic Goiter. W. E. Sistrunk.
6. Lethal Dose of Roentgen Rays for Cancer Cells. Francis Carter Wood and Frederick Prime.
7. Dislocation of the Carpal Scaphoid and Semilunar Bones. Samuel Kleinberg.
8. The Tourniquet: A Modification of an Instrument Employed by the Germans in the Late War. P. E. Truesdale.
9. Iodide and Bromide Pastes as Used in Roentgenography: Preliminary Report. Robert F. Schanz.
10. The Tonsil in Relation to Infectious Processes. David John Davis.
11. Two Unusual Cases of Pyelonephritis. Paul W. Aschner.

2. Effects of Typhoid Fever and Typhoid Vaccine on Pulmonary Tuberculosis.—E. E. Clovis and G. E. Mills report their experience in an epidemic of typhoid fever at the State Tuberculosis Sanatorium, Terra Alta, W. Va., during August and September, 1919. Sixteen persons were infected during the epidemic at this institution, nine of whom were patients. As five of these were outside employees and were nontuberculous they are not included in the report. The conclusion of the effects of the typhoid fever on pulmonary tuberculosis in this series of eleven cases was made two months following convalescence. Of this number four were classed as active with abnormal temperature prior to the typhoid infection, and all were far advanced. Two of the four cases have continued to advance, and judging from a report received, the condition of one patient who returned home has also advanced, but in no case more rapidly than before the onset of typhoid. The remaining patient has shown a slight improvement in general condition. Three of the total cases were classed as active without rise of temperature but with other symptoms, as cough, streaked sputum, and pleurisy. Two of these patients have shown improvement in their general condition, while the condition of the other is unchanged. Three of the remaining four cases were classed as quiescent, and the other as apparently arrested. Two of these patients have shown steady improvement in both pulmonary and general condition. One has shown improvement in general condition, while there is no appreciable change in the condition of the other. With one exception the patients were weighed as soon as they were able to be weighed, and it was found that eight had lost from five to twelve pounds and that one had actually gained five pounds, while the weight of the others remained the same. In studying the effects of typhoid vaccine on pulmonary tuberculosis it was found that a higher percentage of inactive cases gave a mild reaction than the active cases. As was expected, the active cases gave a higher percentage of moderate and severe reactions than the inactive. From the study of these cases the writers draw the following conclusions: 1. The coexistence of these diseases should require a high caloric feeding. 2. Prolonged bed rest during convalescence is advisable as a precautionary measure. 3. Typhoid vaccine gave severe reactions only in the active cases, but with no permanent bad effects. 4. Patients with inactive pulmonary tuberculosis may have typhoid fever without any detrimental effects on the pulmonary condition, while the general condition may often be benefited. 5. Patients with active pulmonary tuberculosis may have typhoid fever and recover without a more rapid advance in the pulmonary condition than would have occurred had they not had typhoid fever. 6. Pulmonary tuberculosis did not have any appreciable effect on the course of the typhoid fever.

10. The Tonsil in Relation to Infectious Processes.—David John Davis included in his study of this subject the distribution of the lymphoid tissue, the protective mechanism of the lymphoid tissue, the surface area of the tonsils, the plasma cells, and the bacterial flora of tonsillar crypts. He summarizes these studies as follows: In order to understand clearly the genesis of certain diseases, it is necessary to study intensively a suspected focus of infection, like the tonsil, in both normal and infected persons. Lymphoid structures attain two maxima of distribution: one in the throat and another in the region of the ileocecal valve and appendix; these maxima correspond in general to the normal distribution of bacteria in the alimentary canal. At these points also the greatest number of pathogenic microorganisms attack the body. Plasma cells appear shortly after birth (therefore after infection) under the mucosa, and their presence probably indicates chronic absorption of infectious and other material. Certain organisms injected into the crypts of the tonsils disappear in a few days. The flora normally found in the tonsils is a restricted one. Actinomyces-like granules, composed of fusiform bacilli, streptococci and spirochetes growing together, appear as more or less normal inhabitants of the crypts. Here may be an important source of *B. fusiformis* in certain infections about the mouth caused by this organism. In the tonsil crypts, *Streptococcus hemolyticus* is almost constantly found. This focus is one source of these organisms in the throat and adjacent structures. This fact may be considered in making throat cultures and in a study of the problem of hemolytic streptococcus carriers.

The Lancet.

January 10, 1920, ii, 2.

1. Bradshaw Lecture on the Surgery of the Heart. Delivered Before the Royal College of Surgeons of England. Sir Charles Ballance.
2. Experiences of Malaria in the Egyptian Expeditionary Force. Philip Manson-Bahr.
3. Diverticulitis. Being the Introductory Remarks to a Discussion at the Section of Surgery (Subsection of Proctology), Royal Society of Medicine, on January 7, 1920. W. H. Maxwell Telling.
4. A Suggested Scale for Feeding Infants on Dried Milk. Vynne Borland.
5. A Simple Means of Lessening or Eliminating Alimentary Toxemia. R. Chetham-Strode and J. D. Benjafield.
6. The Paratyphoid B Group. Harry Schütze.
7. The Dying-out of Native Races. (Concluded). W. H. Rivers.

5. A Simple Means of Lessening or Eliminating Alimentary Toxaemia.—Chetham-Strode and Benjafield, assuming, in line with the teaching of Metchnikoff and his school, that a lactic-acid fermentation in the large intestine is the condition to be aimed at, hold that the problem reduces itself to one of simple chemistry. We know that lactic acid is produced in milk by the fermentation of the lactose by bacteria. We have in the large intestine numerous bacteria capable of effecting this. We have, therefore, to find some means of supplying the necessary lactose. Carbohydrates administered by the mouth in the usual digestible form will not supply this ingredient, as they are broken up and absorbed during their passage through the stomach and small intestine. Thus the carbohydrate must be supplied in some form in which it can resist the action in part, at least, of the gastro-intestinal ferments. The simplest means of overcoming this difficulty, and the one adopted by the writers in their practice, is to administer the carbohydrates in the form of coarse, uncrushed oatmeal. This may be taken raw or cooked sufficiently to soften the outside of the grain, only leaving behind a hard core. The result is that the partially digested grain reaches the large intestine in the form of carbohydrate. The centre of the grain is composed of unaltered starch, while the outer layers, which have been subjected to the digestive action of the juices of the mouth, stomach, and small intestine, are composed of simpler molecules, the disaccharides, and hexoses. Both these latter can be rapidly converted into lactic acid and CO_2 by a suitable bacterial flora. The feces of the average individual are neutral or alkaline to litmus, and, from what has been said, it would appear that the production of a lactic-acid fermentation is quite a simple matter. This takes place in many cases, more especially when dealing with the young, but there remain quite a large number of individuals whose excreta do not at all readily become acid. The causes which may prevent the acid fermentation may be grouped under the following headings: (1) stasis; (2) presence of unsuitable organisms in the fecal flora; (3) absence of essential organisms in the fecal flora; (4) an unsuitable dietary. These categories are discussed and five typical cases cited.

6. The Paratyphoid B. Group.—Harry Schütze, referring to the contention, on the one hand,

that it is possible, by means of the absorption test, to differentiate between Aertrycke and paratyphoid B organisms, and the attempts, on the other hand, of various workers to prove the invalidity of the differentiation, still others advocating the use of certain cultural tests to supplement the serological characterization of the two groups, details his own investigations in this connection. During the examination of a number of strains he came to the conclusion that not only, as is becoming universally recognized, is it possible to differentiate, by the investigation of their respective absorptive characters, and Aertrycke bacillus from a paratyphoid B, but to subdivide, by means of the same test, the Aertrycke organisms into a number of types. From his investigations he draws the following conclusions: 1. By means of Castellani's absorption test it has been possible to divide the "Aertrycke" group of organisms into a number of types, of which one (Mutton type) is by far the most largely represented, 24 organisms from 16 foci belonging to this type out of 46 strains from 28 foci. 2. As the various "Aertrycke" types serologically agree with, and differ from, one another in the same way as each agrees with, and differs from, paratyphosus B, the "Aertryckes" and paratyphoid B have been placed together in one group, of which they thus represent a series of types. There is some evidence for concluding that just as paratyphosus B may occasionally produce acute gastro-interitis in man, so may a typically Aertrycke-like bacillus occasion continued fever resembling enteric. Thus there seems no good reason for separating one para. B type of from a series of Aertrycke or otherwise named types, and it is suggested as simple and justifiable that paratyphosus B be used as species-name for the whole group, the particular variety being indicated by the addition of a type-name, such as Schottmüller, Mutton, Hirschfield, and so on. 3. Reasons for regarding as a member of the paratyphosus B group that organism which in the East is apparently of particular importance, and has been called by some workers paratyphosus C, are here set forth, and the question of nomenclature is considered.

British Medical Journal.

January 10, 1920, i, 3080.

1. A Clinical Lecture on the Surgical Aspects of Spinal Tumors. Percy Sargent.
2. Public Health Versus the State. Bertram G. M. Baskett.
3. Remarks on Sclerodermia. Frank H. Barendt.
4. Meningitis Treated by Intrathecal Injections of the Patient's Blood Serum. Rupert Waterhouse.
5. Forgetting: Psychological Repression. Alfred Carver.

1. A Clinical Lecture on the Surgical Aspects of Spinal Tumours.—Percy Sargent, from a study of fifteen cases of encapsuled intrathecal extramedullary tumors, and twelve cases of tumor causing cord symptoms, other than those of the first class, holds that the chief lesson to be learned from the study is that early exploratory operation should be more frequently undertaken. Neither should a clear history of syphilis nor the existence of a positive Wassermann reaction be considered as a contraindication for operation should improvement not rapidly follow the administration of antisyphilitic remedies. For persons with active syphilis may suffer from spinal neoplasms (three out of fifteen of his cases of simple extramedullary tumor), while a constriction of the cord by fibrosis following gummatous meningitis, incapable of being influenced by drugs, may be successfully dealt with by operation.

Indianapolis Medical Journal.

November, 1919, xxii, 11.

1. "Neurotic" Heart and Socalled "Soldier's Heart." Tom A. Williams.
2. Report of a Case of Multiple Encephalomalacia, With Pathological Demonstrations. Max A. Bahr.
3. A. Traumatic Neurosis in a Case of Syphilis—Case Report. James A. Wynn.
4. Ralcy Husted Bell.

3. A Traumatic Neurosis in a Case of Syphilis.—James A. Wynn reports a case studied at the Robert W. Long Hospital, Indianapolis, which illustrates the possibility of the existence of a traumatic neurosis masked by the symptoms of other existing diseases. The conclusions drawn from the history of this case are that the existence of a four plus Wassermann should not blind one to the fact that an entirely independent nervous lesion can coexist with syphilis. In this case, the faulty verdicts of two hospitals did real harm in focusing the patient's attention on a wrong conception of his condition, and the cure of his neurosis was impeded by his well established belief that he had incipient taboparesis. The subsequent history of this patient bears out the opinion that the entire syndrome in his case was a neurosis, amenable to psychotherapeutic measures.

Southern Medical Journal.

January, 1920, xiii, 1.

1. The Work of the Medical Department During the War. Merritte W. Ireland.
2. The National Research Council. Henry A. Christian.
3. The Status of Amebic Dysentery with Special Reference to Diagnosis and Treatment. Randolph Lyons.
4. Otitis Media. Lawrence T. Royster.
5. Doubts, Differences and Difficulties in Diagnosis of Gastro-intestinal Diseases. J. C. Johnson.
6. Some Facts and Fallacies Relating to Maternal Feeding of Infants. J. D. Love.
7. The Prevalence of Ameba, Cercomonas Intestinalis-Hominis, and Pellagrous Infections in the South—The Responsibility Resting on Nation and State: Suggestions as to Means of Control. John L. Jelks.

1. The Status of Amebic Dysentery with Special Reference to Diagnosis and Treatment.—Randolph Lyons states that the diagnosis of amebic dysentery and of the carrier state is fundamentally dependent upon the finding and identification of the organism in the stool. For the detection of the active or vegetative endamebae, a stool obtained after the administration of a saline cathartic is best suited; cysts, on the other hand, are more readily found in the more solid stool. Where the identification of a species is in doubt, methods for testing its pathogenicity must be employed. For this purpose kittens have been found the most susceptible animal. This method, however, has been made very little use of except in experimental work. The proctoscoscope or sigmoidoscope offers a valuable means of diagnosing amebic dysentery, as ulcers thus noted may appear so typical as to be pathognomonic. Furthermore, in this manner material for examination may be obtained directly from the base of an ulcer by the use of a long applicator. Not only does the proctoscope aid in diagnosis, but also in determining the severity of the disease and in gauging the progress of treatment. Roentgenological findings may also be of assistance in making a diagnosis of amebic dysentery. Attention is directed to the fact that Roentgen findings in the North may be of greater differential diagnostic value than in the South. The subject requires further study, especially in the South, before the diagnostic value of Roentgenological findings can be estimated. The writer hesitates to record the therapeutic test as a method of diagnosis; nevertheless there will occasionally be a case where, after conscientious study of all the data obtainable, the diagnosis still remains uncertain. In such cases it is only fair to the patient that he be given the benefit of any doubt and treated accordingly. The treatment of amebic dysentery is summarized in the statement that ipecac and its alkaloids are still the sheet-anchor. The tendency of the times is to administer a combination form of treatment—that is to say, emetine hydrochloride is given hypodermatically in conjunction with the oral administration of either emetine, hydrochloride, powdered ipecac or emetine-bismuth-iodide. Occasionally some other drug may be administered by mouth as Chaparro or bismuth. There is reason to believe, in the writer's opinion, that this form of treatment is a distinct advance in the therapy of amebic dysentery, and that by its use relapses will be markedly diminished. It has met with notable success in the treatment of carriers.

Western Medical Times.

December, 1919, xxxix, 6.

1. Hernia of the Ovary, of the Fallopian Tube, and of the Ovary and Fallopian Tube. Alme Paul Heineck.
2. The Organic Nervous System. A. T. Cuzner.
3. Mistakes and Puzzles in Blood Examinations. S. R. Klein.

4. The Value of the "No Good"—The Elastic Splint. Douglas H. Stewart.
5. The Study of the Epidemic Commonly Known as "Spanish Influenza." E. Folley.
6. Post-Graduate Work at Tulane University Graduate School and Polyclinic in New Orleans, La. Anna B. DeChene.

3. Mistakes and Puzzles in Blood Examinations.—S. R. Klein calls attention to various mistakes that may cloud the issue in reporting blood examinations. Parasitelike bodies, for example, may gain access to films from the alimentary tract. The skin, and more especially the hairy hides in animals, and the feathers of birds, often yield their quota, and some very curious looking organisms may thus be added to a blood smear. What, he asks, will guide one in distinguishing a stained yeast cell from a blood parasite? Another kind of fallacy may happen through carelessness in the handling of slides, pipettes or other materials used in making the blood examinations. Mistakes may be made in distinguishing a vacuole from a young malarial parasite, piropasm or a spirochaetal inclusion. There are thousands and thousands of mistakes about granules, granulations, chains, dumbbells, droplets and ilament phenomena. Haemoconia, free flagella, platelets, alterations in red cells, corps en assaire, Howell, jelly bodies, centrasomes, degenerations in leucocytes, bodies in the extranuclear protoplasm of certain mononuclears, spherical plasmocytes, free spores, and thousands of other unidentified parasites may have a tremendous influence upon changing the diagnosis from a laboratory standpoint.

The Canadian Medical Association Journal.

January, 1920, x, 1.

1. The Scope of a Federal Department of Health. P. H. Bryce.
2. Constitutional Symptoms and Focal Infections of the Genito-Urinary Tract. David W. MacKenzie.
3. Tuberculosis of the Kidney and Ureter. Warner Jones.
4. Indications for and Results of Transfusion. E. C. Levine.
5. Spasmophilia (Infantile Tetany). Lionel M. Lindsay.
6. Wounds of the Chest. N. B. Gwyn and H. E. MacDermot.
7. The Problem of the Mentally Defective in the Province of Quebec. Gordon S. Mundle.

2. Constitutional Symptoms and Focal Infections of the Genito-Urinary Tract.—David W. MacKenzie holds that the importance of focal sepsis in its relation to the genito-urinary tract entitles it to a prominent position in the minds of internists, general surgeons and the various specialists. Among the numerous septic infections involving the genito-urinary system, which, untreated, are prone to lead to constitutional involvement, may be mentioned acute suppurative nephritis, pyelitis, pyelonephitis, pyonephrosis with or without calculus, tuberculosis of the kidney, renal and perirenal abscesses, ureteritis, pyo-ureter with or without calculus, cystitis, especially associated with urinary obstruction, seminal vesiculitis, and epididymitis. The various conditions are discussed and case reports given.

Revue Médicale de la Suisse Romande.

October, 1919, xxxix, 10.

The Pandemic of 1918.—Krafft finds that we know but few things about the late great epidemic. The bronchial secretions during the period surely spread the disease or at least are highly virulent to monkeys by conjunctival or intranasal inoculation. The contagious principle goes through a filter. It does not render human blood virulent but the disease can be transmitted by subcutaneous injection. This is about all we know and our knowledge is based on a concordance of results—finds by the leading experimental pathologists. When the pestilence first appeared in June the author caused the fifty attendants under his administration to gargle thoroughly several times daily with potassium permanganate and for several weeks no case developed. Finally in July two attendants fell ill and later confessed that they had omitted the precaution. In one hospital the attendants and employés to the number of 59 contracted the disease but there was no mortality albeit pneumonia coexisted. In another institution all of the personnel was attacked but only one died. The patients whom they cared for had a high mortality—about 15 per cent of those attacked. Hence precautionary measures sometimes protect outright while at other times they secure a mild course of the disease. The attendant has a much better chance to protect himself than the average man, despite his constant exposure. We may therefore be hopeful of protecting an intelligent and conscientious community in the same manner. As we understand the mechanism of the disease it is as follows: there is an intense congestion of the respiratory tree with the result that the protective power of the epithelium breaks down and allows the germs or their poisons to surcharge the blood. From the fact of sterile blood we have to accuse the latter. Among the phenomena due to intense congestion, one, edema of the uvula, was found to possess great diagnostic significance, being invariably present in the true disease.

Hygiea.

November 16, 1919, lxxxi, 21.

Treatment of Varicose Ulcers.—Schlassberg has had remarkably good results from a simple and conservative method of treating these lesions. He publishes fifty cases, from which it appears that only six showed recurrence. His experience extends over seven years. Treatment is carried out with lead plaster, as follows: 24 gms. solution of subacetate of lead were mixed with 136 gms. of lead plaster and then spread on 2,000 sq. cm. of linen or cotton. For a few days after admission a Burrow dressing was applied, the plaster treatment following. The spread plaster was so cut as to project 2 cm. beyond the margin of the ulcer. A firm outside bandage was then applied from ankle to just below the knee. The dressings were renewed daily and when the amount of secretion was large a new piece of plaster was applied. At the other extreme some cases require no change of plaster for three days. The patient is up and about during the entire treatment. A study of the table shows that the patients were all treated in the wards and had all of the advantages accruing from complete control. The duration of hospitalization varied from 21 to 197 days, but the duration of the ulcer before coming under treatment had been as high as ten and twelve years.

La Presse Médicale.

December, 1919, xxvii, 74.

What Are Ferments?—Professor Roger has recently delivered alecture on the subject of ferments in his course on comparative pathology. We know what ferments can do, but what are ferments? We have recently obtained the knowledge that they are not protein—that nitrogen is not a necessity in their chemical constitution. Ferment properties are exhibited by lipoids and carbohydrates and whatever a ferment may be it unites in some manner with any of the basic forms of organic existence in such manner as to lose its identity. Ether will extract an enzyme from yolk of egg which contains no nitrogen, is apparently lipoid and exerts a diastasic action. Such a ferment he would term a zymolipoid to distinguish it from the longknown zymoproteid ferments. We have learned that the ferment is in no haste to leave the cell in which it is generated and whil it may be washed into the intestine, for example, and find its way into the blood it exerts considerable activity on the substratum without leaving the epithelium. This is well shown in a loop of intestine which has been washed repeatedly to remove all cellular debris and exclude the possibility of desquamation. If now a solution of saccharose is allowed to pass through the loop inversion of the same can be shown to have occurred. Osmosis in such a case can be excluded. It is not implied that the ferment acts at a distance for it is attracted into the lumen of the gut by the presence of the saccharose; but the ferment cells have not lost their integrity and only a certain amount of enzyme passes out. The element of novelty lies in the force which attracts the ferment to the saccharose. By the same methods it may be shown that the intestinal epithelium contains emulsin. This new knowledge is merely an addendum to the old and does not involve any revolutionary or clinically important departures. It pertains to the cellular ferments as distinguished from the free or excretory ferments.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held January 26, 1920.

THE PRESIDENT, DR. CHARLES H. CHETWOOD, IN THE CHAIR.

Compulsory Health Insurance.—Dr. CHARLES H. CHETWOOD, upon assuming the duties of his office, made this address. He said it was not necessary on this occasion to deliver a profound address, since one of simpler and briefer language fulfilled all the requirements of the constitution. It was appropriate that he should define his position on the question of compulsory health insurance. In plain language he would say that the letter, spirit, and purposes of compulsory health insurance, in any form in which it had been presented for legislative action up to the present time, merited only unqualified disapproval. The false assumption that such a measure was necessary in order to provide proper medical attendance for the laboring classes was without logical reason to support or justify it. Many of those present had given the subject more study and were better able to handle it than he was, but he wished it understood that there was no lack of sincerity in his attitude. In approaching any matter, opinion must be supported by facts. The argument of the advocates of compulsory health insurance was that this measure was necessary in order to protect the workingmen from becoming objects of charity and that it could be made safe for the medical profession. This question had been discussed from many different standpoints, the opinions expressed being influenced by different mental attitudes. There were those trained in the current political thought, not of the highest character, who had the idea that all evils could be corrected by Legislative action, and another class trained under paternalistic forms of government thought it was a good thing. On the other hand, a referendum of the medical profession showed that the majority of physicians opposed it. However, it was not for the medical profession to decide whether this measure was for the public welfare. It was not the single interest of this or any other group of the medical profession to determine whether compulsory health insurance was good for society. In order to arrive at a correct conclusion the views of the different groups directly affected were of interest. These three groups were the corporations or employers, the employees, the medical profession, and the law-making group. After discussing the viewpoints of these groups and showing that none of them was in favor of the measures thus far presented, Dr. Chetwood stated that after all the law-making group was the one which was best fitted to consider what was best for the public in its widest sense. It was not surprising in view of the great mass of conflicting opinion that had been advanced on the subject that many were bewildered. Nevertheless a careful review of the evidence showed that compulsory health insurance was unacceptable to employers, employees, and the medical profession. It was also unacceptable to the law-makers as shown by the fact that no measure had thus far been passed. Dr. Chetwood then argued somewhat at length to show that the principle of compulsory health insurance was not in conformity with American ideals because it separated the people into classes which was contrary to our principles of democracy. He also quoted from the report of the British Trade Union to show that the act in England had proved a failure in most ways. It was claimed by some that statistics in England showed that poverty had been diminished since compulsory health insurance had gone into effect. On closer study of the situation it seemed that the operation of the compulsory health insurance law happened to be coincident with a period of great national prosperity. It might happen that if a compulsory health insurance measure were enacted in this country at the present time when we were passing into a period of great prosperity, statistics could later be adduced, showing that poverty had diminished under the operation of such a measure, which would be entirely out of conformity with the truth. Health conditions in Germany had not improved under compulsory health insurance and were no better than they were in this country. It had been charged that our dispensary system was demoralizing, but even if one accepted that statement (which he did not) two wrongs would not make a right. The dispensary system had played an important part in the evolution and development of medical workers. In closing, Dr. Chetwood characterized compulsory health insurance as Bolshevistic, socialistic, and thoroughly out of accord with American ideals.

The General Prognosis of Syphilis in the Light of Recent Progress.—Dr. S. POLLITZER presented this paper in which he discussed the subject of syphilis from the point of view of its general prognosis as affected by the additions to our knowledge made within the past two decades. These additions were, first, the discovery of the spirochete; second, the Wassermann test; third, the invention of the new arsenical compounds. To these achievements might be added the use of the dark field microscope and spinal puncture for diagnosis and as therapeutic measures. The discovery of the spirochete had added a factor which had enormously improved the general prognosis of syphilis. There was no factor in the prognosis of syphilis that was comparable in importance with early and energetic treatment. The treatment of syphilis by the vigorous exhibition of arsphenamine in its primary stage, while the disease was primarily a local infection and before the organisms had acted long enough on the tissues even to provoke the development of a positive Wassermann reaction, resulted in the immediate cure of the disease in practically every case. It was in its primary stage that the prognosis of a properly treated syphilis was at its very best. It was the correct practice twenty years ago to await the development of secondary lesions, for the purpose of establishing the diagnosis on a firm basis as well as to convince the patient of the correctness of the diagnosis and thereby secure a greater fidelity to treatment. But waiting for the appearance of secondary lesions meant waiting until there was a wide invasion of the system, waiting until there was a profound septicemia established. In the case of any other local infection no one would delay for a single moment the steps necessary to prevent systemic infection. The affections formerly spoken of as parasyphilis, tabes and paresis, Noguchi's discovery of the spirochetes in the tissues of the central nervous system had definitely placed in the group of syphilitic affections, bringing to an end the fifty-nine years controversy as to their nature. The new studies of the spinal fluid had brought out the fact that the foundation for these late lesions of the central nervous system were laid in the early stage of the disease, probably at the time of the first generalization of the spirochete; more than half the cases of syphilis showed evidence of disturbance in the spinal fluid at this early period. On the other hand it was a common observation that our cases of tabes and paresis gave a history of little or no treatment in the early days of their disease. The time to cure tabes and paresis was the time at which the central nervous system was first invaded and before the anatomical lesions that followed many years later had developed. The second great achievement in recent years was the application of the Bordet-Gengou method of complement fixation to syphilis—the Wassermann test. In all the fluctuations of opinion as to the significance and value of this test one fact had remained clear, and that was that a strongly positive reaction meant syphilis. This test had aided in the proof of the syphilitic nature of the late lesions of the central nervous system, of the sclerotic changes of the cardiac valves and of aortic aneurysm, had abolished Colles' and Profeta's laws, and had awakened the profession and the public to the unsuspected extent of the prevalence of syphilis in every community where a systematic inquest had been made. This knowledge had served as the great stimulus to the administration of proper and energetic treatment and insofar had benefited the prognosis of the disease in the individual. Without discussing the moral side of the question, Dr. Pollitzer ventured the assertion that vigorous inunction with calomel ointment applied within two or three hours to the site of inoculation with fresh syphilitic material would prevent systemic infection, and practically eradicate the disease from the human race within a generation. In the second place

the Wassermann reaction was used as an index of the efficacy of treatment and thus as a prognostic sign. It seemed that a negative Wassermann reaction in a syphilitic meant only that there were no foci of spirochetes in the patient sufficiently active to bring about the formation of an appreciable quantity of Wassermann-bodies in the blood; but it afforded no indication of the eradication of the spirochetes in the tissues. They knew that the late syphilitic with a gumma in the skin, or with obvious symptoms of syphilis of the central nervous system frequently presented a negative Wassermann reaction. We knew furthermore that vigorous treatment in the secondary or later stages commonly resulted in a negative Wassermann reaction which subsequently might become positive. As an index of the complete spirochetal disinfection of the patient a negative Wassermann test at a given moment was relatively useless. On the contrary, however, as an index of failure to eradicate the spirochetes a positive Wassermann reaction in the syphilitic under treatment had the greatest value and demanded the continuance of treatment. Dr. Pollitzer discussed the significance of a positive Wassermann in the old symptomless syphilitic with respect to two classes of cases, namely, (1) the syphilitic who had been well treated for several years, whose spinal fluid was negative, who presented no physical evidence of the disease, but whose blood serum persistently showed a strongly positive Wassermann; and (2) a class of elderly patients in whom as the result of a thorough clinical examination a strongly positive Wassermann reaction was discovered as it were by accident, there being no clinical evidence of syphilis. In the first class systematic treatment should be continued for at least three years before relegating the patient to the class of permanently Wassermann positive, and it might be well to continue occasional short courses of treatment for years. As to the second class, the man who had carried his spirochetes for thirty or forty years without even being aware of them might well be allowed to carry them the rest of his days undisturbed. The symptomless Wassermann positive who was well past his fiftieth year should be left alone. With respect to this class the question arose whether one might not be dealing with a condition analogous to that of the healthy carriers of meningitis, diphtheria, or typhoid bacilli. They must, however, not assume too lightly that a given case, without symptoms and Wassermann positive, belonged to this class until they had really subjected the patient to adequate treatment, and had by examination of the spinal fluid excluded the possibility of a still latent syphilis of the central nervous system. In discussing the third great achievement of recent years, the employment of the organic arsenical compounds to which the name arsphenamine had been given, Dr. Pollitzer referred to the extravagant hopes that were entertained ten years ago that a single injection of salvarsan would permanently sterilize the patient infected with spirochetes. In their disappointment that this assumption was not borne out the pendulum had swung too far in the other direction and they had lost sight of the fact that a complete spirochetal sterilization was indeed a frequent achievement. The proof of cure in these cases rested on the permanence of a negative Wassermann reaction, on the freedom from symptoms, already nearly up to ten years, and finally on the frequent occurrence of reinfection with syphilis in these cases. As proof of cure the provocative arsphenamine injection was a futile and often misleading procedure. The only positive proof of cure was a fresh infection. As long as the patient was syphilitic he could not acquire syphilis. Conversely the occurrence of a fresh infection was a proof that he had been free from syphilis. Since the introduction of the new remedies reinfection with syphilis had become a relatively frequent event. In summarizing, Dr. Pollitzer stated that the recent additions to our knowledge had made it possible to attack the disease by prohylaxis at the moment of infection; to recognize the necessity for further treatment in the absence of symptoms; to detect the disease in the central nervous system before clinical symptoms were manifest, and finally, arsphenamine was a remedy incomparably superior to mercury in speed of action as in efficiency. It was inconceivable that the next generation would not reap the benefit of the improved prognosis of syphilis.

Dr. Boleslaw Lapowski said Dr. Pollitzer had given but little attention to the most important point of the subject, namely, the influence of the early diagnosis and early treatment upon the prognosis of syphilis, in other words the important factor of abortive treatment. Some syphilographers were of the opinion, and Dr. Pollitzer among them, that by an early diagnosis and early proper treatment the syphilitic virus could be destroyed and the patient considered cured and permitted to marry and procreate children, provided he was free from manifestations and his blood and fluid reactions were permanently negative. What was permanent? How many years after the infection must a patient be watched and his blood reaction remain negative? At present there were cases known in which five or six years after infection no symptoms appeared and the Wassermann reaction remained negative for that period, but suddenly without any sexual exposure the Wassermann reaction became positive. Before we could say that a drug or a method was effective as a remedy for such a disease as syphilis, it was necessary that the individuals who had been treated should be watched for the remainder of their lives. It was well known that the symptoms of syphilis might not appear for a great many years after the primary infection. How then could anyone in our generation be sure of the effect of his method or drug to such an extent as to pronounce a syphilitic man cured and permit him to marry? But it was claimed that many cases of reinfection had been reported, which had been treated very early, before the appearance or even after the appearance of a positive blood reaction. Here again the question came up, how was the reinfection established? It was the speaker's opinion that as long as we had no means of determining positively when a given syphilitic patient was completely freed from his first infection, we could not accept a reinfection. A negative Wassermann, even, when accompanied with all other clinical requirements, did not establish the absence of the first infection. Dr. Pollitzer said the foundation of general paresis was laid in the early stages of syphilis, and dated from the time when spirochetes entered the central nervous system. At present Levaditi (*Annales de l'Institut Pasteur*, Nov. 1919) by his experimental inoculations seemed to give great support to the idea that a "nerve virus" which developed special affinity to the nerve tissue might play a very important rôle in the development of paresis; and that there were two varieties of spirochetes, one that produced general paresis and one that gave rise to general syphilis. When within six years such advances and changes in our conception of syphilis were promulgated, how could anyone advocate a radical departure in the treatment of syphilis, a departure which was laden with great danger both for the patient and community? It was safer to follow at present the experiences of decades which we acquired in the treatment of syphilis and wait for more substantial proof before adopting *in toto* the new method of treatment.

Dr. L. T. Le Wald called attention to the fact that gastrointestinal syphilis and its treatment had not apparently received a great deal of attention. Professor Warthin of Ann Arbor had called attention to the necessity of revising our ideas of the pathology, diagnosis, and treatment of visceral syphilis, and roentgenologists had studied the subject of gastric syphilis and had diagnosed the condition in cases which in the ordinary course of events would have been diagnosed as malignancy, and the microscopical examination had shown that they were not new growths but interstitial or gummatous changes which had proved to be syphilitic manifestations. Where syphilitic lesions of this kind had been distinguished from cancer they had been treated and successfully cured, or at least the immediate symptomatic effects relieved, and the patients had gone on quite free from the symptoms of malignancy. Some forty such cases were reported from the Mayo Clinic, some twenty or thirty cases in Chicago, and about the same number in New York. He thought it was time that more attention was given to the diagnosis of gastric syphilis than had been in the past.

Dr. Pollitzer, in closing, said that perhaps when he called attention to the fact his paper was limited to twenty minutes he might be pardoned for not having

entirely exhausted the subject of syphilis. A few of the statements made by Dr. Lapowski required attention. So far as he was concerned he could not become much excited over the fact that the Wassermann reaction was not specific for the spirochete, since it was specific for syphilis, unless it meant yaws or leprosy. With regard to the value of a negative reaction, Dr. Lapowski had evidently misunderstood him. He agreed that the negative Wassermann reaction was not proof of freedom from syphilis. In regard to reinfection and the statement that he considered the negative reaction as proof of cure and that when a chancrous lesion appeared later he took that as proof of reinfection, it seemed hardly worth while to say that more proof than that was required to establish a case of reinfection. It was demanded that there should not only be a long period of freedom from symptoms and repeated negative Wassermann reactions, but that there should be a history of exposure, followed by a lesion having the characteristics of an initlal lesion with spirochetes, followed by adenopathies and the whole picture of a fresh infection. As to parasyphilis and two kinds of spirochetes, that subject was to-day just where it was ten years ago. He believed there was but one form, because there was no difference in the organisms of parasyphilis and syphilis either morphologically or culturally. The evidence did not warrant the assumption that there was a special strain of spirochetes, though it had not been disproved. The experiments of Levaditi showed two things. First that attempts to inoculate with the spirochetes frequently failed, because experimentally these inoculations were difficult to make; and, second, that it was possible that the secondary manifestations of syphilis, the roseola, might not appear until after six months or even fail entirely. In considering the questions that related to syphilis as in any other questions one had to exercise a reasonable amount of common sense.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held December 23, 1919.

DR. SOLOMON WIENER IN THE CHAIR.

Two Cases of Instrumental Perforation of the Uterus with Rupture of the Intestine.—Dr. HARRY ARANOW reported this case, which occurred in a woman 25 years of age, whose family history was irrelevant, and menstrual history normal. Her past history showed that she had had measles, scarlet fever, and rheumatism, and for a number of years had suffered from heart disease (mitral stenosis). Her last menstrual period occurred in January, 1919. She presented herself to her family physician during the latter part of March, complaining of palpitation and dyspnea. He called in consultation an internist, who advised interruption of the pregnancy. Accordingly the family physician performed a dilatation and curettage on April 11, 1919. Shortly after recovery from the anesthesia the patient complained of severe abdominal pain. This grew worse, and about 2 p.m. of April 12, the speaker was called in to see the patient in consultation. She looked anxious and very ill. The face, lips, and hands were cyanosed; respiration was rapid and shallow; pulse rapid and small, but firm and regular. The abdomen was distended, tender, and rigid over its entire extent. On careful inquiry the family physician stated that he was not sure he had recovered the entire fetus, but that he had extracted some tissue which looked suspicious. Fortunately the curettings had not been thrown away, and an examination disclosed several tunica epiploica. Without further delay he ordered the patient sent to Lebanon Hospital, and prepared for operation. She was given ¼ grain of morphine, and at 4 P. M. was operated upon through a median suprapubic incision. The lower abdomen and pelvis were filled with a reddish brown serous fluid. The sigmoid was in part torn away from its mesentery and had several ragged holes, one the size of half a dollar. The peritoneal cavity was carefully sponged out, and the fetal head discovered lying loosely in Douglas' pouch. The sigmoid was carefully walled off with sponges, and the uterus examined. A tear was discovered extending from a little above the internal os, along the right margin at the insertion of the posterior layer of the right broad ligament up to the right cornu. As the patient seemed to be in good condition, he sutured the uterine wall with three layers of chromic catgut, and then resected six inches of the sigmoid, and performed an end-to-end anastomosis. The lower border of the great omentum was brought down around the intestinal sutures and tacked in place with a few catgut sutures. A rubber tube was inserted through the cul-de-sac and a small cigarette drain brought out through the lower angle of the wound. The patient was returned to bed in good shape. The head of her bed was elevated and continuous proctoclysis given. To his surprise this patient made an uneventful recovery. Her bowels moved spontaneously on the fourth day, and she was discharged on the fifteenth day after admission. As often happens in medicine, he saw a similar case a few days later. This patient was admitted to the hospital on April 26, 1919. She gave a history of having had heart disease for a number of years, and influenza eight months ago. Menstruation was normal. She had had two children, one six years of age, and one stillborn. In this instance also the family physician, in consulation with an internist, decided to interrupt pregnancy on account of her cardiac condition. Accordingly, on April 14, an abortion had been attempted. The patient took the anesthetic badly and the family physician failed to obtain any fetal tissue, so after several attempts gave it up and put her back to bed. Shortly afterwards she began to complain of severe abdominal pains, most marked on the left side. The pain was so severe that she obtained no relief by morphine administered hypodermically. The patient grew worse and the speaker was called in to see her in consultation on April 16, 1919. She was lying on her right side with her knees drawn up close to her abdomen and complained of severe pain which was greatly increased by any movement. The abdomen was distended and rigid all over, the rigidity being more marked, however, over the left inguinal region. The temperature was 102°, pulse 120, and respirations 30. Vaginal examination showed a soft closed cervix. The uterus was enlarged and tender, but otherwise negative. The right fornix was free, the left fornix contained a fluctuating and tender mass high in the pelvis. On these findings Dr. Aranow said he made a diagnosis of ruptured uterus, and advised immediate operation. Accordingly the patient was admitted to Lebanon Hospital. Upon entering the peritoneum through a median incision there was an escape of serosanguinnous fluid. The visceral parietal peritoneum was congested, but he could find no evidence of perforation either of the uterus or intestines. In searching for the mass which he felt per vaginam he discovered a retroperitoneal hematoma behind the mesosigmoid and rectum. A hysterotomy disclosed several pieces of decidua and placenta but no fetus. A rubber tube was inserted through the cul-de-sac, and the peritoneum and fascia closed. The skin and submucous tissues were drawn over to the left and an incision made through the conjoined tendon down to the peritoneum. The peritoneum was carefully peeled away until it was possible to enter a pocket containing six or eight ounces of foul-smelling material, composed of blood, serum, and intestinal contents. At the bottom of the pocket a perforation of the intestine about two cm. in diameter was found, with a slight nipple-like projection of the intestinal mucous membrane. As the cavity was undoubtedly infected no attempt was made to close the hole in the intestine but several rubber drains were inserted and the abdominal wound closed. There was a profuse purulent discharge from this pocket, necessitating rubber tube drain and irrigation. During one of these irrigations the whole fetal torso was washed out of the wound. Following this the patient made a complete recovery and was discharged from the hospital twenty-nine days after admission. The first case was interesting because of perforation of the intestine, operation thirty-six hours afterwards, and recovery without peritonitis, with movement of the bowels four days after the operation. The second case was of interest because of the unusual location and mechanism of the perforation of the uterus and of the intestine extraperitoneally.

Dr. Frederick C. Holden cited a case coming under his observation some years ago in which a similar accident occurred. In this instance the intestine was brought out through the uterus and cut off and the patient had a fecal fistula through the uterus which finally healed up. Usually such accidents occurred where there was an anteflexed uterus and it was the dilator that did the damage while the curette brought down the intestine. Dr. Holden said he did not understand why in the first case rectal feeding was used after doing the intestinal resection.

Dr. Robert L. Dickinson said that he had seen a case in which the uterus was perforated by forceps. In attempting to get the contents of the uterus the forceps perforated the fundus and also the bowel. The patient was brought in in a dying condition too late for treatment. It was a little strange that men used a curette in a small relaxed uterus. In the pregnant uterus after two and one-half or three months almost all work could be done with forceps, and if one did not exert too much force there was much less danger than with the curette.

Dr. L. T. Le Wald said that the new method of making a diagnosis by means of the *x*-ray after the introduction of air into the peritoneal cavity might be applicable in these cases. An *x*-ray examination might have determined whether the peritoneum was ruptured in the second case. By this method he had been able to diagnose a duodenal ulcer perforation. He thought that by this method they could have made a diagnosis of perforation in this case very promptly.

Dr. Aranow, in closing, said that Dr. Holden's criticism with reference to the rectal feeding was just. It was used by the house surgeon in this case because the patient was put to bed in very bad condition; it was, however, a dangerous procedure in low resections. In reference to the introduction of air into the abdominal cavity, they did not know whether there was a perforation of the intestine, and furthermore the method had not been worked out at that time. He would like to have had the question discussed whether in the presence of a perforation conservatism was not wise, and whether one should do a resection and a hysterectomy or do a resection alone and try to get along by leaving the uterus, or finally whether a hysterectomy should be done and a fistula left and operated on later.

Monstra Duplica (Terata Cata-anadidyma.)—Dr. George L. Brodhead reported this case. He said that the mother of the double monster was a young negress, a primipara, aged 30 years, who went into labor at term. Her physician informed him that after a normal first stage the head of the first child was born spontaneously. As there was no further progress he extracted the arms, trunk, and legs manually. He then discovered that the child was connected with a second still *in utero*, and an ambulance was summoned the patient being carried to the Harlem Hospital where she was placed at once on the delivery table. While the nurses were busy preparing her for operation, and unfortunately while no one was carefully observing her, she gave birth spontaneously to the second child. In all probability birth took place by spontaneous evolution, but of this they were not positive. The children were born dead, but had been alive up to the time of labor. The weight of the monster was 11¼ pounds, the sex was female, and, as seen in the specimen and photographs, the children faced each other and were united by a hood attachment which extended from the ensiform to a point which was just below a common umbilicus which showed a large ventral hernia. There was one umbilical cord and a placenta. The children were very similar in appearance and apparently identical in measurements and weight. The patient completed her labor normally, had no perineal laceration, and the puerperum was uneventful.

Pregnancy in the Rudimentary Horn of a Bicornate Uterus.—Dr. George L. Brodhead reported this case. He stated that Dr. Lee, in his recent text book of obstetrics, stated that this condition closely resembled ectopic gestation. The first case was reported by Mauriceau and Vassal in 1669, and since then more than 100 cases have been reported. The rudimentary horn might be closed at either end, making pregnancy impossible, but accumulation of menses probable. Should the fertilized ovum be inserted in the small horn, there was no hope of reaching the uterus, because the connecting bridge of tissue was usually imperforate. The ovum might grow to term, but the gestation sac usually ruptured in early pregnancy, followed by severe internal hemorrhage. The patient, aged 30, was a V-gravida, having had four previous normal confinements, the last of one-half hour duration. In this instance pregnancy proceeded to about the eighth month, the only symptom being occasional pain in the left hypogastrium. At 7 A. M., on the day of admission to the Harlem Hospital, there was slight pain in the left half of the abdomen, and the patient complained of slight occasional pains up to the time of admission at 2.30 P. M. No life had been felt for two days, and the midwife had diagnosed death of the fetus, for which cause the patient was sent to the hospital. At about 3 P. M. she was apparently in good condition, but at 3.15 she was found in shock and pulseless. Dr. Langrock, who saw the patient first, gave 1,200 c.c. normal saline solution intravenously, but the woman's condition was desperate when the speaker arrived shortly afterward, and in a few minutes she died. Abdominal palpation revealed a fetus apparently free in the cavity, and the cervix was safe and closed. A diagnosis of ruptured abdominal pregnancy was made and also a post-mortem abdominal section, a large amount of blood being found in the cavity with the child. The child weighed 4 10/16 lbs. and was dead, though showing no maceration. As it was impossible to determine the exact variety of pregnancy without thorough microscopical examination of a number of sections, this had been done for him by Dr. Strong and Dr. Schwartz. The report submitted by them stated that the diagnosis was uterus bicornis with rudimentary left horn and pregnancy of approximately eighth months duration in this horn (decidua in the uterus, corpus luteum of pregnancy in the left ovary). Among the interesting features of the case were the following: (1) The patient had been four times pregnant in the right horn of the uterus, before becoming pregnant in the rudimentary left horn. (2) The left horn contained the corpus luteum of pregnancy. There was a well marked fimbriated extremity of the left tube but no tube could be discerned. (3) The uterus seemed to be no larger than the usual size before pregnancy and seemed to have developed from the right Müllerian duct.

Dr. Dickinson asked Dr. Brodhead to draw a diagram showing which was the fetal sac.

Dr. Brodhead drew a diagram showing the rudimentary left horn of the bicornate uterus just above the cervix and just above this what seemed to be the round ligament.

Dr. Holden asked Dr. Brodhead what his diagnosis was.

Dr. Brodhead replied that they thought they were dealing with an abdominal pregnancy of some type, but they did not suspect the true condition until section was made.

Dr. Robert T. Morris said that, in the first case, from the biological standpoint it would be interesting to know whether these twins were from one ovum or from two ova.

Dr. Arnold Sturmdorf asked Dr. Morris how he would determine the origin of those twins from one ovum or from two ova.

Dr. Morris replied that if the twins were absolutely similar he would consider that they came from the identical ovum.

Dr. Sturmdorf said that he had had occasion to study Graafian follicle development and the embryology of the female genitalia in their relation to the pathology of endotrachelitis. According to recent conceptions based upon the original investigations of Kolliker, Dr. Brodhead's case was *not* one of bicornate uterus, but a unicornate uterus with pregnancy in an anomalous tube. The relation of the existing fimbriated extremity and ovary substantiated such an interpretation. It must be recalled that developing from the fusion of the two Müllerian ducts, every uterus was bicornate at a certain stage of its development, and that a portion of each horn subsequently remained as tube. The presence of musculature, similar to uterine muscle, in the tubal wall was natural and a usual finding under the circumstances, but the epithelial lin-

ing of the tubal lumen was not that of the corporal endometrium.

Dr. BRODHEAD, in closing, said he could say nothing in reference to the arguments Dr. Sturmdorf had brought forward to show that the section was of a tubal and not a rudimentary horn of a bicornate uterus, because he had given the specimen to Drs. Strong and Schwartz of the Woman's Hospital who stated positively that it was a rudimentary horn and he had taken their word for it.

Rapidly Growing Multilocular Ovarian Cyst Associated with Complete Amenorrhea.—Dr. GEORGE W. KOSMAK presented a report of a case in which amenorrhea and certain subjective evidences of pregnancy led to a diagnosis of the latter condition in association with an abdominal tumor. The case was reported, he said, for the purpose of calling attention to this peculiar combination of symptoms which might readily lead to an erroneous diagnosis. The patient was 31 years of age, married May 18, 1919. Her menstruation had always been fairly regular and she was menstruating at the time of her marriage. A slight spotting occurred in June and in October she bled a few days during a cold contracted at this time. There was no nausea or vomiting until October, when she also began to cough. The vomiting became gradually worse and she lost considerably in weight. She felt worse at night and was very constipated. A gradually increasing abdominal tumor was noted and the patient and her family believed her to be pregnant. She was first seen December 2, 1919, in consultation. Examination showed a rather sick looking young woman, not well nourished, conjunctivæ pale, eyes sunken, skin dry, heart and lungs negative. The abdomen was uniformly enlarged to the ensiform, rigid, somewhat tender, with the skin smooth and tense, umbilicus flat, no fetal sounds or ballottement possible. There was no secretion present in the breasts. A bimanual examination failed to outline the uterus, but the cervix was soft, admitted finger tip and simulated that of pregnancy. A preoperative diagnosis was made of pregnancy associated with a neoplasm, and in view of the patient's increasing pain, obstinate vomiting, and general decline, operation was decided upon. A median incision was made from an inch above the symphysis to above the umbilicus. The abdominal wall was moderately edematous. On attempting to enter the peritoneal cavity firm adhesions were encountered between the parietal peritoneum, and a large tumor mass which on exploration was found to occupy the greater part of the cavity, extending from the brim of the pelvis practically to the liver. The entire anterior portion of the growth was quite firmly adherent to the abdominal wall. A diagnosis of a large multilocular cyst was made and in order to avoid extending the abdominal incision the portion under the wound was opened and several quarts of a dark-colored fluid containing numerous gelatinous masses allowed to escape. The size of the tumor being thus reduced it could be dragged down through the original incision and was found to be attached by a broad base to the left broad ligament. The pedicle was clamped and the growth removed, the left tube being included in the excised mass. The uterus was displaced to the right side and the right tube and ovary found to be normal. The intestines had been packed in back of the mass and were covered by the omentum, which was not adherent to the tumor. The abdominal wall was closed in three layers, using plain catgut, including a subcuticular suture. The patient took the anesthetic well and made an uneventful recovery. The vomiting stopped in a few days and the wound healed by primary union. The pathological diagnosis was cystadenoma of the ovary. Attention may be called to the almost absolute menorrhea starting at the time of the patient's marriage, together with a uniformly growing abdominal tumor and subjective evidences of pregnancy. The rate of growth exceeded that of a normal pregnancy of the elapsed periods and combined with evidences of intraabdominal disturbance, dictated immediate operation.

Dr. L. T. LEWALD said that perhaps he should offer an apology for introducing the subject of pneumoperitoneum again. This was another case in which introduction of air into the peritoneal cavity might have thrown light. It would have been interesting to know in this instance whether the *x*-ray after pneumoperitoneum would have shown adhesions to the abdominal wall. In this case it would have been very difficult to introduce the needle, and it was a question whether a diagnosis could have been made by the introduction of air into the peritoneal cavity or whether it was one of those cases in which this procedure would have failed or would have been dangerous.

Dr. KOSMAK, in closing the discussion, said he had not seen amenorrhea associated with bilateral dermoid cyst. The diagnosis in this case had been particularly difficult and he did not see how they could have introduced air into the abdominal cavity. He was glad this was not attempted because the tumor might have been perforated. Cases of this kind were often admitted to the Lying-in Hospital in which associated with the pregnancy there was an abdominal tumor, and he did not know how they were to make the distinction in cases of this kind. The abdomen was tense and difficult to palpate and bimanual examination was equally unsatisfactory. The only points by which one could be guided were the amenorrhea and the size of the uterus. The patient stated that the amenorrhea had lasted for over five months but the size of the uterus did not correspond to a five months pregnancy. Only a week later they had had another case with a very similar history in which it was also very difficult to make a diagnosis by palpation. There was, however, secretion present in the breast but the size of the uterus did not correspond to the period of amenorrhea. Severe abdominal pain and other signs indicated operation, and when she was opened a five months' pregnancy was found, and three fibroid tumors, a rather small one in the wall of the uterus, a larger one beginning to break down, and a third one packed into the brim of the pelvis. In order to get at the one in the posterior wall the uterus had to be lifted out of the abdominal cavity. This woman continued with her pregnancy. These two cases presented the same train of symptoms, the only difference was that in the one case there was a distinct secretion in the breasts and in the other there was not.

X-ray Illustration of Normal and Abdominal Position of the Uterus.—Dr. DOUGAL BISSELL gave this demonstration. He stated that the requisites for getting good *x*-ray pictures showing the position of the uterus were that the woman should be thin, that she should have a relaxed perineum, a canal somewhat accessible, and a somewhat patent internal os. The first plates showed what he considered to be the normal position of the uterus with the patient in the standing posture. In all the textbooks the standard position of the uterus was taken as the position this organ assumed when the bladder was half full. When the bladder was half filled or contained a greater quantity of fluid the angle that the uterus made with the horizontal plane differed greatly from that made when the bladder was empty. It did not seem to him that this way of determining the position of the uterus was sufficiently accurate and definite to determine the standard or normal position of the uterus. When the bladder was empty it was found that the uterus lay in practically a horizontal position, its angle with the horizontal plane being between 14 and 20 degrees. Plates were shown of a typical case of enteroptosis. This patient had all her viscera displaced; both kidneys were very low; the stomach and intestines were low and the uterus was retroverted. He had corrected the position by splitting and overlapping the round ligaments, and had succeeded in leaving the uterus in good position. One could take a series of pictures showing the position of the uterus with the bladder filled to different degrees. Instead of using an injection of thorium to get the pictures he used an iron stem because the thorium was not retained nor was it of sufficient density to show through the bony structure of the pelvis. Another plate showed the uterus at an angle of 16 degrees with the horizontal plane. The patient from whom this picture was taken had been operated upon for tuberculous kidney. His method of doing this operation was to open the abdomen and dissect out the ureter for its entire length down to and under the uterine artery. In doing this he found an adherent ovary and tube and the uterus was retroflexed and did not assume the anterior position. The

angle between the axis of the vagina and that of the uterus was 40 degrees. The picture showed the same woman with her uterus in the normal position. Another plate showed a woman wearing an Emmett pessary covered with tin foil. In view of the finding that the normal position of the uterus was in an almost horizontal plane it would be desirable to change the nomenclature and instead of speaking of the anterior and posterior surfaces of the uterus to call the anterior the inferior surface and the posterior the superior surface of the uterus. Dr. Bissell exhibited a series of pictures showing various degrees of displacement. One of these showed that it was possible strictly speaking to have a procidentia uteri without having a cystocele or rectocele. The pictures showed the cervix on a level with the coccyx and by pressing the tip of the finger upon the cervix it could be pressed against the coccyx.

Dr. George Gray Ward asked if he was correct in understanding that the pictures were taken after the round and broad ligaments had been shortened.

Dr. Bissell replied that he was. The pictures were taken after the round ligaments were shortened.

Dr. Ward asked if it was not possible that the uterus was overcorrected and was not in an absolutely normal position.

Dr. Bissell said that would have to be proved by having the bladder filled with fluid and then if the uterus was mobile it would go back to the sacrum. He had not done that in this case but was satisfied that it could be done.

Graphic Measurements of Operative Results.—Dr. Robert L. Dickinson made this presentation, in which he urged the introduction of Bronton's graphic methods into medical textbooks. He said there was no industry that did not have in the office of the manager a collection of swinging leaves from which the manager could show at a glance what each man was producing, and whether costs were increasing or decreasing. These methods were so common in other walks of life and so useful that they ought to be introduced into medicine. He had been working along these lines and had devised a scheme for hospital use, which showed at a glance what every man on the hospital staff was doing, the operations he had performed, the area of frequency, and many other details. A great deal of data could be presented in a graphic way that could be grasped by the mind at a glance and meant a great deal more than statistics.

Dr. Dickinson then gave a lantern slide demonstration of his method of keeping graphic case histories. One of the most interesting figures showed that if a lead tape were introduced into the uterus and then an *x*-ray examination made the exact position of the uterus could be seen in the picture. The two points from which measurements were then taken were the symphysis and the coccyx, and in its normal position the cervix was on a line drawn between these two points, two and one-half inches from the coccyx. The finger, however, was a much simpler measure, taking the subpubic arch as a starting point. One inch was allowed for each phalanx, and one inch allowed from the knuckle to the base of the thumb. With the diagram of the pelvic floor showing the distance from the pubic arch to the coccyx as three inches, and the finger as a measure, one could work out very satisfactory results. Of 150 cases of which he had kept graphic records, he had selected 50 to demonstrate the kind of diagrams that he made before operation, at operation, and perhaps subsequently. By recording such diagrams with the case histories one could tell in a moment more than he could by reading the written record. There were many instances in which the possession of such diagrams would be of great medicolegal value.

New Ideas on the Spirochete.—Mme. Fuchs-Wolfring does not understand why in inoculation of pure cultures of the treponema the results are only exceptionally positive. As far back as 1911 Spengler announced the discovery of atypical spirochetes in the blood, which are granular and ovoid. The defects of our knowledge appear to be due to the fact that only typical organisms have hitherto been accepted as the cause of syphilis. Spengler finds the atypical germ in the blood in florid syphilis, and makes use of the find in diagnosis as a check on the Wassermann test.—*La Presse Médicale.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Board of Medical Examiners, State of Colorado.

October, 1919.

ANATOMY.

1. Define—Anterior fontanelle, dura mater, fissure of Rolando, fundus oculi, foramen of Winslow, and duct of Wirsung.
2. Describe the upper extremity of the ulna.
3. Give attachments, action, and nerve supply of the following muscles, Subscapularis, latissimus dorsi, pronator radii teres, psoas magnus, and sartorius.
4. How does the facial nerve emerge from the cranium? What muscles does it supply? Describe the facial appearance in paralysis of the seventh nerve.
5. Describe the axillary artery.
6. Describe the location and formation of the superficial and deep palmar arches.
7. Describe the large intestine as to size and location, subdivisions, blood supply, and mesentery.
8. Describe Poupart's ligament and the saphenous opening.
9. Explain why each male has a potential inguinal hernia; its incidence in male and female as compared to femoral hernia.
10. Discuss the uterus as to its size and structure, its blood supply, and its relation to the peritoneum.

PHYSIOLOGY.

1. Explain the difference in the action of ptyalin on raw and cooked starch.
2. From what portion of the cortex cerebri do the arm, the face, and the leg receive their motor impulse?
3. Mention the enzymes of the pancreatic juice and state the function of each.
4. How is the automatic action of the heart muscle supposed to be maintained?
5. What general conditions influence blood pressure and blood velocity?
6. Discuss the origin and significance of urea.
7. Give the reaction of the following, and state the cause of reaction: Gastric juice, blood, urine, pancreatic juice.
8. State briefly what is meant by the vasomotor nervous system of the body.
9. What are carbohydrates and what part do they play in the general metabolism of the body?
10. Describe the physiology of menstruation.

CHEMISTRY.

1. Give the formulæ and chemical names of the following substances: (*a*) Saltpeter, (*b*) Epsom salt, (*c*) Paris green, (*d*) aqua fortis, (*e*) gypsum, (*f*) Glauber's salt, (*g*) Rochelle salt.
2. Define (*a*) isomerism, (*b*) metamerism, (*c*) polymerism, with examples of each.
3. Define with examples, (*a*) Basic radical and (*b*) acidulous radical, (*c*) hydride, (*d*) hydroxide, (*e*) haloid salt, (*f*) binary compound, (*g*) anhydride.
4. What are the chemical processes underlying fermentation and putrefaction? Give example.
5. Define (*a*) alcohols, (*b*) ethers, (*c*) phenols, (*d*) alkaloids, with examples.
6. Define the terms metabolism, catabolism, and anabolism.
7. Define (*a*) physiological salt solution, (*b*) isotonic, (*c*) hypoisotonic, and (*d*) hyperisotonic solution.
8. What is the source of urea in the body, its normal quantity, and the significance of its (*a*) increase (*b*) decrease.
9. Define (*a*) proteins, (*b*) albumin, (*c*) peptones, (*d*) albuminoids.
10. Name the most important reagents for uranalysis with the uses of each.

ANSWERS.

ANATOMY.

1. *Anterior fontanelle* is a diamond-shaped space found in infants, situated between the parietal and frontal bones.

Dura mater is the outer of the three membranes covering the brain and spinal cord.

Fissure of Rolando is a fissure situated about the middle of the outer surface of each cerebral hemisphere, beginning just behind the middle of the longitudinal fissure and running downward and forward.

Fundus oculi is that part of the interior of the eyeball which is situated around the posterior pole.

Foramen of Winslow is a foramen connecting the general peritoneal cavity with the lesser peritoneal sac.

Duct of Wirsung is the excretory duct of the pancreas.

2. The *upper extremity of the ulna* is large and irregular and presents the olecranon process, the apex of which is received into the olecranon fossa of the humerus; the triceps muscle is inserted in its upper border; the lateral ligaments are inserted at the sides. The coronoid process projects from the anterior surface and is received (during flexion) into the coronoid fossa of the humerus. The great sigmoid cavity is on the upper surface, and the lesser sigmoid cavity on the outer surface.

3. SUBSCAPULARIS. *Origin:* Subscapular fossa. *Insertion:* Small tuberosity at upper end of humerus. *Action:* It flexes the humerus and rotates it inwards. *Nerve supply:* Subscapular.

LATISSIMUS DORSI. *Origin:* Spinous processes of lower six dorsal vertebræ, lumbar aponeurosis, supraspinous ligaments. *Insertion:* Bicipital groove of humerus. *Action:* It draws the arm downward and backward, and rotates it inward. *Nerve supply:* Long subscapular.

PRONATOR RADII TERES. *Origin:* Internal condyle of humerus and ridge just above it; also from inner border of coronoid process of ulna. *Insertion:* Middle of outer surface of radius. *Action:* It flexes the elbow and pronates the forearm. *Nerve supply:* Median.

PSOAS MAGNUS. *Origin:* Transverse processes and bodies of all the lumbar vertebræ and the body of last dorsal vertebra. *Insertion:* Lesser trochanter of femur: *Action:* It flexes the thigh on trunk, or trunk on thigh, and also rotates the femur outward. *Nerve supply:* Branches from lumbar plexus.

SARTORIUS. *Origin:* Anterior superior spine of ilium. *Insertion:* Inner side of tibia by the side of the tubercle. *Action:* It flexes the hip and knee, abducts the thigh and rotates it outward. *Nerve supply:* Anterior crural.

4. The FACIAL NERVE leaves the cranium through the stylomastoid foramen. It *supplies* the muscles of the face, scalp, external ear, buccinator, platysma, stapedius, stylohyoid, and posterior belly of the diagastric.

"When it is paralyzed, the muscles of the face being all powerless, the countenance acquires on the paralyzed side a characteristic, vacant look, from the absence of all expression; the angle of the mouth is lower, and the paralyzed half of the mouth looks longer than that on the other side; the eye has an unmeaning stare, owing to the paralysis of the orbicularis palpebrarum. All these peculiarities increase the longer the paralysis lasts, and their appearance is exaggerated when at any time the muscles of the opposite side of the face are made active in any expression, or in any of their ordinary functions. In an attempt to blow or whistle, one side of the mouth and cheeks acts properly, but the other side is motionless, or flaps loosely at the impulse of the expired air; so, in trying to suck, one side only of the mouth acts; in feeding, the lips and cheeks are powerless, and, on account of paralysis of the buccinator muscle, food lodges between the cheek and gums." —(Kirkes' *Physiology.*)

5. The *axillary artery* is the continuation of the subclavian; it begins at the outer border of the first rib and extends as far as the lower border of the tendon of the teres major, where it becomes the brachial artery. It is deeply situated at its origin, but is quite superficial at its termination. It is divided into three parts by the pectoralis minor muscle; the first part being above that muscle, the second part behind it, and the third part below it. Its *branches* are: Superior thoracic, acromio-thoracic, long thoracic, alar thoracic, subscapular, and anterior and posterior circumflex.

6. The *superficial palmar arch* is formed by the ulnar artery, and is completed by the ulnar artery anastomosing with a branch of the radial (superficial volar or princeps pollicis). It gives off the four digital branches. The surface marking is a line drawn transversely across the palm from a point where the web of the thumb joins the palm. The *deep palmar arch* is formed by the radial artery, and is completed by the radial artery anastomosing with a deep branch of the ulnar. Its branches are the palmar interosseous, perforating, and palmar recurrent arteries. The surface marking is a line drawn transversely across the palm, one-half inch nearer the wrist than the superficial arch.

7. The large intestine extends from the termination of the ileum to the rectum. It differs from the small intestine in: (1) Its larger size; (2) its more fixed position; (3) the possession of teniæ; (4) in being sacculated; and (5) in possessing appendices epiploicæ.

The colon is divided into ascending, transverse, descending, iliac, and pelvic. The *ascending colon* extends from the cecum to the under surface of the liver to the right of the gall-bladder, where it turns to the left, forming the *hepatic flexure.* It lies in the right iliac and right hypochondriac regions. The peritoneum covers the anterior and lateral surfaces. Length, 8 inches. The *transverse colon* passes from right to left, from the gall-bladder to the spleen. It forms an arch, convex anteriorly, and below: the *transverse arch of the colon.* It is entirely surrounded by peritoneum, which is attached posteriorly to the spine, forming the mesocolon. Length, 20 inches. The *descending colon* passes from the end of the transverse colon by a bend, *the splenic flexure.* Between the splenic flexure and the diaphragm, opposite the tenth left rib, is a fold of the peritoneum, the *costocolic ligament,* which slings up the spleen. The gut then passes downward to the iliac crest, ending in the iliac colon. The peritoneum invests its anterior and lateral surfaces. Length, 4 to 6 inches. The *iliac* colon is continuous with the descending colon at the left iliac crest, and ends at the inner border of the left psoas. Peritoneum invests its anterior and lateral surfaces: it has no mesentery. Length, 5 to 6 inches. The *pelvic colon* extends from the inner border of the psoas to the level of the third sacral vertebra. Length, 16 or 17 inches; very variable. It has an extensive mesentery.—(From *Aids to Anatomy.*)

BLOOD SUPPLY TO THE LARGE INTESTINE. *Cecum and appendix:* Ileocolic and appendicular arteries. *Colon:* Right colic and middle colic (of superior mesenteric), left colic and sigmoid branches (of inferior mesenteric). *Rectum:* Superior hemorrhoidal (of inferior mesenteric), middle hemorrhoidal (from internal iliac), and inferior hemorrhoidal (from internal pudic artery).

8. *Poupart's ligament* is the lower border of the aponeurosis of the external oblique, and extends from the anterior superior spine of the ilium to the spine of the pubis.

The anatomical structures which lie beneath Poupart's ligament are (from without inward): External cutaneous nerve, Iliacus, anterior crural nerve, Psoas, femoral artery, femoral vein, femoral ring.

The saphenous opening is an aperture in the fascia lata, situated at the upper and inner part of the thigh a little below Poupart's ligament. It transmits the internal saphenous vein.

9. *Inguinal hernia* is more common in the male because the inguinal canal is larger, owing to its having allowed the passage through it of the testis. The ratio of inguinal to femoral hernia is given as 96: 2 in the male, and 50: 33 in the female.

10. In the nulliparous adult the uterus is about three inches long, about two inches wide at the upper part, and about one inch thick. The uterus lies between the rectum behind and the bladder in front; it is below the abdominal cavity, and above the vagina. Its position is one of slight anteflexion, with its long axis at right angles to the long axis of the vagina. The anterior surface of its body rests on the bladder, and the cervix points backward toward the coccyx. The uterus is not fixed, but moves freely within certain limits. It is held in place by ligaments—broad ligaments, round ligaments, vesicouterine, and rectouterine.

The *uterus* is composed of an external or serous coat, a middle or muscular coat, and an internal or mucous coat. The serous coat is derived from the peritoneum and covers the fundus and posterior surface; the anterior surface is covered as far as the junction of the cervix with the body. The muscular coat forms the bulk of the uterus, and is arranged in three layers, an outer, middle, and inner. The mucous membrane is adherent to the muscular coat, it lines the uterus

throughout, and is continuous with the lining of the vagina and also with the Fallopian tubes and peritoneum. The *arteries* supplying the uterus are the uterine and ovarian.

PHYSIOLOGY.

1. The action of ptyalin on cooked starch begins promptly; if raw starch is used the action of the ptyalin is much delayed. This is said to be due to the fact that raw starch grains are surrounded by cellulose, and that this cellulose resists the action of the ptyalin; cooking the starch breaks up this cellulose envelope and allows the ready access of the ptyalin to the starch granule. Further, when starch is boiled it takes up water, and then it is acted upon more quickly by the ptyalin.

2. The *motor areas* are located and arranged on the cerebral cortex immediately in front of the fissure of Rolando. At the upper part of the convolutions in front of this fissure are areas connected with the movements of the lower extremities; then from above downward are located the centers for movements of the shoulders, arms, wrists, fingers, face, lips, tongue, and larynx and pharynx.

3. ENZYMES OF THE PANCREATIC JUICE. *Amylopsin*, an amylolytic enzyme, hydrolyzes undigested starch or dextrin to maltose, and later on this is converted into glucose, fructose, and galactose. *Trypsin*, a proteolytic enzyme, hydrolyzes protein to amino-acids, at the same time yielding proteoses, peptones, and polypeptides. *Steapsin*, or pancreatic lipase, converts the fats into glycerol and fatty acids.

4. *Automaticity of the Heart.*—"The question of the cause or causes of the automatic rhythmical contractions must be sought for whether the phenomenon turns out to be a property of the muscular tissue or of the nervous tissue of the heart. When we say that a given tissue is automatic we mean that the stimuli which excite it to activity arise within the tissue itself, and are not brought to it through extrinsic nerves. In the heart, therefore, we assume that a stimulus is continually being produced, and we speak of it as the *inner stimulus*. Experiment and speculation have been directed toward unraveling the nature of this inner stimulus. Most of the physiologists who have expressed an opinion upon the subject have sought an explanation in the composition of the blood or lymph bathing the heart tissue, or in the products of metabolism of the tissue itself. Regarding this latter view there is nothing of the nature of direct experimental evidence in its favor. No product of the metabolism of the heart tissue capable of exerting this stimulating effect has been isolated. In regard to the former view, that the inner stimulus is connected with a definite composition of the blood or lymph, there has been considerable experimental work which is of fundamental significance. While the older physiologists paid attention mainly to the organic substances in the blood, it has been shown in recent years that the inorganic salts are the elements whose influence upon the heart beat is most striking. These salts are in solution in the liquid of the tissue, and are therefore probably more or less completely dissociated. Attention has been directed mainly to the influence of the cations, of which three are especially important, namely, the sodium, the calcium, and the potassium."—(Howell's *Physiology*.)

5. *Blood pressure* is the pressure of the blood due to the ventricular systole, the elasticity of the arterial walls, and the resistance of the capillaries. The normal arterial blood pressure varies; the systolic pressure being about 120 to 150 mm. of mercury, and the diastolic from about 90 to 120 mm. of mercury. Blood pressure is *maintained* by the contraction of the heart, the peripheral resistance, and the elasticity of the arterial walls. Blood pressure:

MAY BE RAISED	MAY BE LOWERED
1. By the heart beating more quickly.	1. By the heart beating more slowly.
2. By the heart beating more powerfully.	2. By the heart beating more feebly.
3. By contraction of the arterioles.	3. By dilatation of the arterioles.
4. By increase in total quantity of blood.	4. By deficient supply of blood to the left ventricle.

Blood velocity is similarly influenced.

6. The greater part of the urea produced in the body is formed in the liver. The liver cells form the urea from two sources: (1) The larger amount, produced by the liver cells, is derived from the amino-acids which have been absorbed from the small intestine, and which are not required by the tissues; this constitutes the *exogenous* urea. (2) The smaller amount, produced by the liver cells, is derived from the ammonium carbonate, which is the outcome of nitrogenous catabolism, and which is derived from the tissues; some is also produced by the action of the uricolytic enzyme upon uric acid; this constitutes the *endogenous* urea.

The amount of *urea* eliminated in the urine depends largely upon the amount of nitrogen contained in the food, and also upon the extent of protein metabolism going on in the body. It is increased in fevers, in diabetes, pneumonia (during resolution); it is decreased in diseases of the liver.

7. *Gastric juice* is acid in reaction, due to hydrochloric acid; *blood* is alkaline, due to disodic phosphate and sodium carbonate; *urine* is acid, due to monosodic phosphate and organic acids; *pancreatic juice* is alkaline, due to sodium carbonate and sodium phosphate.

8. The vasomotor nervous system consists of (1) a vasomotor center in the bulb, (2) of some subsidiary centers in the spinal cord, and (3) of vasomotor nerves, which are of two kinds: (*a*) those causing constriction of the vessels, and so-called vasoconstrictor nerves; and (*b*) those causing dilatation of the vessels, and so-called vasodilator nerves. These nerves supply the muscle tissue in the walls of the blood-vessels and regulate their caliber, thus influencing the *quantity* of blood supplied to a part; at the same time they regulate the *quality* of blood supplied to a part; they also regulate the *nutrition* of a part, also *secretion* and *heat production*. They are concerned, too, in the control of the heartbeat. The center is in the medulla, in the floor of the fourth ventricle, near the calamus scriptorius.

9. *Carbohydrates* were formerly defined as substances of unknown constitution containing carbon, hydrogen and oxygen. The molecule of carbohydrate contained six atoms of carbon (or some multiple of this number), and the hydrogen and oxygen were present in the proportion required to form water. While this definition is not, to-day, scientifically accurate, it suffices to "label" a definite class of compounds containing the sugars and starches.

Carbohydrate metabolism.—"The carbohydrates pass into the liver by the portal circulation as dextrose, and are partly stored up in the liver cells as glycogen, to be given off as sugar in the periods between digestion, to be used up when a sudden demand is made by the starving or working body. Carbohydrates may also be derived from proteids. The dextrose is used up by the muscle and gland-cells being oxidized, the carbon going off as carbon dioxide. As to amount of carbohydrates, only 500 grams can be consumed without digestive disturbance. The carbohydrates are found in small proportions in fleshfoods, such as glycogen, and in milk in the form of lactose. By far the greater proportions of carbohydrates are obtained from the vegetable kingdom. In vegetable foods they occur as starches and sugars. An animal that is fed upon carbohydrates exclusively dies of starvation on account of want of proteid. The saving of proteid increases proportionately with the quantity of carbohydrates ingested. This is an important fact, since the digestive juices are capable of digesting them in large quantities."—(Ott's *Physiology*.)

10. *Physiology of menstruation.*—"The endometrium, in the four or five days preceding the flow, becomes rapidly thicker and its superficial layers are congested with blood and, in places, small collections of blood may be noticed. Opinions differ very much as to the change undergone by this thickened membrane during the flow. According to some authors, most of the membrane is thrown off and the blood escapes from the denuded surface mixed with pieces of the membrane. According to others, no material destruction of the membrane occurs, the blood that escapes being due to small capillary extravasations or perhaps mainly to a process of diapedesis. It would seem that the amount of destruction of the endometrium must be subject to invididual variations. After the cessation of the flow

the mucous membrane is rapidly repaired by regenerative changes in the tissues; the surface epithelium, if denuded, is replaced by proliferation of the cells lining the uterine glands and the thickened, edematous condition of the membrane rapidly subsides during a period of six or seven days. The mucous membrane of the uterus may be said to exhibit a constantly recurring mentrual cycle which falls into four periods: (1) Period of growth in the few (five) days preceding menstruation, characterized by a rapid increase in the stroma, blood vessels, epithelium, etc., of the membrane. (2) The menstruation or period of degeneration (four days) during which the capillary hemorrhage takes place and the epithelium suffers degenerative changes and is cast off more or less. (3) The period of regeneration (seven days) during which the mucous membrane returns to normal size. (4) The period of rest (twelve days) during which the endometrium remains in a quiescent condition."—(Howell's *Text-book of Physiology.*)

CHEMISTRY.

15. *Saltpeter* is potassium nitrate, KNO_3. *Epsom salt* is magnesium sulphate, $MgSO_4$. *Paris green* is cupric-aceto-metarsenite, $Cu(C_2H_3O_2)_2 + 3\ Cu(AsO_2.)_2$ *Aqua fortis* is nitric acid, HNO_3. *Gypsum* is calcium *sulphate*, $CaSO_4$. *Glauber's salt* is sodium sulphate, Na_2SO_4. *Rochelle salt* is sodium potassium tartrate, $NaKC_4H_4O_6$.

2. Substances which have the same percentage composition but different properties are said to be *isomeric*, or *isomeres* of each other; example, acetic acid and methyl formate.

When substances have the same percentage composition and also the same molecular weight, they are said to be *metameres;* example, acetic acid and methyl formate are metameres as well as isomeres.

When substances have the same percentage composition but the molecular weight of one is a multiple of the molecular weight of the other, they are said to be *polymeres;* example, acetic acid and glucose.

3. A *basic radical* is a radical which can displace hydrogen from acids; example, ammonium, NH_4. An *acidulous radical* is a radical which can be combined with hydrogen to form an acid; example, SO_4. A *hydride* is a binary compound one element of which is hydrogen; example, NH_3, nitrogen trihydride. A *hydroxide* is a compound formed by the replacement of half of the hydrogen of water by another element or radical; example, KOH, potassium hydroxide. A *haloid salt* is the salt of a hydracid; example, NaCl, sodium chloride. A *binary compound* is a compound containing only two elements; example, H_2S, hydrogen sulphide. An *anhydride* is a substance capable of combining with water to form an acid; example, SO_3, sulphuric anhydride.

4. The terms *fermentation* and *putrefaction* are applied to certain forms of decomposition, by which molecules of certain organic substances are split up into two or more simpler molecules. A favorable temperature, moisture, and the presence of a substance (such as a ferment or bacteria) are necessary. When carbohydrates are thus decomposed the process is called *fermentation;* when protein matter is thus decomposed, the process is called *putrefaction.*

5. An *alcohol* is the hydroxide of a hydrocarbon radical; examples, CH_3OH, methyl alcohol; C_2H_5OH, ethyl alcohol. An *ether* is the oxide of a hydrocarbon radical; examples, $CH_3C_2H_3O$, methyl ethyl oxide; $(C_2H_5)_2O$, ethyl oxide. A *phenol* is a substance derived from the benzene ring by substituting the hydroxyl group for one of the hydrogen atoms; example, C_6H_5OH, phenol. An *alkaloid* is an organic, basic, nitrogenous substance, capable of combining with acids to form salts in the same way that ammonia does; most of them are alkaline in reaction and bitter in taste. Examples, strychnine, and atropine.

6. *Metabolism* is the name given to the series of chemical changes which take place in the body during life, and by means of which the body is nourished and energy is liberated. *Anabolism* includes such of these changes are are concerned with the building up of the body. *Katabolism* includes such of these changes as are concerned with the wasting of the tissues.

7. *Physiological salt solution* is a solution of sodium chloride in distilled water containing 0.7 per cent. of the salt; it is isotonic with the blood. An *isotonic solution* is one having an osmotic pressure equal to that of serum. A *hypoisotonic solution* is one having an osmotic pressure less than that of serum. A *hyperisotonic solution* is one having an osmotic pressure greater than that of serum.

8. *Source of urea in the body:* The greater part of the urea produced in the body is formed in the liver. The liver cells form the urea from two sources: (1) The larger amount, produced by the liver cells, is derived from the amino-acids which have been absorbed from the small intestine, and which are not required by the tissues; this constitutes the *exogenous* urea. (2) The smaller amount, produced by the liver cells, is derived from the ammonium carbonate, which is the outcome of nitrogenous catabolism, and which is derived from the tissues; some is also produced by the action of the uricolytic enzyme upon uric acid; this constitutes the *endogenous* urea.

About five hundred grains of urea are excreted daily in the urine.

The *urea in the body is diminished* in old age, starvation, and conditions which interfere with the ordinary processes of protein digestion.

The *urea is increased* when much water is ingested, in the early stages of fevers, in diabetes, and in chronic nephritis.

9. *Proteins* are nitrogenous organic substances of complex composition and unknown constitution. They are found in every cell and tissue of the body, and are indispensable to the "life" of these cells and tissues. They are composed of carbon, hydrogen, oxygen and nitrogen; they may also contain sulphur, phosphorus, iron, copper, or iodine.

Albumin is a simple protein, soluble in water; it includes egg albumin, vegetable albumin, lactalalbumin, and serum albumin.

Peptones are secondary, derived, proteins obtained from the latter by hydrolytic cleavage (such as action of acids, alkalies, heat, enzymes). They are soluble in water, uncoagulated by heat; they give the biuret test.

Albuminoids are simple proteins with the same general structures as other proteins; they are insoluble in all neutral solvents; they occur as a general rule in the skin and in its appendages, and are often called scleroproteins.

10. *An analysis of urine* includes: Estimation of total quantity passed in twenty-four hours, color, odor, reaction, specific gravity, total solids (by aid of Haeser's coefficient). Then examine for albumin by Heller's test, or by heat and nitric acid (HNO_3); then for glucose by Moore's test, with potassium hydroxide (KHO), or with Fehling's solution, which contains copper sulphate ($CuSO_4$), sodium hydroxide (NaHO), and Rochelle salt ($C_4O_6H_4NaK$); then for blood with potassium hydroxide solution (KHO); then for bile pigments by Gmelin's test, requiring nitric acid (HNO_3); then for indican, using lead acetate ($Pb(C_2H_3O_2)_2$), hydrochloric acid (HCl), ferric chloride (Fe_2Cl_6), and chloroform ($CHCl_3$).

Then examine quantitatively for urea, using solution of sodium hypobromite (NaBrO); for chlorides, with silver nitrate solution ($AgNO_3$); for sulphates, with barium chloride solution ($BaCl_2$). Acetic acid ($C_2H_4O_2$) will be necessary to acidify alkaline urines.

(*To be continued.*)

Cause of Death in Grippe.—Renaud, who has personally treated over 600 cases of influenza during the pandemic, saw as the essential cause of death pneumopathies with multiple foci of hepatization. The mechanism is either asphyxia or cardiac collapse. There is essentially a pneumococcus sepsis of epidemic character so that the entire picture does not differ essentially from the epidemics of malignant pneumonia which occasionally appear in cold weather. The author had 27 cases of severe type and did not lose one, his management being early repose and digitalis as a background, with adrenalin and pneumococcus serum in more desperate cases, the use of hydrotherapy—in short, the usual treatment for pneumonia.—*La Presse Médicale.*

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AN EXPERIMENTAL STUDY IN MENTAL THERAPEUTICS.*

BY L. PIERCE CLARK, M.D.

NEW YORK.

RECOGNIZING that no small part of our present mental therapy has been first suggested or employed by lay workers, many neuropsychiatrists have given not only their nurse assistants a training in mental nursing as ordinarily understood, but have striven to make them aware of the psychogenic factors at work in individual cases, and show the attendant the possibilities of cultivating the proper attitude to overcome the defects encountered in the individual patient. Indeed, many of us have found it valuable to discuss the mental symptoms and case-record with the nurses so that they may grasp in its entirety the principles of mental and physical treatment. Of course, one needs to discriminate carefully between the patent and obvious facts in a case and those which are unessential or problematical. In this way a continued post-graduate course is made possible for the trained attendant, thus keeping alive and keen a therapeutic interest which otherwise might lag or become rigid and stereotyped. We must remember that but little growth in professional knowledge could be expected if medical societies did not afford physicians opportunity for abundant verbal and written reports on case material. Every well organized hospital for mental disease should have meetings of its nursing staff as well as physicians. Indeed, certain set discussions of a broad and comprehensive character upon case material might be held wherein nurses and physicians could jointly associate. While there can be no doubt in exceptional cases a little psychiatric knowledge is a dangerous thing for a nurse, on the whole careful and consistent explanation of properly arranged facts and principles but makes them keener and more ambitious to do good work in their particular province. If nurses working empirically in the past have introduced a number of new remedies, they ought in future to bring out many more valuable contributions. Even those irregular practitioners, often with less mental capacity and aptitude than the well trained mental nurse, have improved and modified our therapy to no small degree. All, therefore, should be considered on their merits, independent of the guild spirit in medicine which has so retarded advancement in the past. It still exists despite intensive effort in medical liberalism. A critical, unbiased judgment, however, is as necessary as an openness of mind.

In mental medicine it is quite apparent that the modern trend to deal with the more intimate life of the individual has hastened our steps in considering new therapeutic measures, and above all it has led us to consider mental diseases as shown in disorders of human behavior more on the basis of actual facts than the special name and diagnosis. Thus mental medicine becomes gradually more liberalized; perhpas in some instances too rapidly so. However, we must make progress as we may, consistent with good common sense.

It is not our concern here to consider the ordinary forms of occupational and amusement therapy such as farm, garden, and shop work, sports, athletics, music, and various artistic pursuits. Admirable as these remedies have proved, only too often they have been urged in a stereotyped manner and made quite distasteful and uninviting to the neurotic and psychotic invalid. Our aim on the contrary has been to seek several new and as yet not fully tried out remedies in a unique and novel setting, and I shall report briefly our experience with this manner of therapeutic approach upon a somewhat heterogeneous group of nervous invalids during a trial period covering several months.

The plan of therapy embraced four classes of school work: (1) Montessori and kindergarten classes for pupil patients and pupil teachers in one group; (2) out-of-door crafts work largely embraced in wood carving and cabinet making; (3) the teaching of English expression in reading, story-telling, and dramatic work, and (4) rhythmic dancing. All the work was undertaken during the past summer, out of doors in the groves and forests of a well-known mountain resort. The types from which the individuals were taken included psychoneurotics, retarded depressants, epileptics, organic palsies with slight physical and mental retardations, and speech disorders. To fill the classes in Montessori and kindergarten work a few normal pupils were admitted. The work was carried out under the supervision of experts in these four special fields who also possessed insight into the nature of the mental defects treated and what was essentially needed for each particular patient.

I. Montessori and Kindergarten Work for Neurotics and Psychotics.—We need not spend time here to digest the work of the Froebel system

*Delivered before the New York Psychiatrical Society, November 5, 1919. Lantern slide demonstration.

of kindergartening nor the more modern, distinct but not unrelated system known as the Montessori Method. No doubt the latter is much superior to the former in training widely aberrant types of abnormal children, especially those of the rest-

Fig. 1.—A serenade. The relaxation exhibited is very noteworthy.

less, antisocial and individualistic type—that kind of child who finds it difficult to take on a systematic régime of educational training such as the kindergarten embraces. A method to be widely adaptable must also be widely modifiable. Indeed, Madame Montessori has again and again reiterated this fact, maintaining that the enduring principle in her method is the *spirit* of the *work itself*, and that those who employ it must possess this spirit and be as flexible as the method

Fig. 2.—Rhythm class, showing the children dancing with the older people.

itself. This, of course, robs the method of that definite procedure so much innately sought for by many educators, and it unfortunately allows for no specific standardization. In consequence there has sprung up many sects and schools of the Montessori Method, each claiming a superiority which in many instances has caused no end of controversy among their several exponents. One thing is certain, however, that the Montessori Method has not only brought out a much more thorough

Fig. 3.—"The Greek Urn," the patients lending themselves to the movements, which are very slow and stately.

re-examination of primary teaching principles, but has developed the general resourcefulness of teaching in those who have practised it. It has also increased the power of pedagogic observation. Many teachers have gained new insight into the possibilities of child-development through their work in the Montessori Method. For practical ends, as neuropsychiatrists our main concern is to find a wider and more flexible principle of educating psychopathic and abnormal children; and that, too, by the aid of those teachers who show a ready spirit of co-operation in our difficult task.

It occurred to me that not only was the Montessori Method of value for psychopathic children, but that under carefully trained teachers as supervisors many patients might be profitably employed as associate teachers as well. To this end we established the summer kindergarten and Montessori school out of doors where psychopathic chil-

Fig. 4.—"The Arrow Dance." The play of the muscles here is particularly good. Note the man, an epileptic, whose costume is incongruous to the setting, and contrast with Fig. 5.

dren could be trained, and wherein my adult patients at the same time could be trained as teachers in the method.

The school work for the day opened with improvised rhythmic dancing and ended with story-

telling and dramatic pantomime. The behavior and reactions of psychopathic children to this form of work are sufficiently familiar to all. Suffice it to say that the gradual induction of the psychopathic pupils with normal children, con-

FIG. 5.—The Arrow Dance, the same dance as in Fig. 4, a month later; in this the man has donned simple costume and entered into the spirit of the dance.

trary to what is usually held, worked out well. Perhaps success was as much due to the ample supply of teachers as to the free system of teaching which the school afforded. We found that the flexible Montessori Method was of greatest use in beginners to teach consistent concentration and application, but it failed to be sufficiently disciplinary in mental training. So soon as the main principles of mental training had been given, more and more of the regular Froebel kindergarten work was introduced. Nearly all the adult patient-teachers had been educated under old forms of teaching, and it was often impossible for a time for them to follow newer and deductive methods. Their critical prejudices suffered no abatement, though they were mentally ill. They did better on the advanced kindergarten work. It was obvious from our experience that the use of patient-teachers in the Montessori and kindergarten work had to be supervised very closely lest

FIG. 6.—"Canopy Dance" to Chopin's Waltz in G Major. The group took epecial delight in this dance, the music and the motions being particularly enjoyable.

the symptoms of the patient-teachers and their mental attitude interfere with the proper running of such classes. The number of supervising teachers had to be increased owing to their having to look in two pedagogic directions.

Some practical lessons were learned in regard to the native normal pupils. The extreme meagerness of the intellectual opportunities of the inland townsfolk was very obvious. Few had had any chance to develop a constructive imagination in

FIG. 7.—Original pose.

games, sports, or books. This was in such sharp contrast to the city children as to make the situation truly deplorable. Why should not the public schools or playground associations extend their facilities to the rural communities? Why should not the rural-bred child have a community center embracing playground activities, craftswork, folk dancing, and dramatic art to enrich his meager life? For our own purpose as well as to help out the obvious lack in our little native pupils, the rhythms, story-telling, and dramatics were made a part of the school routine. The eagerness with which the country children embraced these additions to the routine work was truly remarkable. Not a little permanent good was added to the work in the social service which we did in having the parents visit the school and in our visiting the children's homes. The tactful suggestions which

FIG. 8.—"Water Dance." Three types of cases. The composition of this picture is particularly graceful.

we were able to offer in making the home life more attractive and worth while helped a great deal.

II. Crafts School.—The work of the Crafts School was largely devoted to the teaching of wood-carving and cabinet work. Aside from the

well-known advantages of the arts and crafts in treating nervous invalids, especially in using it as a means of inducting such patients into any number of lines of healthful occupational interest, we used it for the latent but potent means

Fig. 9.—Group, original pose.

of teaching perception and manual dexterity, and above all, the social adaptations which only too often have been given in a direct and less acceptable manner as bald preaching—the old adage,

To teach as though we taught him not.
As though the thing we taught had been forgot.

Its value was largely owing to the fact that no abstract study was required, the expense and ease of its maintenance being in its favor. Almost all the patients selected for this work had never had any experience in the use of tools and had little or no interests of any sort.

A rather important point was that the head worker in wood-carving was well trained in mental nursing. All demonstrations and talks in carving were given after the actual work had been accomplished; then it was possible to show how inaptitude in the use of the hands and mind had been largely responsible for the poor result. Gradually, as in all occupational work, the patients liked the work for its own sake, instead of looking upon it as merely routine and a means for distracting their attention from morbid symptoms. No doubt carving is excellent for teaching group and teamwork in individuals who are innately antisocial or socially uncongenial. Craftswork is one of the best means to reawaken interest, and under its stimulus many another more subtle change in mental attitude can be brought about. Not only was the carved article useful, but it was made for some definite end, and the work-bench gave an ideal opportunity for exchange of ideas and group talk on ethical and social adaptations. The work was also a topic for conversation in rest periods. Hand in hand with mental improvement there was an increased interest for the work, and the character of the finished object was always a sign of the pupil's improved power to express himself objectively. Just as the conflicting thoughts and obsessive ideas faded away, so did the work show a harmony in the worked design, giving thereby a prognostic guide to the patient's betterment. A work table in the forest grove and an adjacent shed gave ample opportunity for daily work.

III. Expression School.—Probably few not immediately concerned in pedagogic work in its broader aspects are fully aware of the tremendous strides which the modern teaching of English has undergone. Not many realize that there are several distinct schools in teaching English expression, not only for overcoming speech disorders but in the art of general use of language. We have all realized that a certain facility in the technique of speech is absolutely essential to correct stammering and lisping, but few of us are aware how far afield teachers in this special work have gone. Speech technicians, of course, still have their use, and the art of proper neuromuscular training for speech disorders is necessary. But we all know how disheartening is the ultimate prognosis for the average confirmed stammerer if he stops with auditory and visual imagery training. Sooner or later he relapses to nearly his former state of speech disability, particularly if he return to his former surroundings and associations. It is not so much that the principles of training were at fault, but that the system was not broad or comprehensive enough. The average stammerer bears the peculiar marks of his defect not only in speech but in every physical and mental activity, so that he literally "stammers all over his body," as has been aptly stated. All his habits of thought, oral and written, have their peculiar expressions. Unfortunately, in curing speech disorders, the technicians fail in a sufficiently broad psychological training to incorporate proper mental habits with the purely technical type of training which they give. However, there is a small but growing school of special English teachers who are striving to separate themselves from the cosmetic group of art-expressionists as well as speech technicians, and hope thereby to enter into a field for training not only those suffering from speech disorders but all individuals who lack good oral expression. It is unfortunate that this latter phase of their work in English expression is still confined to a few private schools or to those who have the time and means to pay for special training. Here and there a few school boards are striving to make this work an integral part of the public school system. When this principle

Fig. 10.—"The Balloon Dance" to "The Humoresque." The men liked this dance particularly, as it had a strikingly masculine note. There is not only relaxation shown here, but they also abandoned themselves to the dance.

shall be generally adopted we may hope that a great deal of our native vernacular and general slipshod speech as a people will disappear.

It occurred to me that this comprehensive approach to the art of English expression might be

FIG. 11.—"The Patriarch" in the center telling a story, the other performers make him the center of the dance, and go off according to their own interpretation of the story.

valuable as a co-operative part of all the other schools for our nervous patients. First of all the idea would find sympathetic support from those doing rhythmic dancing, those at kindergarten and Montessori work with its story-telling and dramatic accessories, as well as those engaged in the crafts and nature study work. The hope was justified, and when it is properly arranged for it promises to become a part of good mental therapeutics. The work was largely individual, and was confined to the so-called natural method of hearing and interpretation of the English language combined with such psychologic training to increase quickness of wit, ingenuity, independence of thinking, foresight, and insight. Thus the individual's life separately and collectively was broadened and deepened. That which has done so much for the stammerer was found exceedingly valuable for all nervous invalids who submitted themselves to the English training. At first it seemed odd that the patients with speech disorders should have a training in "footwork" (physical gymnastics), but soon its advantage was recognized as fully as expressing clear mental concepts in hearing or reading; thus the physical and the mental work in the art of English expression progressed hand in hand.

It would take too much space to detail the individual teachings employed. The English training had to be adjusted and suited to the particular type of mental and physical defect of the nervous as well as the speech patients under training. The general result was to clarify mental interpretations and to give with ease and precision fitting expression to the thoughts and emotions through the intelligent and artistic use of the voice, speech and actions, and thus form a fitting part of the other schools of training in mental therapeutics.

IV. Rhythmic Dancing.—Almost everyone knows that rhythmic dancing has been in vogue for a long time as an amusement, and has been extensively used for cultivation of bodily grace. Latterly a few more discriminating teachers have developed the art for overcoming certain types of nervousness. A few have cooperated with neuropsychiatrists and have been guided by them in laying special stress upon certain kinds of music and rhythmic movements which need to be inculcated to overcome specific defects. The introduction of rhythmic dancing would be of greatest benefit at the end of inactive and bed rest treatments in sanatoria in which the change to gymnasium or outdoor sports seems to be too abrupt for many nervous invalids who are incapable or unwilling to take up active exercise. The value of it would, perhaps, be more psychologic even than physiologic, the weak will could be stimulated and one can thus teach social adaptations and cooperation with the group spirit.

It was interesting to note how each pupil-patient had his particular personal objections to entering the rhythm group even after private lessons had been given. These objections, as might be imagined, were similar to those ordinarily given by shy, timid people in every-day life, but here more tact and general insistence was necessary to gain co-operation. It was found that the patients between the ages of nineteen and thirty-five almost without exception entered easily and whole-heartedly into the spirit of the dance. They received pleasure and value in the work from the start. Physical and mental habits in general "set," so to speak, at an earlier period in the psychotic than in so-called normals. The fact that the dancer, like the singer, can give expression to his emotions without the aid of a musical instrument dawned slowly upon each performer. That he might call upon the mechanisms of his body and obtain results that were beautiful as well as useful came as a surprise. After a time each one was encouraged to try out new combination of rhythms of his own. For many reasons this latter practice is perhaps of more value mentally than following rules. To many it became so fascinating that some even tried to work out

FIG. 12.—Montessori group. Teachers in background, and pupils in foreground; two of the latter are mentally defective.

new dancing scores to music not yet rhythmed.

It is unnecessary to say that most neurotics, especially nonhysterics, either have an inherent defect in sense of rhythm or find great difficulty in acquiring the proper mental attitude to take

up the work. At first all our pupil-patients did even cruder work than is ordinarily encountered in so-called normal groups, and their first attempts were even grotesque, for they apparently had never thought of the body in terms of beauty or graceful motion. One patient suffering from a retarded depression, began her work willingly but in a mechanical manner, weeping and protesting her inability to dance. In a few weeks her extremely awkward movements disappeared, the freedom of the dance succeeded and she became most critical of her performance. Quite characteristic of her type of disorder, she demanded of herself an almost impossible perfection for one so little gifted in natural grace. A man of equal age, a confirmed epileptic, mentally and physically rigid and pedantic, would not allow his interest in the dance to be shown, but after a month's work he astonished everyone by the alacrity with which he cast aside his everyday clothing and donned a simple costume and took a real pride in the performance of the graceful tableaux. Contrary to what might have been expected, a stammering, awkward epileptic youth developed into one of the best pupils, passing from a grotesque poseur to one exhibiting joyous abandon in the dance. As may be imagined, his bodily grace as well as his speech was greatly benefited, and the myoclonic jerks (petit mal moteur) which were a part of his epileptic disorder, were also markedly improved.

Fig. 13.—Another Montessori Group.

A girl slightly retarded mentally, who had in early life shown some cerebellar fits as a sequence to a cerebrocerebellar palsy, took up the work with a cumulative advance on her previous motor training. In these handicapped cerebellar individuals the later use of rhythmic dancing will prove a real boon. The graceful combination of sequential movements in a synergic activity will be of great advantage. This particular girl improved greatly in knee flexibility, power of delicate and precise balancing and the coordination of associated limb and arm movements. Perhaps the greatest single advantage she gained was what the teacher called the "aliveness" of her toes and feet in simple every-day activity. She also gained better social rapport in the group and improved her former obvious physical and mental queerness.

The therapeutic value obtained in the costuming is one of the factors of rhythmic dancing which will come more and more to be emphasized. It was very noteworthy as regards the nervous group here as a whole. The removal of several layers of clothing whose purpose seems to be to bind and hamper free activity, does much to put the dancer in rapport with the beauty of the nature setting; he seems to free himself physically so he might accept the freedom of the forest.

No small advantage in the rhythmic work was hinted at before it was derived in the reawakening of the dramatic play-instinct. The child-imagination was stirred again, and the later adult conflicts and self engrossment fell away. As the summer's work progressed the energy previously expended in neurotic conflicts was redirected into healthier channels. Coincident with this redirection of effort and power to control the will in a new line of conduct, was the noticeable improvement in mental concentration and control. At first this was brought out step by step by gaining power to listen to the music which was the accompaniment of the dance. Although this requires little mental effort, not one patient seemed to care whether his gestures were rhythmic or in time with the music. Indirectly, he gradually became aware that he was not an individualist engrossed in his own particular symptoms but that he was either a part of a glaring discord or an interpreter of a rhythmic motif of splendid beauty, a harmonious whole. Perhaps the dancer feels even greater rhythmic charm in music than the vocalist. At least our group seemed to suggest this view. Many expressed themselves as being made aware of the innate beauty of music for the first time in which rhythmic values were refined by bodily sensations and movements. While of course this value is but a part of all dancing, it seems to be developed most markedly by the freer system of rhythmic gymnastics.

Some photographs are incorporated as a part of this therapeutic work. It may be said contrary to what is usually the custom, no effort was made to pose the groups specially to gain unusual effects nor were the most proficient allowed to usurp the center of scenes to give the best exhibition possible. On the contrary the regular routine work is shown, good, bad or indifferent, as the plates may show.

My general opinion as to the lasting value of such a therapeutic remedy is that rhythmic dancing, especially outdoors in natural surroundings and modified for men patients, has come to stay, and should be more generally employed.

In conclusion I want to say that various new settings of mental therapy out of doors and in the country ought to be employed, not only for mild nervous disorders in private practice but in sanatoria and modern public institutions. Not a little advantage is gained in making these principles very flexible in application and as an integral part of country life. Properly equipped such an experiment calls out the very best initiative of teachers, nurses, and physicians. In my experience there are many values in the novel and bizarre not obtainable in systems and routines haltingly or indifferently applied. So long as we train neurotics for normal life interests

and the natural social activities that grow out of them, we cannot go far amiss in mental therapeutics.

For assistance in carrying out the general plan of work embraced in the summer school, I am indebted to Mr. T. E. Uniker, Miss Agnes Brill, Mrs. E. P. Whitney and Miss Mary B. Curtis.

20 West Forty-eighth Street.

ON SOME PRESENT-DAY CARDIOLOGICAL TOPICS.

By THOMAS E. SATTERTHWAITE, M.D.

NEW YORK.

For the last fifteen years many efforts have been made to devise suitable tests for cardiac efficiency, but opinions still continue to be divided as to their comparative usefulness. This matter, however, suddenly rose to be one of great practical importance at the outset of the war; while even now, presumably, the tests may at any time be necessary in determining the physical fitness of government employees. At the outbreak of the war they were used in the examinations of recruits to discover whether the men examined were fit for active service or not. A subsequent examination to test putative cardiac disability bore on the question whether the man could eventually be returned to active service or not. The problems were different. In the first, under prevailing circumstances, little time could be allotted for physical examinations and they were necessarily incomplete.[1-2] In the second, ample time was given for thorough examinations and the work was delegated to the men presumably best fitted for it, and they were furnished with the best appliances available. It is proper, therefore, to consider the two tests apart from one another, the former being only a preliminary one, as it were. Now, inasmuch as the accepted recruit was always under medical supervision, and could at any time be put under treatment in case of supposed cardiac disability, there was not the pressing need of a thorough examination as required in the second case. In the latter, however, the examinations were understood to be final, the men being in a position to receive all the tests that were available in the military machine, such as the following: [3] Trigeminal irritation by the inhalation of strong smelling salts that slow the normal heart but accelerate the neurotic. The oculocardiac elicited by pressure on one or both eyeballs. By this method the normal rate is slowed four to ten beats per minute. Any increased degree of retardation suggests trouble with the cardioneural mechanism. Again the administration of atropine, from 1/25 to 1/50 of a grain, increases the normal beat from 30 to 40 per minute, while in hearts with myocardial degeneration the increase may be only 20 beats or even less. These are the so-called neurological tests. The more important tests, however, depend on the reaction of the heart muscle to either active or passive exertion.

Selig's[4] has been very frequently used. The pulse and systolic blood pressure are taken before and after the subject climbs a flight of 20 steps. Normally there is an increase of 20 beats per minute and a rise of blood pressure of 8 mm. Hg. If the myocardium is insufficient, the pulse rate increases 30 or more beats, while the blood pressure rises more slowly, or falls. The length of time taken for the recovery to the normal systolic pressure may be regarded as the index of cardial efficiency.

The hopping-test,[5] the sole officially named government test, consists in having the patient hop twenty paces on one foot. It is a modification of the Selig test, but not so valuable as some others, inasmuch as the work performed cannot be computed accurately. Graüpner's[6] is better, as it consists in having the patient perform a more definite amount of work with a special instrument called the ergometer, and depends on a comparison of the behaviors of pulse rate and arterial pressure. In the normal heart under exercise the systolic pressure rises after the acceleration of the rate, and after rest is maintained, longer than in the inefficient heart where the pressure rise is both delayed and diminished.

Cabot and Bruce[7] have recommended using a measured amount of stair climbing, which is another practical and useful method. They estimated the amount of work in foot-pounds, which is computed by multiplying the number of pounds the individual weighs by the number of feet ascended. Thus an energy-index is provided.

Herz[8] has used simple flexion and extension of the arm and finds that in persons with weak hearts the rate increases five to twenty beats a minute.

Katzenstein's[9] test consists in compressing both femoral arteries. If the arterial pressure rises some fifteen mm. Hg. and the pulse rate does not rise, or even slows a little, the heart is held to be vigorous. If the pressure falls and the pulse rises in rate the heart is insufficient. I have used Schapiro's[10] method for about ten years.[11] The pulse is taken first in the recumbent and then in the sitting position. In health there is an increase of frequency, when the individual has assumed the sitting posture (after lying down), of from three to ten beats per minute. In the weak heart there is an absence of change or a diminution of the frequency in changing from the recumbent to the sitting position. This method is applicable for ordinary civilian practice. The three tests, however, that recommend themselves especially from their near approach to mathematical accuracy, if that is desirable, are those of Barach[12], Stone[13], and Tigerstedt.[14] The former takes the systolic pressure by a mercurial instrument, using the auscultatory method. The systolic pressure gives the energy-factor of the heart, the diastolic, the energy-factor of the peripheral resistance, while the two combined give the energy-index of the entire circulatory system. Now, if these two are multiplied by the pulse-rate, the sum represents the total cardiac energy used in one minute. This should be compared with the average systolic and average diastolic pressures, multiplied by the normal pulse rate as shown by the ordinary tables and the result will indicate the degree of variation in the abnormal heart energy from that of the normal heart. For instance, if the pulse rate were 72, the systolic pressure 120, and the diastolic 70, the result would read as follows:

Systolic Pres.	120 mm. Hg. $\times$ 72 =	8,640
Diastolic Pres.	70 mm. Hg. $\times$ 72 =	5,040
Total		13,680

which last figure would represent the total of normal energy spent in one minute. Any higher figure than this would represent a proportionate increase in energy; any lower figure a corresponding loss in energy. By this plan the energy is represented in plain figures.

Stone's index of efficiency is even more simple. He estimates it by dividing the pulse pressure by the diastolic. Testing it in 400 cases, he found that while the normal is set at 50, there was less than 1 per cent. of variation in his cases. His index is: $\frac{\text{P.P.}}{\text{D.P.}}$ In Tigerstedt and Strassburger's test the index is derived from four factors. Multiply the pulse pressure by the pulse rate and divide the result by the systolic pressure multiplied by the pulse rate, and the formula reads: $\frac{\text{P.P.} \times \text{P.R.}}{\text{S.P.} \times \text{P.R.}}$ While the average normal quotient is 33, by this method normal cases register between 30 and 35. These methods recommend themselves for their simplicity, and because the index of energy in each is expressed in numerals. They are adapted for the examination of invalided men in service, when being tested for cardiac efficiency. Bernard Smith[15] has also published some statistics following an examination of 500 applicants for the aviation service, of whom 400 were accepted. His conclusions were, however, that the various blood pressure findings alone were of little absolute importance in determining physical fitness for aviators, but that with the added information derived from the results of measured exercise the results were of definite value. He adopted the Selig method of stair climbing, the stairs being 24 in number, each with a 6-inch rise, the time consumed in the ascent being five seconds. He estimated the measure of efficiency by the Tigerstedt-Strassburger formula, using the auscultatory method of determining the pressures.

The tests by the injection of atropine and epinephrin, and by compression of the femorals, however, are suggestive of animal experimentation and the physiological laboratory. They will probably be unpopular with many in civilian practice for this reason. Besides, most of us do not care to inject strong drugs for diagnostic purposes, and in the case of epinephrin, especially, one that is not always safe, as I have taken occasion to state on another occasion.

In the matter of testing cardiac efficiency whether in government service or out of it, we must realize that absolute accuracy in finding its degree will not be and cannot be reached. Our accuracy can be only relative. We neither have a normal energy-index, nor can we get one. Each individual has his own index just as each has his own thumb mark. The index will vary with him, according to his psychic state, his age, weight, and height, his position when examined, the external temperature, the quality of the atmosphere, and other conditions.

One of the minor points of interest that has been evoked by the use of mercurial manometers is that from the oscillations of the column in the tube a diagnosis of alternating pulse can be made by the naked eye (Kilgore[16]). This is a point of some value.

That it is important to take the pressures in both arms has been shown by Bowers.[17] In a study of 31 patients between the ages of 65 and 95 he has found that there is sometimes a considerable difference between the two sides, particularly in arteriosclerosis. He also believes, as the result of his studies, that a high pressure in these cases points toward cerebral hemorrhage; a low pressure to cerebral embolism. This matter calls for further investigation.

In a case now under my care, of a young lady who had an attack of cerebral embolism (or possibly hemorrhage) some years ago, but who has recovered so that the mobility of the affected (right) side is nearly restored, she had no pressure on the right side, when first seen by me, that could be registered by my manometer. Also there may be a difference in systolic pressure between the two sides of as much as 20 mm. Hg. (Cyriax[18]). The same is true in unilateral tuberculosis. The rise in the pressure is on the affected side.

Fortunately, as Anders[19] and others have pointed out, there has been a tendency of late to emphasize the fact that hypertension is misunderstood. Yet it is true that regardless of its cause it has an unfavorable outlook. It suggests renal difficulty or arteriosclerosis, but may be due to a neurosis; to excess in eating or drinking; to an idiosyncrasy; or to a familial peculiarity. Besides, it may be physiological. The first examination may show high pressure; the second a notable decrease in the pressure. These facts should be constantly borne in mind in making a prognosis. And yet, as I have intimated, high pressure must always be taken seriously. It does not, as a rule, suggest longevity, but there is every reason not to alarm the patient, in any case. As these facts have not been generally known, the unfortunate patient's condition has sometimes been jeopardized, from fear of a stroke, perhaps, when there was really insufficient cause for alarm. Nor is hypotension well understood.

A good deal of attention has been given, of late, to what was called at the time of our Civil War the "soldier's heart" and later "Da Costa's irritable heart." Wilson and Mackenzie,[20] however, admit it was discovered by Henry Hartshorne of Philadelphia, in 1864 (see *Am. Journal of the Med. Sciences*, July 1, 1864), and that the criteria he gave are the same as those of the "irritable heart" of to-day, viz., "great exhaustion after effort, breathlessness on slight exertion, a rapid pulse, which becomes more rapid upon the slightest attempt at action, pain over the cardiac region, or along the left costal region, and a vasomotor condition of greater or less stability." Wilson's experience was derived from a study of 200 "irritable hearts." This much, however, should be added to the history of the "irritable heart." When, in 1864, Hartshorne described it before the College of Physicians of Philadelphia, he stated that Alfred Stillé had recognized it, the year before, after a study of 400 cases.

Sir James Barr[21] has claimed that it is a thyroid disorder. Carroll[22] has called attention also to similarities between the symptoms of the irritable heart and thyroidism, saying that in both there is hyperactivity of the opposing nerve fibers of the autonomic system; but he has taken the ground that in both there is a constitutional predisposition owing to sympathetic or vagotonic instability, the remote causes being chronic infections of some sort.

Meakins[23] holds that the "irritable heart" is not a pathological entity, and is not strictly a "soldier's heart." He gives the symptoms, as he has noted them. There is at first a rise of blood pressure but only if the patient is up and about. Then it remains high longer than usual. Left precordial pain is common, but increases during an intercurrent affection. Orthodiagraphic methods show no increase in the heart's area, which may even be diminished. The rate of respiration is always at the upper limit of normality, but during sleep it is seldom below 20 as against a normal of between 8 and 14. In several cases of the "irritable heart," the rate in sleep may rise to 40 or 50 per minute. After exercise the rate always increases. These patients show some degree of nervous irritability. There may be tremor and giddiness. Many of them have a personal or family history of a psychoneurosis, and in 70 per cent. he found constitutional asthenia. An increase of red blood cells is credited to the respiratory disturbance. There is always a rise in the leucocyte count. It may reach 12,000 or even 15,000. There is also a high lymphocyte count, which may vary from 25 to 75 per cent. of the total count. There is a relative acidosis due to a deficient aeration of the blood caused by the shallow breathing. The "irritable heart" is, to his mind, a conglomerate of functional disturbances, rather than a pathological entity.

In a very elaborate account of the "irritable heart" Neuhof[24] concludes as follows: The irritable heart as observed in general practice is similar to that found in soldiers. Vasomotor symptoms are more pronounced in the former. The etiologic factors are similar, but because of training and war conditions, dormant and latent neuroses crop out oftener and are more readily evoked; consequently the cardiac syndrome is more violent and lasts longer. Infection is a factor only in so far as it induces and produces nerve and muscular fatigue and psychasthenia. There is no specific pathological change in the cardiovascular system. The fundamental cause of the cardiac neurosis with its various manifestations seem due to hyperexcitation of the sympathetic nervous system.

Warfield and Smith,[25] in writing of it among men being inducted into service, say a diagnosis of the condition may be made by taking a careful history, paying particular attention to previous attacks of dizziness or fainting or exhaustion, precordial pain, and pounding of the heart on *slight exertion;* second, by noting the unusual physical response to the hopping exercise and an increase in the pulse rate out of all proportion to the exercise.

From a survey of these views we see that there is some lack of uniformity as to the special diagnostic features of the "irritable heart." The reason is that it represents a conglomeration of morbid states differing from one another in many respects, but still having similarities that admit of its diagnosis. It it not, however, a pathological entity nor is it a "soldier's heart." It is seen in civilian life as well, but it is well to classify it, temporarily at least, under a special name, and there seems to be no good reason for calling it anything but the "irritable heart."

The rôle of infective agents in producing heart disease has been established in many instances. In rheumatism, scarlet fever, and measles, we accept the theory that these affections may have associated with them endocarditis, which in many cases is a phase of the malady. We have also constantly before us claims that the meningococcus of cerebrospinal fever, the bacillus of influenza, and the *Streptococcus viridans* of oral sepsis are causes of endocarditis. But we are confronted with the statements of Rosenow, if he has been correctly quoted, that a streptococcus of the mouth or tonsils may change into the germ of pneumonia and back again on to a micrococcus, and that a simple innocent variety can be converted by culture into an infecting agent, morphologically different and capable of producing many different diseases. These statements are certainly amazing, so that we must in justice to preconceived notions wait for further developments before we can accept them.

Cecori[26] has reported a case of "slow endocarditis" in which the disease began with a gallstone cholecystitis associated with an irregular but slight fever, that lasted over five months and terminated fatally. At the autopsy colon bacilli were found in the gallbladder, while there was a small colony of streptococci in the heart walls and valves.

Since Babcock[27] called special attention in 1919 to chronic cholecystitis as a cause of myocardial incompetence, the attention of both physicians and surgeons has been specially directed to this interrelation. Babcock has published 13 cases, of which he made four groups: (1) where there was cardiac decompensation with murmurs, dilation, arrhythmia and feeble heart action; (2) where there were attacks of pain that were anginoid in character, or infracardiac and were followed by symptoms of cardiac inadequacy; (3) arrhythmias that were very intractable, and (4) valvular diseases in which there was cardiac incompetence evidently produced by hepatic colic.

Discussing this matter, he has called attention (1) to the well known disastrous effects of acute cholecystitis on the heart, setting up, as he believes, a myocarditis, acute or chronic; (2) to the depressing effects of cholemia on the heart by the biliverdin, and the increase in blood pressure, due to bile-salts; (3) to the possibility that an irritation of the splanchnics, which are the regulators of the circulation, is the cause of the trouble; (4) to the irritation of the pneumogastric terminals, which are distributed in the wall of the gall-bladder and act reflexly on the heart. In such instances as these the importance of an early opening into the gall-bladder and drainage is emphasized. In this connection the question of merely draining the gall-bladder or removing it has been discussed by C. H. Mayo.[28] If there is no active infection and the integrity of the organ has been maintained, drainage will give relief, he says, in a high percentage of cases; otherwise removal of the gall-bladder is to be recommended.

In the case of a patient who was under my care in 1916, and who had been treated medically three times in Carlsbad for gall-bladder trouble, there was pain about the heart and arrhythmia, with recurring attacks of gallstones, colic, and perihepatitis. An operation was deemed advisable, but was deferred, as usual, until the acute symptoms had subsided. Cholecystectomy was then done. The

patient passed from under my care, but the result was satisfactory, at least in so far as that the heart symptoms were temporarily relieved. Recently, I am told, he succumbed to the heart trouble. An earlier operation in this case would, in the light of his history, have been desirable.

From the above views we may assume that cardiac decompensation is due to chronic gall-bladder disease as well as to the acute form.

While the fluoroscope and the *x*-ray have now been used for many years in the diagnosis of aneurysms, especially the thoracic, their uses in the determination of circulatory disorders have been less conspicuous in their application to the heart. Hirsch,[29] however, has demonstrated that these methods will define the contours of the heart satisfactorily even in pronounced pulmonary emphysema, when the cardiac dullness cannot be elicited by percussion and when the apex cannot be located by either percussion or auscultation. By such methods the contour of each auricle or ventricle can be made out, and their relations to the great vessels at the base of the heart. It is improbable, however, that the *x*-ray will give much assistance in the localization of valve diseases, or that any form of contour can more than suggest the pathological condition of a valve. And yet it is claimed that there are more or less distinctive features of valve disease shown by the *x*-ray. At any rate, whether the fluoroscope or the *x*-ray is used the examiner should always be provided with pictures of the normal heart, so that one can differentiate its contours from those of the diseased organ.

By these methods, also, the infantile heart can be demonstrated, as Bishop[30] has shown.

The *x*-ray picture is useful in that it is taken at a standard distance from the patient, viz., 6 feet, while it shows the bony framework of the chest and both the anterior and posterior arches of the ribs. In this way the relation of the base of the heart to the anterior ribs is shown. In addition, by means of Bardeen's tables, we are now furnished with the normal size of the heart, according to the age and weight of the individual and so can detect any variation from the normal contour, which can also be sketched on the plate over the heart's shadow. Further by the planimeter the actual dimension of the heart can be measured. Both the fluoroscope and the *x*-ray furnish direct proof of abnormalities, but the latter makes a permanent record of it.

In the matter of drugs the advantages of digitalis have come more and more to the fore. At the same time, however, its modus operandi is quite commonly misappreciated, as well as the vast differences in action between its various preparations.

Digitalis absolutely controls fibrillation and flutter, temporarily at least, if used in appropriate doses. Unfortunately, there seems to be good reason to believe that in the recent pneumonias of the influenzal epidemic it was given in excessive doses. Digitalis is a two-edged sword. It may restore to life, in the most amazing manner, when death seems to be at hand. On the other hand it may produce heart block, and kill if it is given without due comprehension of its modus operandi. Digitalis may take 36 hours or even more before any effect on the system is noted. If during this time the administration of it is persisted in, the action will be cumulative and the result fatal perhaps, provided the particular preparation of the drug is active. Some of the preparations now on the market can be relied upon to be up to the standard; others may be practically inert.

I am pleased to be able to say now, contrary to impressions produced by some experiments of the late Boos[30] that digipuratum in the ampules, each containing 1 c.c., can be given safely by deep muscular injection with satisfactory results, even though the system, at the time, is saturated with digitalis. That is, the full of the ampule containing 1 c.c. can be given without necessary dividing the dose. Under these circumstances, I usually allow an interval of two or more days between the injections. Though I have given it occasionally in daily doses, with good effect, it may be well to divide the doses until we have gathered more information on the matter. In my opinion, however, there is no remedy that produces such prompt and satisfactory results in extreme heart failure, as the liquid digipuratum, given in one dose by deep muscular injection. In this connection it may be well here to notice the remarkable case reported by Mollison[32] where a young boy developed heart failure during the operation of tonsillectomy. Artificial respiration having failed, an incision was made from the ensiform to the umbilicus. Through the opening thus made, the heart was exposed. One c.c. of pituitrin was then injected into the heart substance. A saline infusion was also given. The anesthetic used was composed of chloroform, two parts, and ether, three parts. The boy recovered, but unfortunately the query still remains unanswered, To which particular agency was the recovery due?

In the matter of prognosis, the early fatality of pulsus alternans has been studied by White,[34] as also that of auricular fibrillation, when complicated by abnormal ventricular reflexes. In both death may be anticipated within three years. On the other hand, in uncomplicated auricular fibrillation the danger to life is comparatively small.

Nothing has developed in medical circles within the last few years that promises greater benefit to the public, our profession generally, and the cardiologist in particular, than the scheme of having what has been called "group diagnoses." While this plan had been carried out for more than a quarter of a century in the wards of some of our large hospitals, it did not rise to the dignity of a regular feature of an institution, so far as I know, until it was adopted by the Manhattan State Hospital for the Insane, on Ward's Island, in or about 1902, where complete diagnoses were made in every case admitted by a staff of paid specialists. The present scheme has three or four diagnosis clinics in operation in Greater New York. Examinations and reports are made for physicians only, in each special department, and the combined results are furnished, together with the essential points in each case. Up to this time physicians in general have had for the most part no hospital opportunities. For them these new institutions offer their patients the help of trained specialists at a minimum cost to each. Without such helps many physicians must be forever groping about in the dark, unable to make up-to-date diagnoses, from lack of either experience or appliances.

An out-of-town surgeon, not connected with any well-equipped hospital, is confronted with a possible operation for exophthalmic goiter. It is a case for a surgeon or internist, but which? Nor can a decision be reached without a series of examinations of the patient by specialists. He applies to a Diagnostic Clinic and a report is sent him covering all the points in the case necessary to make his course clear.

A surgeon friend of mine was confronted with such a case. Experts along various lines examined his patient and as a result an operation was felt to be contraindicated, and the patient was turned over to an internist. The same course of action holds good for the general practitioner, and especially one who is far away from a great medical center. Under this plan the patient may be sent to one of the clinics and returned to his own physician with definite statements as to any course of treatment which is thought proper by the several specialists to whom he has been sent. Valuable time is saved, perhaps thereby the patient's life. In fact, one may make the broad statement that thorough, comprehensive examinations can no longer be made by either specialists or general practitioners without help from their confrères.

The field is now so large that no one man is competent to cover it properly. Therefore diagnostic clinics, with "group diagnoses," have come and are going to stay. The cardiologist appreciates this fact as much as any other specialist.

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7 EAST EIGHTIETH STREET.

INTERESTING CASES FROM THE ORTHOPEDIC CLINIC OF LEBANON HOSPITAL.*

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WHILE the following cases are not only of rare occurrence, they also present interesting features which warrant this report.

The first case is that of a woman who had fallen down a flight of stairs and had sustained a double Colles' fracture. This is the first case of double Colles' fracture which we have seen in a fairly active fracture clinic. Unlike the usual manner in which Colles' fracture is produced, that is a fall on the outstretched hand, this patient fell and landed on the dorsum of her hands, the hands being in flexion. The history of the case follows:

FIG. 1.—Case I. Fracture of left radius.

CASE I.—Mrs. N., age 39. Tripped and fell down a flight of stairs, striking upon both hands, which were in flexion.

Examination: The usual signs of fracture of the lower end of the radius were present. The right wrist was also very tender in the region of the styloid process of the ulna.

Diagnosis: Double Colles' fracture, with fracture of the styloid process of the right ulna. This diagnosis was confirmed by subsequent *x*-ray pictures (Figs. 1 and 2).

Treatment: Immobilization with plaster of Paris bandages, followed by early baking, massage, and exercises. The patient made an uneventful recovery, with good function in both wrists.

*Cases presented at a meeting of the Lebanon Hospital Alumni Society.

The following cases represent a type of fracture which is commonly overlooked, because the cardinal signs of fracture, namely crepitus, false mobility, and deformity are usually lacking. It is very commonly found in children. The usual site is the

FIG. 2.—Case I. Fracture of right radius and styloid process of ulnar.

tibia, only one case having occurred in the fibula in quite a series of cases. These fractures are incomplete and are known as subperiosteal or intraperiosteal fractures. The most constant and what can be designated as the diagnostic sign, is the localized bone or "pencil" tenderness. The way to map out this maximum point or line of tenderness is to palpate or make pressure with the back of a pen or the rubber tip of a lead pencil. By tracing the point of maximum tenderness one can in a vast majority of cases trace the line of fracture. We have confirmed our clinical findings with *x*-ray pictures, one of which is shown in this report. (Fig. 3). This tenderness is at times very exquisite. Many parents are surprised to learn that their children had sustained fractures, so trivial had been the suffering both subjectively and functionally. The diagnosis is made by tracing the line of maximum tenderness. The duration of this sign varies, sometimes persisting for months.

The following history is typical of a fracture of this type.

CASE II.—Julius F. a few days before being brought to our clinic, fell, striking upon his leg. No attention was paid to the accident as he was able to get about. For the following few days the child complained of pain only when he walked.

Examination: The patient walked with a slight limp. The leg was swollen, there was no deformity, ecchymosis, crepitus, or false mobility. A line of tenderness was traced along the shaft of the tibia for a distance of two and a half inches.

Diagnosis: A diagnosis of subperiosteal fracture of the tibia was made and proper treatment instituted. A subsequent *x*-ray picture confirmed the diagnosis (Fig. 3).

Treatment: The treatment of this type of fracture differs only from that of complete fracture in that the period of immobilization is of shorter duration.

Fracture of the head of the radius occurs more commonly than was formerly believed. It is usually the result of a direct injury and occasionally results from an indirect injury, such as a fall upon the outstretched hand.

The head of the radius is very prone to fracture on account of its exposed subcutaneous position. The head is readily palpable and can be felt rotating at the radiohumeral joint. When the patient falls, striking upon the outer side of the elbow, the head of the radius is compressed between the ground and the coronoid process at the lesser sigmoid cavity, with the result that the tangential portion of the head is cracked off. Occasionally a stellate comminuted fracture may result. The external epicondyle of the humerus may also be the site of a chipping fracture. When the fracture results from indirect violence the head of the radius is jammed against the capitellum.

The chief sign of this type of fracture is a wincing tenderness, elicited by direct pressure upon the head or neck of the radius. There may be swelling opposite the radiohumeral joint, due to effusion from a traumatic synovitis. Pain may be produced by rotating the forearm. Ecchymosis may appear late and is usually found below the radiohumeral joint. Fracture of the head or neck of the radius may be accompanied by luxation of the elbow, fracture of the external epicondyle, and occasionally by injuries at the wrist.

A very interesting condition which should be borne in mind when making a differential diagnosis between the various elbow injuries is that known as traumatic palsy of the forearm. It is very common in children. It is one in which a partial dislocation of the head of the radius results from a trauma to the upper extremity. The history of the trauma and the subsequent picture are characteristic. The patient has been dragged along or raised by the wrists, following which there is disability and severe pain when manipulation of the affected extremity is attempted. The limb hangs limply at the side as if the case were one of flaccid

FIG. 3.—Case II. Subperiosteal fracture of the tibia.

paralysis. Naturally the possibility of a fracture at the elbow must be considered. Slight swelling at the elbow may be present. Ecchymosis, crepitus, deformity, and false mobility are absent. Passive flexion and extension are not restricted. Prona-

tion and supination are limited. Upon extreme supination a clicking sound is heard, at which time the head of the radius slips back into its normal position. Immediately thereafter there is resumption of the normal functions of the limb. This condition is by no means uncommon and should always be remembered when diagnosis of elbow injuries is made.

The treatment of fracture of the head or neck of the radius is the same which obtains in the treatment of intraarticular fractures in general. One must remember that the head of the radius lies wholly within the joint, is covered with synovial membrane and bathed by synovial fluid. Hence fracture of the head of the radius is usually accompanied by traumatic synovitis and some hemorrhage within the joint. In view of these facts the best treatment is immobilization with early baking. Movements should be delayed until the swelling of the radiohumeral joint has subsided. In selecting an immobilizing agent, one must remember that the head of the radius enters into the formation of two joints, the radiohumeral and the radioulnar, and the fixation agent must control both these joints. A very simple and efficient fixation agent is one which maintains the forearm in acute flexion. The bare forearm is fully flexed so that the hand on the affected side rests on the opposite shoulder and the elbow is carried well forward on the chest. The position is fixed by a strip of adhesive plaster encircling the arm and forearm just above the elbow joint. The forearm is now bandaged to the arm by figure-of-eight turns of a flannel bandage. Before applying this dressing the arm should be dried and powdered and boric acid cotton placed in the elbow crease and the axilla to absorb the perspiration and keep the parts dry. The limb is retained in position by a sling around the neck.

Immobilization should be continued until the swelling disappears. Baking should be begun immediately and continued daily throughout the treatment. Passive movements followed shortly by active movements should be begun as soon as the swelling has subsided.

In case a fragment has been separated and become displaced, so as to block flexion of the forearm and it cannot be reduced by conservative manipulation, operative measures should be instituted and the offending fragment either replaced in the proper position or, in old fractures, removed. The following history is representative of a series of seven cases of fracture of the head and neck of the radius which we have seen.

CASE III.—Pearl D. slipped and fell downstairs a distance of four steps, landing upon the outer side of her elbow.

Examination: There was slight swelling at the radiohumeral joint, no ecchymosis. There was no displacement of any of the three processes. There was excruciating tenderness over the neck of the radius. Flexion and extension of the elbow was free and painless, pronation and supination were painful and restricted.

Diagnosis: A diagnosis of fracture of the neck of the radius was made and proper treatment instituted. A subsequent *x*-ray picture confirmed the diagnosis.

Fracture of the great tuberosity of the humerus does not occur very frequently. In this type of fracture the great tuberosity may be detached without any loss of continuity in the shaft of the bone. This accident gives rise to considerable broadening of the shoulder, the fragment being drawn upward and backward by the muscles attached to it. The continuity of the head of the bone with the shaft is unimpaired. The fragment in the following case was not completely detached and was firmly held in position by untorn bands of periosteum. The position most favorable for good union is in abduction and outward rotation. The following case is one of three which we have seen. In one, fractures of the surgical neck of the humerus and outer end of the clavicle were also present. The other one was similar to the case to be reported.

CASE IV.—D. N. fell, striking upon her shoulder. Came to the clinic the following day complaining of pain and disability of the shoulder.

Examination: The arm was held in adduction and supported by the other hand. There was swelling about the shoulder and ecchymosis covering the lower two-thirds of the arm. There was a distinct widening of the shoulder joint. There was no deformity. All the movements of the shoulder were restricted and attempts at passive movement were very painful. There was excruciating tenderness over the upper part of the humerus in the region of the great tuberosity.

Diagnosis: A diagnosis of fracture of the great tuberosity of the humerus was made and proper treatment instituted. A subsequent *x*-ray picture confirmed the diagnosis. The patient made an uneventful recovery.

The following case is one of a double birth palsy. While single birth palsy is not uncommon, double birth palsy is rarely encountered. It is usually the result of an injury to the nerves of the brachial plexus. The resultant paralysis is characteristic. When seen early the arm hangs limply at the side. Later the elbow becomes flexed, the forearm pronated and the entire upper extremity inwardly rotated.

It is evident that the paralysis is due to forcible separation of the head and the shoulder, resulting in a tear of some of the cords of the brachial plexus. There are two well recognized types of paralysis seen. The more common consists of a lesion which involves the fifth and sixth cervical roots and the suprascapular nerve. This type, known as the upper arm type, produces a paralysis of only the muscles of the upper arm, with the exception of the supinators. The other type, known as the lower arm type, results from the injury not only of the fifth and sixth cervical roots, but also of the seventh and eighth and possibly of the first thoracic. The entire upper extremity is flaccid, there is a wrist drop with paralysis of the small muscles of the hand. In the milder cases the stretching or tearing force results in a hemorrhage or edema into the nerve sheaths. In others there may be a rupture of the perineural sheath accompanied by hemorrhage into the substance of the nerve trunk, with or without tearing apart or a separation of the nerve fibers. In the severer cases there is either a partial or complete division of the fifth and sixth cervical roots.

The early picture of the upper arm type is classical. The arm hangs limply at the side, slightly flexed, and rotated inwardly. There is complete inability to abduct, elevate outwardly, or supinate the upper extremity. There is absence of active flexion at the elbow. In the lower arm type in

addition to the above, there is paralysis of the forearm and the hand. Wrist droy, inability to supinate and extend the forearm are usually present. Paralysis of the flexors and extensors of the fingers, associated with paralysis of the small muscles of the hand, is often present. The proximal phalanges may be hyperextended and the distal ones flexed, due to a paralysis of the interossei or lumbricales.

The treatment of birth palsy resolves itself into expectant and operative. The upper arm type usually responds to massage, exercises, and a brace. The lower arm type as a rule has to be operated upon. Unless the treatment has been instituted early in the former, operative interference becomes necessary. This operation is not for repair of the plexus, but to correct contraction deformities.

To prevent these contraction deformities it is well to maintain the arm at rest in a position where the unparalyzed muscles cannot become contracted. This is best accomplished by the use of a wire splint which will retain the arm in an abducted, elevated, and outwardly rotated position, with the hand in supination.

Massage and exercises are of the greatest importance and should be practised daily. This treatment should be continued for several years, and if contractures develop in the subscapularis and pectoralis major, they should be divided before any further range in the arm is to be hoped for.

Regarding operation on the plexus—it is best to operate early, the earlier the better. The operation comprises repair as far as possible of any injury or damage to the nerve roots that may be met with. The after care is similar to that recommended above, *i.e.* prevention of deformity, massage, and exercises.

The prognosis in all upper arm types is good, provided treatment is carried out properly and early enough. In the lower arm type the outlook is not so favorable. The upper arm may recover

FIG. 4.—Case V. Double birth palsy. right side has completely recovered; brace on left side to maintain abduction and external rotation.

but the forearm and hand remain paralyzed. Treatment should nevertheless be carried out over a long time.

CASE V.—Baby F., 9 months of age, first child, breech delivery. One week after birth the mother noticed that both upper extremities hung limply. The infant made no attempt to move either of them. As soon as the mother was able to, she brought the child to the clinic.

Examination: Examination disclosed a typical birth palsy (upper arm type), with adduction of the arms,

FIG. 5.—Case VI. Syphilitic osteoperiostitis of the humerus.

flexion at the elbows and inward rotation of the upper extremities.

Treatment: The treatment consisted of massage and retention of the arms in a position of rest, by means of braces (Fig. 4).

Subsequent course: At the age of nine months there was complete recovery of the right arm and almost complete recovery of the left. The left arm can be abducted to an angle of almost one hundred degrees.

In all suspected cases of syphilis of bones and joints it is essential that we go into the family and personal history of the patient, bringing out a complete history of the parents as chronic rheumatism, various eye troubles, chronic bone suppurations, miscarriages, sterility, sudden deaths (apoplexy), as well as a definite history of the primary infection in either parent. In the personal history of the patient in congenital syphilis we should look for such symptoms as rhinitis, lesions of the skin and mucous membranes, iritis, suppurating lesions of the hands and feet, malnutrition, and dental changes such as Hutchinsonian teeth, dental interspacing, fluting of the incisors, and humpy molars (Roberts).

In acquiring syphilis it is not always possible to obtain a definite history. In these cases one must not overlook the fact that in any suspected case a Wassermann should be made.

The onset of the symptoms is generally insidious with frequent relapses. In a number of cases it follows a definite history of trauma. Pain is one of the main symptoms complained of. It is very severe and worse at night. Swelling may be present. Tenderness, localized to the area involved, is also a fairly common symptom. The *x*-ray findings may show a periostitis, osteitis, or an osteochondritis.

CASE VI.—Chas. S., age 42 years, white, American, married eighteen years.

Wife had two miscarriages and one still birth at the seventh month. Four living children, apparently well.

History of a chancre twenty-two years ago, for which he had received two months' treatment, which was medication taken by mouth. Present trouble began about three years ago when while swinging a heavy hammer, he felt something snap in his right arm, at the same time his arm falling limply to his side as if it were paralyzed. He went to a hospital where an *x*-ray showed a supracondyloid fracture of the humerus. His arm was immobilized. In spite of this immobilization the pain persisted. After several months' treatment for the fracture he was discharged, still having pain, worse at night. He applied home remedies and liniments for this pain, without relief.

He then went to another clinic where his blood was examined and it showed a four plus reaction. During the course of four months he received twelve injections of salvarsan, but no internal medication, without any relief of the pain.

In June, 1919, he came to our clinic, complaining of excruciating pain in the arm and disability, so severe that he was unable to work.

Examination: At this time his arm showed marked tenderness and thickening of the lower two-thirds of the right humerus and limitation of motion in the right elbow. His pupils were irregular, unequal, and reacted sluggishly to light. A blood Wassermann was made and it showed a four plus reaction. An *x*-ray picture (Fig. 5) showed an osteoperiostitis of the humerus.

Treatment: He was placed on mixed treatment consisting of mercury intramuscularly once a week and the iodide of potassium by mouth. In three weeks his pain had subsided and a few months later he was well enough to return to work.

The following case is one of several of infantile paralysis which were overlooked at the onset and came to our clinic a number of years later for advice. The mother of this patient was surprised to learn that her child had an attack of infantile paralysis, as she could not recollect the child ever having been paralyzed. The distribution of the paralysis is an unusual one and occurred infrequently during the last epidemic. The small muscles (thenar muscles) of one hand and the calf muscles in the opposite leg were the groups paralyzed. The history follows:

CASE VII.—K. S., 11 years of age, second child, normal delivery. At the age of twelve months when the patient began to walk, the mother noticed that the left foot turned out. She went to a clinic, where she was told that the child would outgrow the condition. The mother always noticed that one limb was thinner than the other. Four years ago (1915) she came to our clinic on account of pain in the left heel, and a limp.

Examination: The child walked with a limp on the left side, and there was distinct atrophy of the left leg. All that remained of the tendo Achilles was a very thin cord. The thenar prominence of the right hand was absent. The right thumb could not be adducted.

This is undoubtedly a case of poliomyelitis involving the calf muscles of the left leg and the thenar muscles of the right hand, a rather unusual distribution of paralysis.

These cases have been chosen at random from the records of the Lebanon Hospital Orthopedic Clinic, not only for their rarity, but also for the interesting features which they present.

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Antagonism of Adrenalin and Quinine.—Clerc and Pezzi speak of the subtotal antagonism between these substances. Thus adrenalin excites the center of the vagus in the bulb while quinine paralyzes it. One drug therefore excites the heart and the other slows it. Similar antagonism is seen in the province of the blood pressure, but here the activities are complex: adrenalin raises the tension by combined cardiac and vascular action, and quinine makes for hypotension by a mechanism which is not altogether obvious. Both drugs are technically vasoconstrictors.—*Le Progrès Médical.*

HIPPOCRATIC MEDICINE.*

BY JOHN H. HARE, M.D.,

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IN presenting this paper to a body of men, supposedly strictly scientific, I feel it necessary to offer some apology for consuming our time with an historical subject. If I may be allowed to quote in advance from my author I may give one reason in his words. He has written, "The physician must know what his predecessors have known, if he does not wish to deceive both himself and others." We certainly should be familiar with the writings of the greatest physician.

Francis Adams, a surgeon of a small village in Aberdeenshire, has given us the best English translations of the Greek classics that we have and has thereby made a world name for himself as a scholar. It is from his translation of the works of Hippocrates, published by the Sydenham Society, that I draw my material for this paper.

For our purposes of discussion we may, more or less arbitrarily, divide the history of medicine into three periods. We may call these: first, the mystic period; second, the period of humoral pathology; and third, the modern or bacteriologic period. The first period extends from the beginning of things to near the time of Hippocrates and is characterized by the mysticism accompanying, or forming rather, the practice of medicine. About the time of Hippocrates some theories of pathology were being formed in an attempt to explain disease processes. Although in the light of modern knowledge these theories are ridiculous, they represent the first attempts at seeking the truths of nature and the true beginning of scientific medicine. Of the modern period it is scarcely necessary to speak; the most valuable parts of it have been developed within the memory of men now living.

The period in world history during the fifth and sixth centuries before Christ marked the zenith of Greece in all her activities. Her wars with Persia had terminated in great conquests, her art had reached the highest development the world has ever known; the philosophy of Plato, the learning of Pythagoras are equaled only by the medicine of Hippocrates. The time was ripe for the birth of such a genius. The collection of invalids at the Asclepidæ provided the clinical material and the writing, imported from Phoenicia, provided the means of expression and record.

These Asclepidæ are worthy of note. They were originally built for temples in which to worship Æsculapius, the god of health, and quite naturally developed into hospitals or sanitariums. The teaching of medicine took place at these temples, and the physicians were priests to the god of health. The system of teaching in a hospital we recognize now as the best method and it is only in the past few years that our own medical schools have realized the wisdom of this and now, after more than two thousand years, are building their own hospitals. It has been estimated that there were sixty-four of these Asclepidæ throughout Greece at the time of Hippocrates. However, two, those at Cos

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and Cnidos, easily ranked above all the others in popularity and in personnel of staff. The characteristics of these two are summed up admirably by Dr. Theodore H. Allen in his "Brief History of Medicine" as follows:

The school of Cnidos is said to have laid especial weight upon the subjective statements of the sick, the relation of the symptoms to individual parts of the body, and the use of active remedies, especially drastics. Less attention was devoted to diet. It cultivated the science of diagnostics and recognized some auscultatory signs, *e g.* the pleuritic friction sound, and it satisfactorily distinguished many diseases, such as phthisis, typhus, disease of the urinary bladder, the kidneys, the bile, etc. The Cnidans also performed even major operations, like trepanning the ribs and excision of the kidneys, and though always empirics they were bold operators. In opposition to the physicians of Cos, however, they discarded venesecton.

The school of Cos (which was flourishing as early as 600 B. C.), in contrast to that of Cnidos, cultivated especially objective investigations, symptomatology, prognosis, the relation of symptoms to the entire body, etiology, and expectant and mild therapeutics, though it recommended venesection; in short, it practised all that is worthy of praise in the medicine of Hippocrates and the Hippocratists. These two schools are the first examples of those two opposing tendencies which have characterized medicine down to the present day.

The generally accepted date of the birth of Hippocrates is 460 B.C. There is, however, very strong evidence that this should be farther back, possibly to 480 B.C. But for practical purposes it is well established that he practised the latter part of the fifth century before Christ. His father was a physician of Cos, so was his grandfather; and according to more or less mythical genealogy, his ancestors are traceable back to Æsculapius himself. Thus he was born and spent his early youth in one of the most famous hospitals of the age and had the opportunity of observing medical practice from the beginning of his life. Not very much more is known of his life except that he visited, in the course of his practice, a great many distinguished personages and traveled very widely. The story is told that he had to leave Greece because he had burned the library at Cnidos in order that he might have control of all the medical knowledge of the day. There seems to be not a vestige of truth in this gossip. He lived to an advanced age, variously estimated as 85, 90, 104, and even 109 years, and died in Thessaly.

At the risk of boresome repetition I wish to give another quotation (from Adams):

It will readily occur to our reader, then, that our author flourished at one of the most remarkable epochs in the intellectual development of the human race. He had for his contemporaries Pericles, the famous statesman; the poets Æschylus, Sophocles, Euripedes, Aristophanes, and Pindar; the philosopher Socrates, with his distinguished disciples, Plato and Xenophon; the venerable father of history, Herodotus, and his young rival Thucydides; the unrivalled statuary Phidias with his illustrious pupils, and many other distinguished names, which have conferred immortal honor on the age in which they lived and exalted the dignity of human nature. Nor was Greece the only region of the earth remarkable at this time for moral and intellectual improvement; for, if we may believe Oriental chronology, Confucius and Zoroaster had gone off the stage of life only a very few years before the dawn of this celebrated age of Grecian superiority in the arts and sciences.

The ancients assumed the existence of four elements—water, fire, air, and earth. All things were necessarily combinations of these elements. The four cardinal conditions of the body were: dryness, warmth, coldness, and moisture. Variations of these states, proceeding from one to another, determined health or disease. Corresponding to the four elements they had four cardinal fluids, yellow bile, blood, mucus, and black bile. All disease processes were simple, in three steps: crudity, coction, and crisis; or degeneration, preparation, and evacuation. The fluids degenerated, were collected, and prepared for evacuation, which, occurring, terminated the disease by crisis. If any of these steps were not completed or failed, particularly the crisis, there would be an incurable disease, secondary affection, etc. The crises occurred on odd days. The art of the physician consisted in choosing the right time to interfere in all conditions. Nature, however, was the healer and the physician only her servant. Beside these proximate causes, Hippocrates speaks of remote causes rather emphatically; injudicious mode of life, climatic and meteorological influences, seasons, endemic and epidemic constitution, place of residence, etc.

It is interesting to note the frequency and obviousness of the remnants of this pathology now, in lay medicine at least. A diagnosis of biliousness is a favorite, and the liver is a very popular seat of trouble. Recently I saw a case in consultation, of that mental condition we know as melancholia. Upon physical examination the patient showed marked signs and symptoms of an inflamed gall bladder. Remembering the philology of melancholia (Greek for black bile), I cannot but admire the acuity of observation by the ancients of subjective symptoms in connection with physical disease. In reading any medical text or paper of the present day, it is remarkable that an even day is scarcely ever mentioned, an incubation period is five or seven days, never four or six, and so on ad infinitum.

We have come to pay little attention to the more simple methods of treatment. Our system of dietetics has resolved itself into a smug statement of calories and percentages with rather limited application. In "Regimen in Acute Diseases," our author discusses his views of dietetics in minute detail. Barley decoction or "ptisan" as the ancients knew it, was considered a very valuable adjunct in the treatment of any disease and its survival for all this time certainly indicates some value. We have no cereal water, bland and not astringent, that will take the place of barley water in our infant feeding. Hippocrates and his associates considered fever a combination of heat and dryness, to be treated with coolness and moisture, hence barley decoction. The only argument was as to whether the barley itself should be strained out or not. The sum of his advice seems to be not to change food suddenly. If treatment is started with strained ptisan, continue and do not change, and the same in regard to full and slender diets. At present the starvation treatment of typhoid fever holds the record with a mortality of only seven per cent., but you well know the dire results of a sudden increase of food in such a treatment. The Bellevue Hospital typhoid diet with the enormous quantity of five thousand calories per day does almost as well and convalescence is said to be extremely rapid, however, the generous diet must be started in the very

beginning and there must be no cessation or all is lost. The argument is that, the stomach and intestines, if kept stimulated by food, will furnish secretion and digest in proportion to the food taken; but if no food is furnished, they lose a part of the power of digestion. In speaking of starvation diets our author speaks of outsiders coming in and feeding the patient followed by prompt recovery. The meddlesome neighbors have always been present and to our great chagrin a great many times it seems.

The use of water, fomentation, and wines is discussed in a general way in "Regimen." Hippocrates states that warm fomentations promote the formation of pus and warns against their use in various conditions. He also advises the use of aromatics with purges to protect the stomach; still another piece of advice applicable to modern practice. The course of pneumonia is accurately described in this work and the manner of death in such a case. The ancients used water, as water alone and as "hydromel," a mixture of honey and water. In Galen's commentaries on Hippocrates' use of water in the treatment of fevers, we find the distinguished Roman stating that he could cure a case of fever with nothing but water, used in proper amount, at the proper time and in the proper manner. Hydromel was accredited with various virtues, but it was certainly laxative. The close of "Regimen" is concerned with baths and bathing; in bathing invalids extreme care and gentleness is urged, both bath and patient should have the proper preparation; one should not bathe immediately after eating, etc.—in brief, rules for the bath that we ourselves observe and have or think we have, scientific explanation.

A diagnosis is reached by consideration of the history, symptoms, and physical signs in the great majority of our cases. The clinical laboratory we use in necessity. The diagnoses at Cos were reached in the same manner. Allow me to present a case history in the words of our author, from the first book of Epidemics.

> Philiscus, who lived by the wall, took to bed on the first day of acute fever; he sweated; towards night was uneasy. On the second day all the symptoms were exacerbated; late in the evening he had a proper stool from a small clyster; the night quiet. On the third day, early in the morning and until noon, he appeared to be free from fever; towards evening, acute fever, with sweating, thirst, tongue parched; passed black urine; night uncomfortable, no sleep; he was delirious cn all subjects. On the fourth all the symptoms exacerbated, urine black, night more comfortable, urine of a better color. On the fifth, about midday, had a slight trickling of pure blood from the nose; urine varied in character, having floating in it round bodies, resembling semen, and scattered, but which did not fall to the bottom; a suppository having been applied some scanty flatulent matters were passed; night uncomfortable, little sleep, talking incoherently; extremities altogether cold, and could not be warmed; urine black; slept a little towards day; loss of speech, cold sweats; extremities livid; about the middle of the sixth day he died. The respiration throughout, like that of a person recollecting himself, was rare and large, and the spleen was swelled upon in a round tumor, the sweats cold throughout the paroxysms on the even days.

It will be readily seen that diagnosis was not so much the object as prognosis. Galen, in his commentaries, says of this case, that the fatal outcome was apparent as early as the third day when the relapse occurred. Be that as it may, it certainly is a graphic description of a severe fever with regular exacerbations on the even days, and antedates Cheyne-Stokes classic respiration by several centuries.

Before leaving the first book of Epidemics we shall quote one more paragraph as an introduction to our consideration of the "Prognostics."

> The physician must be able to tell the antecedents, know the present, and foretell the future—must meditate these things and have two special objects in view with regard to disease, namely, to do good or to do no harm. The art consists in three things—the disease, the patient, and the physician. The physician is the servant of nature, and the patient must combat the disease along with the physician.

The ancients set great store on prognostic ability, particularly the students at Cos. For a great many years they collected statistics and embodied the results in what is known as the "Coan Prognostics." In compiling his work known as "Prognostics," Hippocrates doubtless drew a great deal of his material from this collection. However, the work of our author is unique in lucidity of expression and acuity of observation. Disease of the entire body and surgical affections, part by part, are taken up in this, one of the largest works. The views are too numerous to consider in any detail, but the reader will be surprised to find so much information in such an ancient text. The first paragraph is very expressive and worthy of our notice:

> It appears to me a most excellent thing for the physician to cultivate prognosis, for by foreseeing and foretelling, in the presence of the sick, the present, the past, and the future, and explaining the omissions which patients have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick, so that men will have confidence to entrust themselves to such a physician. And he will manage the cure best who has foreseen what is to happen from the present state of matters. For it is impossible to make all the sick well; this, indeed, would have been better than to be able to foretell what is to happen; but since men die, some even before calling the physician, from the violence of the disease, and some die immediately after calling him, having lived, perhaps, only one day or a little longer, and before the physician could bring his art to counteract the disease; it therfore becomes necessary to know the nature of such affections, how far they are above the powers of the constitution; and, moreover, if there be anything divine in the disease, and to learn a foreknowledge of this also. Thus a man will be the more esteemed to be a good physician, for he will be the better able to treat those aright who can be saved, from having long anticipated everything; and by seeing and announcing beforehand those who will live and those who will die, he will thus escape censure.

The statement giving credence to the divine nature of disease in this paragraph is the only such admission in all the works of our author. All the commentators are puzzled by this, since Hippocrates was the first and only physician of that time to refuse the theory of the divine origin of any disease. In the treatise on the "Sacred Disease" we find the following: "It is thus with the disease called 'sacred'; it appears to me to be no more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder," and a great deal more in like strain. Certainly Hippocrates did not believe in the divine origin of disease. In copying and rewriting ancient manuscripts, the com-

mentators and copyists many times introduced their own views as interpolations. We plead ignorance concerning original manuscripts, but such would seem a reasonable explanation to us.

An extract from the "Prognostics" is probably the best known contribution of our author to medicine, which is always attributed to its source and correctly. We remember well "a sharp nose, hollow eyes, collapsed temples; the ears cold, contracted and their lobes turned out; the skin about the forehead being rough, distended, and parched; the color of the whole face being green, black, livid, or lead colored." This passage we have appropriated and condensed into two words, "Hippocratic facies," and as such it appears in every modern medical text. Adams calls attention to the description of death, very much like that quoted, as given by Celsus, Lucretius, and Shakespeare. The death of Falstaff as described in the second act of Henry the Fifth is very suggestive of Hippocrates. "For after I saw him fumble with the sheets, and play with flowers, and smile upon his fingers' ends, I knew there was but one way: for his nose was as sharp as a pin, and he babbled of green fields. So he bade me lay more clothes on his feet: I put my hand into the bed and felt them, and they were as cold as any stone."

The treatment of disease at so remote a period was naturally very simple. Of the two schools advocating, on the one side, mild and expectant therapy, and on the other more active and vigorous treatment, Hippocrates placed his reliance more with the first and used for the greater part measures of dietetics and regimen. Hydrotherapy was extensively used in its various forms. Venesection was very popular with the ancients, but our author advised it only in the rarest cases. In the appendix to "Regimen" he describes the symptoms of apoplexy accurately and advises venesection in selected cases just as we do to-day in the same type of case.

Almost all the modern forms of medicament were used, mention being made of cerates, ointments, clysters, emulsions, gargles, fomentations, and suppositories. Prescriptions containing a very great many different drugs are given. Some of these are: galbanum, cumin, artemisia, scammony, bryonia, seseli, hellebore, madder, pepper, asafetida, carrot, linseed, myrrh, pine fruit, euphorbia, squills, anise, cantharides, mandragora, charcoal, crocus, and copper sulphate, besides ptisan and hydromel as mentioned before. The treatment of pneumonia is described in detail. A prescription for empyema is given as, "Cut some bulbs of squill, boil in water and when well boiled throw this away, and, having poured in more water, boil until it appears to the touch soft and well boiled; then triturate finely and mix roasted cumin and white sesames, and young almonds pounded in honey, form into an electuary and give." Empyema meant to Hippocrates any disease in which pus came from the lungs or chest. Who among us has not used squills or hydrocyanic acid dilute? A prescription for opening the bowels, "Pour upon figs the juice of spurge, in the proportion of seven to one: then put into a new vessel and lay past when properly mixed. Give before food." "Syrup of figs" was discovered twenty-five hundreds years ago!

The consideration of the surgical methods of treatment of Hippocrates is the hardest blow of all to our pride of modern achievement. The generalities of procedure are preserved in the work on "The Surgery," along with many particulars. Special works are devoted to injuries of the head, fractures, articulations, ulcers, fistulæ, and hemorrhoids. He was a bold and fearless operator in those cases which he believed should be operated upon, probably too bold in trephining, according to our present belief. He described the anatomy of the cranium in an excellent manner for that time and for long centuries afterward, the first corrections being those of Fallopius in the sixteenth century. Injuries of the head are classified as, (1) Simple fractures, (2) contused fractures, (3) fractures with depression, (4) fracture of outer table alone, and (5) fracture distant from point of impact, and prescribes treatment for each class. In order to detect a suspected fracture he cleansed the bone and applied a dressing of ink; upon curetting the surface, the fracture would be clearly indicated by a black line and if the line could not be scraped away he trephined. The dressings were drying in character and warning was given of the danger of putting a dressing on over the hair. The peculiarities of the child's cranium were known and commented upon, and also the fact that paralysis occurred on the opposite side of the body from the injury. Directions for trephining are clearly given—drill and then inspect with a probe so that the brain will not be injured. The trephine of that time varied in form. They used a straight rod shape like a screw driver, one turned by means of a bow, and even had one with an offset crank like the brace of today.

Practically the whole of three large books is devoted to fractures and dislocations; many rare and unusual varieties being described. Adams ascribes this remarkable knowledge of fractures and dislocations to the numerous accidents of the games and to the wide travels of the physicians. The proper function of a dressing was recognized, namely, to hold the parts in apposition and immovable. Those feats which were beyond human strength in the reduction of fractures, were performed by many mechanical devices. The dangers of tight bandages, and of splints over bony prominences, were mentioned and the serious results described nicely. Volkmann's paralysis might well have had another name. By smearing a cerate on the skin and then on each layer of the bandage as it went on, a stiff dressing, very much like our plaster bandage, was secured, and in some respects I should think very superior to it. Broken legs are directed to be placed in extension and the use of canal or gutter splints is described. A broken arm is directed to be reduced by traction and manipulation, splinted and bandaged, and placed in a flexed position with the hand midway between supination and pronation. Sounds familiar, doesn't it? Club foot was recognized as a false dislocation and treated by splints and bandages in infancy. Compound fractures of all parts are described and treatment is given. They are to be reduced at once, when possible, either manually or by means of an iron lever placed between the ends of the bones; failure to reduce means the immediate amputation of the projecting bone.

The treatment of ulcers is noteworthy on account

of the pharmacological list given—alum, sodium carbonate, copper, ox-gall, pomegranate, saffron, oak decoction, vinegar, wine bark of the fig, lead, zinc oxide, silver, elaterium, verdigris, wool fat, and sulphur; all of them, practically, astringents and antiseptics or dessicants. Purging for inflamed sores was advised. The curettment of the edge of indolent ulcers was practiced but it was also known that an ulcer would not heal if surrounded by inflammation or a varix. When applying a cataplasm, care not to cover the sore, but only the parts around, is to be observed, so that the pus may have free egress. Burns were treated by astringent and emolient applications. Full directions for the operation of venesection are given, but its use is rarely advised. When used, however, it was to be pushed to the limit of safety.

Fistulæ were, by choice, treated by incision as at present, but treatment by introducing a pack or tent saturated with caustic of some variety is also described. The practice of passing a seton and incising by gradually drawing it tighter, was known and highly recommended in suitable cases. Extreme cleanliness was to be observed no matter what method of treatment was to be pursued. Hemorrhoids were cured by actual cautery, caustic applications and even excision. A very elaborate description of a rectal speculum is given in the book on "Hemorrhoids," and directions for applying caustic on a holder, through this are given. Astringent suppositories of gall, myrrh, alum, etc., were used as palliatives. The following description of an operation for hemorrhoids gives a pretty vivid picture of the surgery of the time: "When the cautery is applied the patient's head and hands should be held so that he may not stir, but he himself should cry out, for this will make the rectum project the more."

We have nothing in modern medical literature or teaching which corresponds to the "Aphorisms" of Hippocrates. The title of the work indicates its nature and content. Medicine has become so much less empirical and has grown to such an extent that any attempt to present modern medicine in the form of aphorisms would be very futile. However, the permanent value of these ancient statements is recognized and they are often quoted, too many times without a knowledge or appreciation of their source. We are reminded very often that "Experience is fallacious and judgment difficult." With all our advance we have made no better statement of fact than this, "Phthisis most commonly occurs between the ages of eighteen and thirty-five years," and "Diarrhea attacking a person afflicted with phthisis is a mortal symptom." And there are many others.

Medical ethics is a problem today and evidently was among our ancient brethren. Their solution of the problem seems applicable now, for who, observing the oath of Hippocrates in letter and spirit, could be criticized? The "Oath" and the "Law" are so well known and appreciated that any words of mine would most certainly be useless, for, "It would be vain to blame and useless to praise."

I have endeavored to direct your attention to the history of the age of Hippocrates, his theories of pathology, diagnosis, prognosis, dietetics, treatment, both medical and surgical, and his idea of ethics. If I have aroused any interest in medical history, which I feel to be too much neglected, or in the practice of the greatest physician the world has ever known, I am well satisfied. The study of the works of Hippocrates has been a source of much pleasure, and I must confess that to me it has been of very practical value. One more quotation from Francis Adams: "I need scarcely say that, as a medical author the name Hippocrates stands preeminently illustrious. In this way he has left monuments of his genius more durable than the marble statues of Phidias, his contemporary, and as enduring as the tragedies of Sophocles, or the Olympic odes of Pindar."

223 Boehne Building.

LATENT TUBERCULOSIS.*

By O. W. McMICHAEL, B.A., M.D.,

CHICAGO, ILL.

THE call to arms revealed to us our national strength and weakness. We believed ourselves strong—but who could have believed us as strong and virile as the battlefields of France proved us? Who, on the other hand, could have believed that one-third of the young men of our nation would have been found unfit to fight, and that one in every hundred was a blighted victim of tuberculous disease?

We knew we had a tuberculosis problem and we knew that we would have to provide for the blinded, the battle-maimed, and for those who would fall out in the march because of some defect in their physical machinery. Plans were made for the reconstruction necessitated by the ravages of war. In the minds of most, reconstruction meant the establishment of factories for artificial limbs, but no one dreamed that the greatest tax upon our resources and the greater number to be cared for would be, not the victims of shot and shell, but those who were struck down from within by the arch enemy of the human race, the tubercle bacillus. We knew that the enemy was lying in wait and never in the history of warfare was such a well-planned effort made to exclude from the ranks men who presented evidence of the disease. Confidence was felt that the medical knowledge of the country would exclude from our army every man who carried the seeds of death. Our complacency was short lived for in the very first lists from France of those who gave their lives for their country, was the cause of death shot or shell? No. Tuberculosis. Day by day these reports came in till some one grew ashamed, so ashamed in fact that the word was changed to "died of disease."

Some one had blundered, for in spite of all the difficulties that surrounded the detection of this hidden enemy, he does not strike without warning, and for a man to be sent to France and die of tuberculosis before he reached the battle lines stands to the everlasting discredit of the medical man who passed him as physically fit. Apologists might find excuse in the haste of war but those of sterner mould can only feel toward him as

*Read at twentieth annual session of the Ohio Valley Medical Association at Evansville, Indiana, on November 11 and 12, 1919.

they do toward the man who sends to the front a defective shell. What sort of excuse are we to find from him of whom it was said that "The President of the United States of America to all who shall see these presents, greeting; know ye that reposing special trust and confidence in the patriotism, fidelity, and abilities of ——— I do hereby appoint him a member of local board ——" and who sends to camp for enrollment in the United States Army men so far advanced with tuberculosis that they find their last earthly resting place in the hospital ward of their first camp. It would seem at first thought that these must be isolated cases and due to the ignorance of only a few, but when we think again that the overwhelming problem in reconstruction is the adequate provision for that class of man which many times over outnumbers all the others—the victims of tuberculosis, we must realize that the fault lies in our conception of the disease and our methods of its detection. What is wrong with us? Where does the fault lie? Is it lack of skill?—it can't be that, for the American medical man is better trained, of higher grade of intelligence, and is more resourceful than the medical man of any other country on earth. We used to think the German was all wise in medicine and all powerful in battle, but the Yankee soldier would not believe and broke the German line on the fields of France. The Yankee doctor believed when the German told him that if a man did not have rales in his chest he could fight—and there we met defeat. Now are we caring for a long line of men who were sent across the seas with latent tuberculosis.

The lesson was a bitter one and from our defeat we can learn that the stethoscope is not the only aid to diagnosis and that we can and will by more modern methods learn to recognize early tuberculosis.

Modern medicine is a tower of Babel and because of the confusion of tongues we fail to understand each other. To one tuberculosis means that the victim is soon to close his eyes, to another it means only a trivial ailment that a couple of weeks in the country, a few dozen eggs, and a few quarts of milk, and all will be well. How hard it is to keep our thinking caps on straight. How hard it is to get rid of the old word "tubercular," a relic of the days before the discovery of the tubercle bacillus, meaning "like tuberculosis," and substitute the more exact term "tuberculous" which means infected by the tubercle bacillus.

The terms "incipient," "moderately advanced," and "advanced" mean different things to different men. To illustrate this, how often do we read a paper on "incipient tuberculosis" and find included symptoms and signs which can be produced only by advanced destructive processes in the lung! So it is with "active tuberculosis." When we are asked, "Has he active tuberculosis," we must know what concept the questioner has of "active." Has he in mind the warfare between the body cells and the tubercle bacillus or has he in mind the battle at a particular place in the line where the enemy is making a drive and threatening to break through?

Words were invented to conceal thoughts and phrases to lead them astray. The phrase "look for the initial lesion" has misled us in our understanding of tuberculosis and if you turn it upside down you will find it stamped "Made in Germany."

American investigators have proven that the tubercle bacillus may penetrate the tissues without leaving a trace at the point of entrance, scatter to various parts of the body, and there multiply. Instead of an initial focus or primary lesion we may have a thousand foci no one of them large enough to interfere mechanically with the function of the organ in which they are lodged.

It must be remembered that the tubercle bacillus is not a motile organism. The only way in which we can account for its presence in the tissues of the body is that it was carried there by the leucocytes along the only line of travel, the blood and lymph streams. Given the presence of the tubercle bacillus in the tissue, what happens? Every cell which obtains its nourishment from another cell must produce a substance which will digest that other cell so that it may employ the elements of the other cell for its own upbuilding. These digestive elements we call toxins because they are poisonous or destructive agents. Another law of nature is that every toxin-producing cell produces these harmful substances far in excess of its own needs. Therefore if we are to seek for early evidence of the presence of the tubercle bacillus our search must be directed, not to the damage that results only after years of growth of the colonies of germs so extensive that they interfere seriously with the functions of the organs in which they have established their habitat, but to the more subtle effects of the slow poisoning of the host by the excess of the tuberculotoxins.

We are constantly warned that we must differentiate between tuberculous infection and tuberculous disease. Does this mean that the individual who has a tuberculous infection is not entitled to our consideration till a certain degree of damage has been done? It is true that dame Nature is a better doctor than we are and prevents the vast majority of the cases of tuberculous infection from becoming tuberculous disease, but that does not relieve us from our duty as good scouts of seeking out the enemy without waiting till he shows his head. If when he keeps his head out of sight we could assume that he was asleep, we might be justified in saying he was latent.

Latent tuberculosis is a term as indefinite as incipient tuberculosis and one hesitates to employ it lest it convey the impression that there is a period when the tubercle bacillus is inactive. The only time a tubercle bacillus is inactive is when he is dead. Even then he is a trouble maker for the concentrated lipoids of dead disintegrated tubercle bacilli play a part in the destruction of lung tissue and cavity formation. The term latent tuberculosis then may be applied to the period between infection and the development of sufficient damage to enable us to recognize tuberculous disease. Throughout this period the human body is waging warfare against the toxins produced by the tubercle bacillus. Toxins are poured out into the circulation, anti-

toxins are produced, and so the battle goes. The host is well or ill or only slightly disturbed as the tide ebbs and flows.

The function of every organ in the body may be disturbed at times and to catalog the symptoms which may be produced by latent tuberculosis we ought to include the entire list of symptoms of functional disturbance.

Since it is the fad now to teach that all tuberculous infection is contracted in childhood and that practically all children are infected, wouldn't you think that all children should be studied for evidence of latent tuberculosis? and yet when a child who is "run down" or poorly developed is brought to us we grab a stethoscope, listen and hear nothing, look at his tongue, take out his tonsils, and let it go at that. We do not see the drooping lower eyelids, the bluish pink triangle under his eyes, the dilated veins on his chest, the small beady cervical glands; we do not see that the upper part of his chest is not developing as it should, that the lower part of his chest is broader than it should be; we do not learn that he is wearing the same size clothes that he did last year. Of course he hasn't tuberculosis because he has no rales in his chest, but a tuberculin test would tell a different story.

The tired school girl is brought to us because she cannot keep up with her work. She is tired all the time. She has not lost weight, she always was thin, just like her father who always was thin and who, by the way, is carrying around in his chest an old tuberculous cavity that no one knows about, though they do say that he was threatened with lung trouble when he was a young man. She has no cough, so we do not look at her chest. We do notice that her thyroid is a little larger but many girls at puberty have enlarged thyroids. She is just "run down" so we prescribe a tonic, whatever that is, she picks up again, and in two or three years she is sent to a sanatorium. We do not see that that enlarged thyroid meant a response to a cry for help. We did not know that the blood was burdened with an excess of tubercle toxins, that the suprarenal glands were unable to meet the burden of controlling elimination and telegraphed the pituitary body, which in turn whipped up the thyroid. Disturbance of endocrine balance is a result of toxemia. Tubercle toxemia is constantly present in varying degree in latent tuberculosis. Lowered blood pressure is a constant sign of tubercle toxemia.

In the absence of definite signs how are we to recognize latent tuberculosis? The answer is tuberculin. Immediately the objection is raised that many who have no tuberculosis react to tuberculin. Granted, but none react to tuberculin who have no tuberculous infection. Let us establish first who are and who are not infected and then latent tuberculosis will take on a new meaning, and many thought to be latent cases will be found to be actively tuberculous.

The tuberculous soldier has taught us that latent tuberculosis may easily become active tuberculosis and that we must give more earnest consideration to the manifestations of infection and toxemia.

25 East Washington Street.

ULCER OF THE ESOPHAGUS FROM THE STANDPOINT OF AN ESOPHAGOSCOPIST;

ITS CAUSE, SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT.*

By JOSEPH EASTMAN SHEEHAN, M.D.

NEW YORK.

I AM very happy to address this Society to-night on this topic, because I want to emphasize the fact that it is amazing how little this rather common lesion is referred to in the literature or in textbooks; also, to emphasize the more general use of the esophagoscope and the string test of Einhorn as an aid in diagnosis, and the employment of the duodenal feeding tube of Einhorn in the treatment of esophageal ulcer.

By esophagoscopy is understood the examination of the esophagus with the aid of lighted tubes introduced through the mouth.

The esophagus begins at the lower edge of the cricoid cartilage, opposite the lower border of the sixth cervical vertebra and ends at the cardiac opening of the stomach, opposite the fifth thoracic vertebra. It is about 25 cm. (10 inches) long and begins 15 cm. (6 inches) distant from the teeth. The average diameter of its lumen is 2 cm., which at the upper and lower constriction is reduced to 1.5 cm.

The lumen of the esophagus is narrowed at four points, namely: (1) at the cricopharynx, (2) where it crosses the left bronchus, (3) where it crosses the aorta, (4) near the end as it passes through the diaphragm, the cardio-hiatus.

Historical.—Kussmaul, in 1868 and later on Mikulicz, were the first to take up the subject of esophagoscopy. In 1895, Kierstein developed an esophagoscope; Killian, my teacher, the father of bronchoesophagoscopy, in 1896 perfected the procedure of esophagoscopy. Credit should also be given to Brunning of Germany, Gusiez of France, and Jackson of America for our present knowledge of esophagoscopy.

Location.—The most frequent site of esophageal ulcer is at the fourth constriction, that is between the cardia and the hiatus. Seventy-five per cent. of all esophageal ulcers occur in this location. The cricopharynx is the next most frequent location for ulceration and finally it is found in the constrictions where the left bronchus and aorta cross the esophagus. It is my experience ulcers of the fourth constriction of the esophagus are more frequent in males than in females.

The ulcers may be circular, as occurs in the syphilitic, semicircular, round, or irregular. In this latter class the ulcer may extend up and down the tube for a considerable length. Several may be clustered together, or ulcerations may occur at both ends of the esophagus.

The favorable site of esophageal ulcer when it occurs at the fourth constriction is on the right posterolateral wall.

Etiology.—It is quite impossible in a considerable number of cases to determine the cause of esophageal ulcerations. Regurgitation of gastric juice or islands of gastric mucosa aberrant in the mucosa seem to underly this condition. (Davis.)

*Read before the Harlem Medical Society, Wednesday evening, November 5, 1919.

(*a*) This condition is favored by stenosis of the pylorus or duodenum or by an hour-glass stomach. (Davis.)

(*b*) Hurried eating with the intake of quantities of hot or cold food over a long period of time may be a potent cause.

(*c*) Syphilis.

(*d*) Tuberculosis.

(*e*) Malignancy.

(*f*) A scratch or erosion of the mucous membrane caused by swallowing foreign bodies, particularly those with a sharpened edge, as a fish-bone or chicken-bone, or pieces of metal, such as a pin, may and generally does give rise to an ulceration.

(*g*) Injuries of the esophagus, as in suicidal intent.

(*h*) The ingestion of corrosive fluids, as carbolic acid, iodine, or concentrated lye.

Symtomatology.—Superficial ulceration of the esophagus causes few if any symptoms. It is only, as a rule, in the long-standing, deep-seated ulcerations that definite symptoms are produced; that is in ulcerations which have penetrated to the muscular coat or through it. Dysphagia is present in a goodly proportion of cases, and this dysphagia is one of the main diagnostic points in the differentiation of ulcer of the stomach.

Immediate pain on swallowing and tenderness over the sternum are characteristic symptoms of esophageal ulcerations. These symptoms are more or less constantly present when the ulcer is at the fourth constriction.

Sometimes and quite often one elicits pain upon pressure over the region of the lower border of the spleen. Because of the pain and dysphagia, in some cases, patients take little food with the result of a mild or severe type of inanition. There may be only a dull burning pain or a sense of pressure. Hematemesis may occur. A tickling or choking sensation and a collection of mucus in the mouth may be the only symptoms. Some patients may be nauseated and vomit.

Diagnosis.—In all cases of suspected ulcer of the esophagus, no matter how remotely referable are the symptoms, esophagoscopy, preceded by the string test of Einhorn, should be employed. 65 per cent. of the 27 cases in my series of esophageal ulceration, which were proven by the esophagoscope, gave a positive string test.

In many cases it is only after routine broncho-esophagoscopy, that an ulcer of the esophagus is detected. The *x*-ray adds nothing; I rarely resort to it as a means of diagnosis in this condition.

In the esophagoscope and the string test of Einhorn we have two of the most useful methods at our command, as an aid in diagnosing esophageal ulcerations. I make a plea for their more general use.

Treatment.—After the diagnosis of the ulcer is made and its exact location is determined, I prepare the patient for an esophagoscopy. The ulcer is generally located with the aid of the esophagoscope under cocaine or ether anesthesia. I then apply a 20 per cent. silver nitrate solution over the whole surface of the ulcer or ulcers. The Einhorn duodenal tube is inserted and feedings are started as soon as the bucket enters the duodenum. The patient generally remains in bed for one week after which he is allowed to get up and about for a week or ten days. The tube is then withdrawn from the interior.

Large doses of bismuth subnitrate, combined with argyrol crystals and magnesium ustum, are given three or four times daily. This is the only substance which is taken by mouth. It acts as a coating to the ulceration. 500 c.c. of a physiological saline solution is given per rectum in the form of a Murphy drip twice daily. After the tube is removed the string test is employed to note the progress of healing. Many times after this treatment one gets a negative string test, showing that the ulcer has healed.

Conclusion.—The purpose of this paper is to urge upon the profession the more general use of the esophagoscope and the string test of Einhorn in diagnosing ulcerations of the esophagus, and the general employment of the duodenal tube of Einhorn in the treatment of this condition.

24 East Forty-eighth Street.

Medicolegal Notes.

Privileged Communications.—The Arkansas Supreme Court holds that in an action originating in a municipal court one who there said she had no objection to a physician testifying did not thereby waive her right to object to testimony of the physician on trial of the case in the circuit court, where it was shown she did not understand that she had a right to keep him from testifying.—Metropolitan Life Ins. Co. (Ark.), 209 S. W. 77.

Due Care and Skill in Setting Fracture.—In an action for alleged negligence in resetting a broken leg so that the ends of the bone overlapped it was held that in the absence of a showing that such a condition would have been at least improbable had the leg received reasonably prudent and ordinarily skillful surgical treatment, it could not be said that the mere pathological condition of the leg in and of itself sufficed to show negligence on the part of the defendant. "The difficulties and uncertainties in the practice of medicine and surgery are such that no practitioner can be required to guarantee results, and all the law demands is that he bring and apply to the case in hand that degree of skill, care, knowledge, and attention ordinarily possessed and exercised by practitioners of the medical profession under like circumstances."—Zoterell v. Repp., 187 Mich. 330, 153 N. W. 695. With respect to the failure to attain a complete bony union, the plaintiff's experts themselves testified that there was no way for an average or even a skilled surgeon to tell whether ligamentous or bony tissue was being deposited between and around the fractured ends of a broken bone in the process of reuniting, without opening the wound. While one expert testified that it was good surgery to open the wound and staple the bone, especially where, as here, there was an oblique fracture, none of the experts gave it as their opinion that it was not good practice to rely altogether upon casts and splints, as the defendant did. It appeared that a plaster of Paris cast was put on the leg on April 9, 1912; that another cast was put on on April 12, and possibly another on April 17; that the cast was removed on April 25, and that a yucca splint was then put on and held in place by a light bandage. The patient wanting to go to his ranch, the defendant told him he could go by being careful and using his crutch all the time, keeping the splint on for about two weeks. No further treatment was given. There was no testimony that anything covered by this treatment was improper. It was held that the evidence failed to show any lack of care and skill on the part of the defendant in setting and treating the fractured bone, and judgment for the plaintiff was reversed.—Perkins v. Trueblood, California Supreme Court, 181 Pac. 642.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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PHYSICAL THERAPY IN MILITARY AND CIVIL PRACTICE.

BEFORE the war physical therapy was coming into its own, because it is one of the most effective methods for preventing disease and because all signs seem to point to the fact that medical practice of the future will be very much more of a preventive nature than it has been in the past. The war brought out into strong relief not only the extreme value of physical therapy as a means of training men into hard condition, rendering them better able to undergo the vicissitudes of strenuous warfare and to resist disease, but it also demonstrated in the clearest manner possible that as a remedial and curative agent it was highly efficacious. The war may be said to have placed physical therapy on a sound foundation, for the lessons that the war taught with regard to the usefulness of physical therapy may be employed with success in civil medical practice. In an interesting paper on this subject, read at the annual meeting of the Association of Military Surgeons, last October, by Commander William Seaman Bainbridge, M.C., U.S.N.R.F., and published in the *Military Surgeon* for December, 1919, it is pointed out that the lesson learned by the bitter experience of war will have been more or less in vain unless its principles are applied to civil life. In order that the necessary and laudable object should be achieved with the least friction possible, Bainbridge brings forward three suggestions.

The first of these is that civilian hospitals in time of peace shall have departments fully equipped for the employment of physical therapy, so that they can be utilized, not only for the treatment of the injured, but also as far as may be possible to secure a maximum of physical efficiency among the general population. Attention is drawn to the fact that the war has demonstrated most conclusively that no patient recovering from a serious wound should be discharged until every effort has been made to send him out in as sound a condition as circumstances permit, and with reasonable assurance that no remediable disabling after-effects persist. It has been the custom to send the patient out as soon as he is able to be removed. According to Bainbridge, it appears reasonable to argue that many a stiff joint or other disabling after-effect of operation or injury might have been completely remedied or avoided by retaining the patient for a longer time on the in or out patient's list. Physical agents, such as thermal, mechanical, and electrical treatment, curative workshop treatment, and so on, might have been intelligently utilized. The fallacy also of prolonged immobilization of a joint injury or fractured limb is considered and the success of Dr. Charles Willems in treating joint lesions by a method which is based upon the principle of immediate active mobilization of the joint is cited in support of the view. It will be remembered by our readers that Dr. Willems gave an exhaustive account of his mode of treatment in the "Medical and Surgical Lessons of the War Series" in the MEDICAL RECORD of June 7 and 14, 1919, xcv, 23 and 24. Bainbridge holds that it is obvious that every large civil hospital equipped to provide all kinds of physical therapeutic treatment is a potential base hospital, convalescent camp, or institution for the reduction of disabled soldiers, while at the same time it is actively engaged in doing its part toward maintaining the highest standard of physical efficiency so far as the civilian population is concerned. The latter point is manifestly very important.

The second suggestion is that civilian hospitals shall be so equipped in time of peace as to be more quickly available by the Government in an efficient condition for military service in the event of war. That is to say that in time of peace there should be more hospital beds, ready for war emergency than in the past. The third suggestion is that military hospitals, both temporary and permanent, should be equipped in such a manner during peace that when utilized in time of war the maximum of medical and surgical efficiency may be attained.

The equipment for employing physical therapy skilfully and scientifically must be personal as well as mechanical. The best mechanical equipment will be useless unless there is a sufficient number of skilled exponents of this form of treatment. Bainbridge recommends that lay workers be trained in the various methods in which physical therapy is applied. He further thinks that it is conceivable that military hospitals equipped with facilities for making use of physiotherapy might be utilized as training schools for men to be called upon later to administer the various physical adjuvant measures which have been found so essential in the war now over.

Of course the benefits of physical methods in securing and maintaining general health are too obvious to require emphasis. Dr. Bainbridge has made out a very strong case for physical therapy in his paper and his suggestions may be commended to the earnest attention of the medical profession throughout the country. As Major Corbusier said in the discussion on this paper,

there is no doubt we are far behind European countries in our use of physiotherapy, and it is incumbent upon us to introduce the principles, which our army surgeons learned by experience in the war, into our civil hospitals. He also insisted upon the necessity of every medical school being equipped with means for teaching and training in all forms of physical therapy.

ENCEPHALITIS LETHARGICA IN ENGLAND.

In 1918 and 1919 a disease occurred in England and Wales which puzzled medical men considerably. It presented features resembling poliomyelitis and cerebrospinal meningitis, and yet differed from these infections in certain other respects. According to numerous papers which appeared in the English medical press, the distinctive symptoms of the obscure malady seemed to be those of an acute general disease associated with a condition of increasing languor, apathy and drowsiness, passing into lethargy; progressive muscular weakness passing into complete disablement; and a combination of various cranial nerve palsies, of which ptosis, squint, and nystagmus were characteristic signs. So languorous and lethargic are those afflicted with this disease that the complaint is usually termed in the lay press "sleeping sickness." The matter was made the subject of inquiry by some of the prominent medical men of the English Local Government Board and the result of these inquiries formed the subject of a special report.* From the evidence adduced the general conclusions arrived at were that the illness under consideration was not a form of acute poliomyelitis, as had been assumed by many, and that its prevalence in epidemic form depended on conditions other than those necessary for the epidemic prevalence of that disease. It was decided that the disease was encephalitis lethargica, and in order to obtain early and complete information of all cases of the disease in different parts of the country, it was made compulsorily notifiable for a period of one year. It is stated in the medical supplement to the Forty-Eighth Annual Report of the English Local Government Board, 1918-1919, that further evidence is required before a conclusion can be arrived at as to whether the disease is infectious in the sense that a person suffering from an attack can convey the infection to other persons. The investigation proved that the disease was not botulism or food poisoning, as was suggested by some, but it seems to have ignored its coincidence with its pandemic of influenza, not only the present one but that of 1889-90.

From the clinical point of view three types are distinguished: (1) With general disturbance of the functions of the central nervous system, but without localization; (2) with various localizations; (3) mild or abortive. The incubation period is said to be of variable duration. The prodromal period includes the first seven days, but may extend to two or three weeks, with lethargic somnolence, headache, diplopia, general lassitude, and occasionally vomiting and diarrhea. The acute symptoms include a febrile temperature, marked asthenia, stupor, difficulties in speech, and spasmodic twitchings of the face. In the type with localizations of the central nervous system, paralysis of accommodation with diplopia is very frequent and early. There may be ophthalmoplegia, external or internal, with ptosis. The muscles innervated by the facial nerve may also be paralyzed and likewise those of the tongue and pharynx, rarely those of the limbs. Sensory troubles are the exception. Death appears due to paralysis of the respiratory nervous centers. An explanation was offered in the report for the widespread sporadic distribution of encephalitis lethargica. It was suggested that the malady belongs to that group of affections, including cerebrospinal fever and acute poliomyelitis, in which the pathological agent is more frequently present in the human organism than the clinical symptoms indicate. Either as the result of the breakdown of the immunity to the effects of the virus which the individual who harbors it has up to that time enjoyed, or as the result of a nonimmune person becoming infected with a strain of the virus which has attained a degree of pathogenicity described as "specific," a manifestation of the disease occurs. In interepidemic periods or when cases are less frequent, such cases only appear to be sporadic. All these diseases—acute poliomyelitis, cerebrospinal meningitis, and encephalitis lethargica—are obscure in many features, the report says, but the latter disease on account of its comparative novelty or because its differential diagnosis has been made only recently is the most obscure. A warning is given in the annual report that it is already apparent that the biological properties of encephalitis lethargica are altering, as the successive examples of multiple cases indicate. It may be only a short stage in the evolutionary progress of the causal organism for its activities to be manifested in wider epidemic form.

It is curious that the report does not consider the relation of encephalitis lethargica to pandemic influenza, or at least does not note the coincidence of the two affections. Lethargic symptoms were so common during the visitation of influenza in 1772, that the epidemic was characterized as one of "sleeping sickness." The disease prevailed in 1889-90, appearing in Eastern Europe when the first part of the epidemic was subsiding and traveling westward, precisely as it did during the present influenza epidemic. This of course does not prove that encephalitis lethargica is a cerebral localization of influenza, but the coincidence is sufficiently striking to warrant a more careful study than it appears yet to have received.

*Report to the English Local Government Board, New Series No. 21, upon an obscure disease, Encephalitis Lethargica.

VITAMINES.

THE recent report on vitamines prepared by a joint committee of the Lister Institute and of the Medical Research Committee of London, issued at the end of 1919, illustrates the rapid growth of knowledge concerning the processes of life. Hardly more than a decade ago, it was believed that Liebig's work and that of his successors had placed the chemistry of food on a sound basis. The living cell required food to repair waste, to provide for growth, and to supply energy. The constituents of a suitable dietary were proteins, fats, carbohydrates, and inorganic matter which forms the ash when the bodies of animals or plants are burned. The usual mixed diet of man and animal contains these substances in large amounts. But it contains them in varying proportions, and associated with many other substances. Experiments were made by different workers to prepare artificial dietaries containing only the necessary ingredients in the purest forms in which they could be obtained. Some ten years ago it began to be apparent that a really "pure" diet was insufficient. Rats and mice fed on it assumed a miserable appearance after about a month, and rapidly perished. Minute traces of certain materials, such as extract of yeast, added to the diet, prevented the development of the untoward consequences. Some addition, minute in quantity, had to be made to the recognized raw materials for growth and the vehicles of energy. Knowledge from this source was then correlated with knowledge derived from the study of certain morbid processes.

It had long been known empirically that scurvy attacked seafaring men fed on preserved foodstuffs, but that the disease could be cured by fresh vegetables or the juice of oranges and lemons. The Eastern scourge known as beriberi was traced to a substitution of rice decorticated by the machinery of the West for rice prepared in native fashion, and it became manifest that a constituent of absolute necessity to health had been removed with the husk. Hence the conception of vitamines or accessory foodstuffs came into being. They are required in quantities so minute that they cannot be regarded as sources of energy, while their presence or absence does not affect the number of calories in the diet. They are organic bodies, developed in green leaves in the presence of the solar rays, or in the embryo during its germinal period in the seed. Herbivorous animals obtain them from plants and carnivorous animals from their prey. Three have so far been recognized a fat soluble body, the absence of which gives rise to rickets in young animals; a water soluble body, necessary to the growth of young animals and warding off beriberi; and lastly, an antiscorbutic substance. The report discusses the distribution of these bodies and the means of securing their presence in food. Fortunately there is no reason for alarm if a varied diet containing fresh vegetables and fruits, milk and butter is available. But where the diet consists chiefly of long cooked and preserved foods there is very serious danger, especially in the case of young subjects.

THE PROGNOSIS OF COMPLETE ARRHYTHMIA.

IT is most probable that there is no necessary relationship between complete arrhythmia and cardiac insufficiency, because a pronounced insufficiency may arise although the cardiac rhythm remains regular, and on the other hand, in subjects leading an active life, the heart adapts itself to a completely irregular rhythm, to such an extent that the latter constitutes about the only pathological phenomenon in these individuals. It is none the less true that the menace and degree of cardiac insufficiency dominate the prognosis of complete arrhythmia, and depend essentially upon the different factors of the reserve strength of the myocardium. The factor whose importance is the most immediate is evidently the functional condition of the myocardium, itself depending on its anatomical condition. But there are also other factors which exhaust the reserve strength of the heart by causing an exaggeration of its work.

Among these factors the mode of life must be taken into consideration; certain subjects can tolerate their arrhythmia only by following a very strict hygiene and an activity in proportion to the resources of the myocardium. The occurrence of intercurrent complications, among which a fresh rheumatismal attack is the most important, is to be feared, because they may weaken the patient's general health or produce lesions of the various viscera, particularly the heart; likewise pleuropulmonary and renal affections, the reaction of which on the heart is immediate. The concomitance of complete arrhythmia and a valvular lesion acts deplorably by the circulatory hydraulic disturbance it causes or exaggerates. It is manifest that complete arrhythmia is accompanied by a maximum of cardiac insufficiency in cases with valvular lesions, among which the predominating part of mitral lesions is explained by the very fact of their frequency. Finally, consideration should be given to the frequency and gravity of the successive paroxysms of cardiac insufficiency, each of them being accompanied or followed by visceral lesions which are increased with each attack and consequently aggravate the degree of myocardial failure.

As a factor of strength-saving of the myocardium, the beneficial action of general dietetics is to be considered, and especially the stimulating action of cardiac tonic medication comes into play, and their opportune use must act as a counterweight to the causes of cardiac failure. It is the favorable realization of these various eventualities which permits the coexistence of an extreme perturbation of the cardiac rhythm with a satis-

factory general and functional state of health. Nevertheless, the heart of a patient suffering from complete arrhythmia is in a very precarious state of functional equilibrium which can be destroyed by some very trifling cause. The prognosis would, however, be relatively favorable in the subjects who had adapted themselves to their arrhythmia, were it not for the constant menace of sudden death from an outburst of ventricular fibrillation, although fortunately this is rare.

The Indications of the Cesarean Operation.

A very good critical review has been recently offered by Couinaud (Thèse de Paris, 1919), on the indications of cesarean section in cases other than contracted pelvis and neoplasms. The operation is rarely indicated in congenitally narrowed vagina because during gestation the vaginal walls become soft and yielding so that spontaneous delivery can take place. But in cases of cicatricial atresia gestation has no effect on the condition, and since it is difficult to estimate the degree of adhesion between the vaginal walls, bladder, and rectum the cesarean operation is indicated. Imminent rupture of the uterus is naturally a formal indication for the operation, while primary rigidity of the cervix is likewise an indication if the stenosis is very marked, but usually labor will progress. Should it not do so dilatation of the cervix should not be resorted to, nor vaginal cesarean section, the only rational treatment being the classical operation. In cases of secondary rigidity of the cervix—which in reality is an infectious edema of the cervix—hysterectomy may be indicated, but the cesarean operation is to be rejected, and this also applies to eclampsia. When the fetus is excessively large the indications for cesarean section are deduced from the state of maternal shock, the condition of the fetus, the menace of uterine rupture, as well as the relative indications based upon the estimate of the difference between the size of the fetus and the pelvic diameters in previous labors. If the fetus is manifestly suffering and dilatation is incomplete, the head not engaged, and the child is at term and viable, the operation should be done at the express wish of the mother for a living offspring. This same applies to face, shoulder, and forehead presentations. Cesarean section is not indicated in low insertion of the placenta unless there is complex dystocia at the same time, but generally the classical treatment will be satisfactory. In cases of retroplacental hemorrhage the operation should be done if rupture of the membranes is fruitless and if the hemorrhage is so serious that the various methods of artificial dilatation of the cervix will be too slow for controlling the situation. When there is an irreducible procidentia of the cord cesarean section may be undertaken, but the fact must not be lost sight of that a dead child may be extracted or one whose vitality is seriously compromised. Unquestionably, the indications for this life-saving operation should be greatly increased, but at the same time it would seem that the relative indications for its execution must be looked upon as rather exceptional in practice. In spite of the technical progress made during the past decade in this operation, it will nevertheless remain a major interference, and should it be indiscriminately resorted to—as is unquestionably the case in some quarters—the future of this otherwise excellent operation will certainly be compromised.

Vaccinotherapy in Acute Staphylococcic Osteomyelitis.

Vaccinotherapy has been recently essayed in acute staphylococcic osteomyelitis of adolescence. From the technical viewpoint stock vaccine is first employed when the case comes under observation, but later on an autovaccine is used in some cases. The injection can be made at almost any point and the first doses should never exceed a tenth of a cubic centimeter, which represents two hundred million bacteria. Afterwards the dose may be doubled but the next injection must not be given until the phenomena of reaction caused by the preceding injection have disappeared. To obtain a cure, from two to seven injections have been necessary, according to the case. The reactions met with have been mild ordinarily, while local reactional phenomena seem to be exceptional. The general phenomena consist in a slight thermic rise and a marked acceleration of the pulse rate, lasting for one or two days, while a very minute amount of albumin may appear in the urine. Vaccinotherapy appears to be contraindicated, or at least it will be without avail, when the patient presents the peculiar typhoid state common in the severe infectious processes. In fact, this treatment is to be recommended only in those instances in which the local symptoms are more important than the general phenomena. The first favorable sign observed after vaccination is the improvement of the general condition—a drop in the temperature, the return of both appetite and sleep. Then the local symptoms retrogress, the spontaneous pain first disappears, then the pain on pressure, likewise the inflammatory phenomena. A fluctuating collection can be detected by palpation and this may persist or become absorbed. Frequently no hyperostosis or sequestra develop after vaccinotherapy so that a favorable evolution takes place with remarkable rapidity. It is not uncommon for the temperature to become normal within a week or ten days, and the child may use the involved limb in from a fortnight to four weeks.

Simple Venereal Ulcer.

An elaborate study of this subject from the literature, contributed by Rabut in the *Gazette des Hôpitaux* for December 20, 1919, xcii, 80, shows how little our knowledge of soft chancre has advanced in recent years. Under the head of mediate contagion we find mention of transmission by soiled apparatus such as scissors, but in the absence of details do not know whether the scissors were actually contaminated or merely caused a traumatic port of entry for the virus. The incidence varies greatly and is markedly increased by any cause which brings together thousands of people, as great expositions and especially the late war. After relaxation of police control of prostitution chancroid also increases. Old experiments in animal inoculation have been repeated and it is significant that

the monkey is believed to be the only animal to be successfully inoculated with chancroidal virus, the free border of the eyelid being the optimum locality. However, some old accounts of positive results in rabbits and cats seem authentic. Inoculable pus is sterilized by a heat of 45° C. Left untreated a chancroid heals in time but requires two and even three months if untreated. In a case of phagedenic chancroid the process had lasted three years. The author does not allude to two important subjects. One is the confusion of granuloma venereum of the tropics with phagedenic chancroid, some reported cases of the latter clearly belonging under the former head. The other is the discovery during the war of Ducrey's bacillus carriers in the persons of prostitutes themselves free from chancroid who harbored the germ in the vulval secretions.

Twenty-five Years of Antidiphtheritic Serotherapy.

It was before the Rome Congress in 1894 that Roux presented the case for antitoxin so thoroughly that it was at once accepted by authorities throughout the world. Twenty-five years later Martin summed up our experience with the remedy to date (*La Presse Médicale*, October 18, 1919, xxvii, 60) before a session of the Paris Academy of Medicine. Before the serum era the mortality from the disease varied from 50 to 100 per 100,000 inhabitants. Since that period the figure has been less than 20, and often less than 10. The hospital mortality throughout the world now runs from 10 to 15 per cent. of those stricken. During the five years of warfare the number of soldiers attacked by the disease was about 30,000 in all the hospitals, and the total number of deaths about 600, or 2 per cent. Before the use of antitoxin Paris lost from 14 to 45 inhabitants weekly from the disease. She now loses, and has for many years, from 2 or 3 to 13 a week; or in other words the former minimum has become the maximum. Indeed for the past ten years the maximum has not exceeded 7 weekly. Naturally during the twenty-five years the population has increased notably, no account being taken of this fact in the statistics. No one to-day can doubt that diphtheria antitoxin has made good. The enormous number of repeated serum injections of all kinds made during the war has brought home the fact that the dangers of anaphylaxis have been grossly exaggerated. Again the hypertoxic case once regarded as doomed in advance is now known to be curable by intensive treatment, including intramuscular and intravenous exhibition. The latter can be carried out without fear of anaphylaxis if the serum is diluted ninefold and thrown in the vein very slowly.

News of the Week.

Cripples Find Employment.—The employment bureau of the Institute for Crippled and Disabled Men, in the two years of its operation, has placed 1,800 cripples in well paid positions, according to a recent report. Of this number 84 were right arm amputations, 81 left arm amputations, 217 with one arm partially disabled, 84 with both legs amputated or both legs paralyzed, 340 with one leg amputated, 100 with right or left side paralyzed, 85 with spinal injuries, 14 with locomotor ataxia, 775 lame, and the rest with a variety of handicaps.

Shortage of Visiting Nurses.—In the report of the year's work of the Henry Street Settlement, New York City, attention is called to shortage of visiting nurses and the need of increasing the nursing service. During 1919, 35,433 patients in the Boroughs of Manhattan, Bronx and Richmond were cared for by the nurses of this Settlement. The nurses made 261,690 visits to patients under the care of the various centers, 10,000 of which were of a health advisory and social service type, and 1,320 were visits among factories where employees' welfare and health work is under the supervision of the Settlement. The nursing centers provided 11,655 office dressings during the year, and 1,299 visits were made of cases referred to the Settlement by the Red Cross.

Town Meeting Starts Influenza Epidemic.—The snowbound hill town of Cummington, Mass., had its annual town meeting on February 2. A week later 163 of its 700 inhabitants were ill with influenza. Energetic measures of relief were instituted by the Hampshire County Red Cross Chapter, and a relief expedition to the town was headed by the Reverend G. A. Wightman, county missionary. The shortage of food and medicine was relieved, and efforts made to secure nurses. The two resident doctors were reported to be exhausted from their labors.

Osler Memorial Meeting.—Owing to a misunderstanding of a telephone message the date of the Osler Memorial Meeting, announced in the issue of February 14, was incorrectly given as February 21. The meeting will be held on February 28 at 8:30 p. m. in the New York Academy of Medicine. The speakers will be Drs. Francis J. Shepherd of Montreal, Thomas McCrae of Philadelphia, Edward C. Streeter of Boston, and William H. Welch of Baltimore.

State Aid for Tuberculosis Patients.—The New York legislature has been asked to appropriate one million dollars for State aid for tuberculosis patients to enable them to receive care in the country, in boarding houses licensed for the purpose, where medical supervision and proper sanitary conditions will be assured, and where the patients can have plenty of air and sunlight. A similar bill was defeated last year. Health Commissioner Copeland of New York City is said to approve the measure.

Typhoid Epidemic in Galicia.—It is reported that typhoid fever in epidemic form is raging in Southeastern Galicia, 100,000 deaths having occurred since the epidemic started. One out of every five taken ill dies, and several villages have been left without a single survivor. At Stanislau, according to the report, the hospitals are so crowded that typhoid victims are lying in the streets, people not afflicted being afraid to go near them, and the doctors being too busy to give them attention. American Red Cross officials have been asked by the Polish Government to rush doctors to the stricken district.

Sir James A. Grant, Canadian physician and statesman, died at Ottawa on February 6, at the

age of 89. Death resulted from a broken hip, caused by a fall. He was the sole survivor fo the First Canadian Federal Parliament. His "How to Live 100 Years" and other contributions attracted attention in this country and abroad.

Captain Oscar C. Frundt, M. C., U. S. Army, of Jersey City, has been awarded the Distinguished Service Cross for extraordinary heroism in action while commanding a hospital train in Eastern Siberia in June, 1919. Captain Frundt was graduated from Cornell University Medical Department in 1911.

Charitable Bequests.—By the will of the late Sophie Jacobs Gerstle, widow of R. H. Gerstle, the following institutions among others, will receive $500 each: Mt. Sinai Hospital; Montefiore Home, and United Hebrew Charities. Beth Israel Hospital and the Washington Heights Hospital will receive each $250.

Obituary Notes.—Dr. PHILIP G. SANDERSON of Detroit, Mich., died of pneumonia on January 28, after an illness of three days. He was 52 years of age. He was graduated from the Illinois University College of Medicine in 1899.

Dr. A. F. DURHAM of Sparta, Ga., died of cardiac disease January 30. He was graduated from Jefferson Medical College, Philadelphia, in 1887.

Dr. JOHN M. GRANT of St. Louis, Mo., died of pneumonia on January 29, at the age of 56. He was graduated from the Missouri Medical College in 1889, and specialized in surgery. He was a member of the American Medical Association.

Dr. MAY CUSHMAN RICE of Chicago died from influenza-pneumonia February 4, at the age of 57. She was graduated from Northwestern University Woman's Medical School in 1896 and specialized in Rœntgenology. Dr. Rice was a member of the American Medical Association and other organizations, and was the author of "Electricity in Gynecology."

Dr. JOHN JASPER SEWALL of Newport, Me., died February 4, at the age of 63. He was graduated from New York University Medical College in 1884.

Dr. SALLY ROBINSON CREIGHTON BEST of New York City, died February 6. She was graduated from Cornell University Medical College in 1894. During the war Dr. Best served the United States Government in the censorship of drugs. She was an active member of the Executive Committee of the American Women's Hospital.

Dr. GEORGE H. BALLARAY of Paterson, N. J., died February 10, at the age of 72. He was graduated from the College of Physicians and Surgeons, New York City, in 1869. He had been a member of the staffs of the Paterson General Hospital, St. Joseph's Hospital, Paterson, and was surgeon to the Woman's Hospital, Newark. He was a member of the American Medical Association, the Medical Society of the State of New York, the New York Academy of Medicine, and various other organizations.

Dr. FRANK W. MERRITT of Jay, Me., died January 25, after an illness of two years, at the age of 64. He was graduated from the Medical Department of the University of Vermont in 1889.

Dr. JOSEPH TALBOT MACLEAN of New York City died January 28. He was graduated from Bellevue Hospital Medical College in 1876.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, February 6, 1920.

Annual Meeting of the British National Dental Association.—The annual meeting of the National Dental Association opened at the Connaught Rooms, London, on Jan. 27. Delegates representative of 11,000 members or thereabouts attended the meeting. The discussion turned largely on the future of the unregistered dental practitioners under the new legislation. At present there are two opposing camps in the British dental world, the registered and the unregistered dentists. The registered number 5,000, while the unregistered count up to about 15,000. Mr. Victor Lawson, in his address as president, referred to the prospect of the members obtaining their charter from Parliament. They were working, he said, for recognition and status. They were men who understood dentistry, the majority of them having been apprenticed for upward of five years, and they were capable of carrying on surgeries of their own. They entirely objected to vulgar and blatant advertising and canvassing, and conducted ethical and conservative practices. No qualified man could say more. It had been suggested that much harm had been done by unregistered dentists, but he denied strongly that this was so. In view of the large number of unregistered dentists, cases of malpractice were few and far between. It was undisputed that the ethical and capable unregistered practitioner was both useful and necessary in rendering beneficial service to the general public, and could not be done without. The president claimed high authority for the statement that it was the intention to take on and register en bloc members of the Association and of the Incorporated Dental Society, Ltd. The meeting passed a resolution protesting against the absence, eleven months after the date of the report of the departmental committee on dentistry, of legislation to eliminate automatically the advertising and canvassing dental quacks. It was decided to make strong recommendations to the Ministry of Health, in the interests not only of both sections of the dental profession, but of the public health, calling for an immediate measure which would adequately protect the public from these gross evils. The resolution was carried. At the annual dinner of the Association, which was held on the evening of Jan. 27, Mr. F. A. Seddon, M.P., said that the object of the Association was that those who were described as "unregistered" should be permitted to render, in future, as in the past, a great service to the community without any stigma attaching to them. Had there been no unregistered dentists, tens of thousands of people in Great Britain would have received no attention at all. The limited number of practitioners on the register precluded them from meeting all the wants of the community. When, in the early days of the war, many thousands of willing fighters were rejected owing to defective teeth, the unregistered men came forward and did work which could not have been accomplished had it been left to the registered

side of the profession. If for no other reason than that they were now entitled to receive recognition. He hoped that what was now the moral right of the unregistered would soon become a legal right. Mr. Seddon further expressed the conviction that dental treatment would soon become as obligatory for children in the elementary schools as learning to read and write.

The war has not only taught and emphasized the vital need of properly caring for the teeth of a nation, and especially of its children, but has shown plainly that, in order that dental work may be really effective, it must be done by skilled men. The dental profession should take a high position and that this may come to pass, the whole body of dentists must be raised to a higher standard, and advertising dentists and quacks must be got rid of. The only way to do so is to bring in legislation requiring a dentist to give proof of his knowledge by examinations, written, oral, and clinical, before he can be registered, and making it a penal offense for an unregistered dentist to practise his profession. Those who are practising at the present time no doubt will be allowed to register, but none will be allowed to advertise vulgarly. Such legislation will be unjust to none and will be for the good of the public health.

Appointments to Chairs of Medical Science.—The Daniell Chair of Chemistry at King's College, vacated by the appointment of Dr. A. W. Crossley to the Directorship of Research to the British Cotton Industry Research Association, has been filled recently by Dr. Samuel Smiles. Dr. Smiles was educated at the University College, London, and at the Universities of Paris and Jena. He has had teaching experience at University College, London, and since last year has been Professor of Organic Chemistry at Armstrong College, Newcastle. There has been of late an increasing tendency on the part of hospital medical schools to entrust the appointment of medical professors to the Senate of the University of London. This is quite a new departure, as in the past the medical schools have shown a decided, jealous determination to keep such appointments in their own hands, but they seem to have learned by experience that they get better men by making use of the Senate. Dr. H. E. Roaf has just been appointed by the Senate to the University Chair of Physiology at London Hospital Medical School, and Dr. T. S. Vincent has been appointed to the University Chair of Physiology at the Middlesex Hospital Medical School. It may be said that more instances of the same tendency are pending. Dr. Roaf, since 1911, has been lecturer on physiology at St. Mary's Hospital Medical School, and for three years during the war was in charge of the Pathological Laboratories at Cairo. Dr. Vincent was from 1904 Professor of Physiology and Biochemistry in the University of Manitoba. That the advantage to be gained from solidarity with the University should be thus recognized by the hospitals is of great importance and interest, especially when the fact is taken into consideration that it is being subjected to considerable criticism from other quarters. Mr. S. B. Joel and Mr. J. B. Joel, nephews of the late Barney Barnato, the well-known South African millionaire, have given the sum of £20,000 for the endowment of a University Chair of Physics at the Middlesex Hospital Medical School. The munificent gift is interesting and instructive for more than one reason. It shows, it is to be hoped, that the rich men of Great Britain are awakening to the need of the medical schools and hospitals for money sufficient to conduct medical research on a wide scale. Another reason why the endowment is important is because it makes a novel, albeit national, experiment. Physics and scientific medical research should go hand in hand, and particularly so far as radium, *x*-ray, or electrical treatment is concerned, because physics is the fundamental part of such treatment. Medical students require a knowledge of physics so as to be able to understand the why and wherefore of radium, *x*-ray treatment, and so on. The institution of a chair of physics at a medical school is wise and in the proper order of things and doubtless other hospitals in London and elsewhere would welcome a like endowment.

Hospital Saturday Fund.—This year's grants to hospitals and kindred institutions from the Hospital Saturday Fund amount to £54,305. The total is £4,727 more than last year's awards, and is the largest sum ever distributed. As many as 233 institutions will benefit from the distribution, among which are 40 general hospitals, which will receive £19,961. At these 40 hospitals during 1918 there were available 9,427 beds, of which the number in daily occupation was 7,913. The weekly cost per bed ranged from £1, 5s, 4d to £3, 17s, 6d, giving an average of £2, 15s. The total number of patients using these beds was 102,964, and the period of occupation varied from twelve to forty-five days. In the out-patient department no fewer than 825,241 patients were treated, the number of attendances being 3,320,671, and the cost of treatment fluctuated between one shilling and sixpence and eight shillings and fivepence for each patient.

Persons Who Live Longest.—Dr. Otto May, medical officer of the Prudential Assurance Company, in a lecture on "Turberculosis in Relation to Life Assurance," delivered at the Royal Institute of Public Health, on Jan. 29, 1920, said that the ideal type for longevity was the rather short man, especially if in later years he was somewhat under weight. Life assurance officers looked with suspicion upon young entries who were tall and much under weight, especially if they had any history connecting them with tuberculosis. People who were above the average weight were not looked upon as good risks at any age. Underweight in the early years of life was a handicap, but over weight was looked upon as a worse handicap. It was the thin, wiry chap who was likely to be profitable to the insurance officer. An investigation carried out in America had shown that tall, underweight men showed considerably higher mortality than short, thin men.

Tuberculosis and the Industrial Classes.—At a meeting of the Divisional Committees and Secretaries of the National Union for Insurance, held recently in the Pinsbury Town Hall, London, Dr. Noel D. Bardswell, principal tuberculosis officer to the London Insurance Committee, spoke on "Some Aspects of the Tuberculosis Problem, Viewed from the Standpoint of the Industrial Classes." He said that of all diseases tuberculosis

was the most inimical by far to the life and capacities of the worker—of all the claims which were made upon insurance societies, that from tuberculous persons was much the heaviest. Every year no fewer than sixty thousand people died from the disease in England and for those who died there were probably ten to twenty times this number who were suffering from it. The main predisposing causes of the disease were lack of fresh air, of proper food, of sunlight, the presence of dirt, drink, insanitary houses, workshops, and workplaces of all kinds. If these things were attended to people would have a better chance of warding off infection; and food, particularly milk, should be carefully inspected to guard against the conveyance of the disease to otherwise healthy persons.

Some Questions of Heredity.—Dr. W. Bateson, lecturing on biology at King's College on Jan. 26, 1920, mentioned that night blindness had been traced through eight generations, not skipping one. Other afflictions, including deformities, were sometimes carried on from generation to generation under curious circumstances, while the prospect of feeble-minded parents having children who were not similarly afflicted was practically nil. So far as color blindness was concerned, the results obtained were important. A man might have no progeny so afflicted, but there had been no case reported of a color-blind woman having a son with normal sight. Dr. Bateson said that he was often questioned on the subject of intermarriage—say with a cousin. He knew of no practical deduction which he was entitled to draw, but he would rather marry his cousin if he knew her family than marry someone else's cousin about whom he knew nothing.

Obituary. — A very distinct, in many ways a unique, figure passed from human ken when Charles Louis Taylor died on December 21, at the age of 70. Taylor had been assistant editor of the *British Medical Journal* for twenty years, and a member of the staff for close on thirty-one years. He was a Scotchman, born in Peterhead, Aberdeenshire, and possessed most of the Scotchman's best and most typical characteristics. Throughout his life he was a diligent student and acquisitive in a high degree of all knowledge bearing upon the medical profession and especially, perhaps, that which was concerned with the historical and literary side. His education well qualified him for the post of assistant editor of a leading medical journal. The early years of his life were lived in France, where his mother took him when an infant on the premature death of his father. The first part of his education was given in Aberdeenshire, where he was thoroughly grounded in the classics, and then was placed in the Scots College, Balladobid, Spain, remaining there for four or five years. At Balladobid he became steeped in ancient literature and learned to speak and write Latin with the facility of one accustomed to use that language as the medium for conversation. The next few years he spent mostly in France and about the age of 20 he entered the medical school of University College, London, where he passed through the curriculum. It will thus be gathered that he was peculiarly well equipped for medical, literary, or journalistic work. Before joining the staff of the *British Medical Journal* in 1886, he was secretary to Sir Morell Mackenzie, the nose and throat specialist. As assistant editor he was a great success, for not only was he possessed of medical and wide literary knowledge, but he had a colloquial command of French, Spanish, and Latin, a working knowledge of Greek, Italian and Portuguese, and a more than ordinary acquaintance with German. In addition, Taylor was one of those men who believed that anything worth doing at all was worth doing well; he had that faculty designated by Carlyle as genius, an infinite capacity for taking pains. He fulfilled the often monotonous duties and drudgery of his post with the greatest care. Although the greater part of his writing was done for the *British Medical Journal*, he did a certain amount of literary work in other directions. It may be mentioned that he was responsible for the series of articles which appeared in the *Journal* under the title, "Nova et Vetera"—and wrote most of these excellent essays dealing largely with the history of medicine. Taylor was immensely popular with his colleagues and esteemed for his geniality, loyalty, and kindness. Sir Clifford Allbutt's appreciation of the deceased editor, which appeared in the *British Medical Journal* of January 17, 1920, is given by one who knew him intimately as a man and a writer and supplies a vivid presentation of both. Sir Clifford says: "Taylor was a delightful writer, erudite in many ways, general and particular, but especially in historical subjects. He took pleasure in some byways of scientific history, on which and other such matters he contributed much to the contents, and not a little to the gaiety of the *Journal*. Taylor's wit and keen sense of humor were always entertaining, often brilliant and effective. Many of his paragraphs, fugitive, alas! were in their ironical and humorous vein singularly happy. Moreover, his wit was always barbed with point and precision. No inaccuracy escaped him and he would smilingly pin the error to the counter or dismiss it with a whimsical allusion. Sometimes he permitted himself to draw a sharper arrow, when folly and presumption had to snarl; but he was too kindhearted to use the weapon unless the gravity of the occasion required it." Like many able and brilliant men of the essentially student temperament, Taylor was of a retiring disposition and seemed to prefer the companionship of his family and a few chosen friends to the plaudits of the public. Whatever fame he gained came to him unsought. He is survived by his widow, two daughters, and his son, Dr. C. J. G. Taylor, of Nuneaton, Warwickshire, who served throughout the war as surgeon in the navy.

A CONSTITUTIONAL QUESTION.

To the Editor of the Medical Record:

Sir:—An important matter which is to come before the meeting of the Medical Society of the State of New York in April, is the question of the constitutionality of the election of a delegate to a general office in the society during the period of the term for which he shall have been elected a delegate. This matter came up before the House of

Delegates during the election of a candidate for president at the last meeting of the society, the discussion being based upon Art. III, Sec. 3, of the Constitution of the State Society, which is as follows: "No delegate elected to the House of Delegates shall be a candidate for a general office in the Society until after the expiration of the term for which he shall have been elected a delegate."

In the specific case concerning which discussion arose, it was held by some that the office of delegate and the term for which he was elected terminated the minute he resigned and his resignation was accepted by the body that elected him a delegate. Whether or not an interpretation of the constitution can be adjudicated by vote during an election contest, the fact remains that many members hold with the minority on this occasion that this interpretation is not in accordance with the meaning of Article III, Sec. 3, of the Constitution, and they hold that this provision covers the term for which the delegate was elected, irrespective of whether he resigned or not before that term expired. Under the Constitution of the State of New York a member of the Legislature is not allowed to accept an appointive office during the continuance of the term for which he shall have been elected a legislator. The House of Delegates is the legislative body of the State Society and the delegates are its legislators. In this as in some other respects the Constitution of the State Society seems to have been modeled on the principles of the Constitution of the State of New York.

JOHN P. DAVIN, M.D.

117 WEST SEVENTY-SIXTH STREET.

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 5, 1920, cxxxii, 6.

1. The Surgical Treatment of Peptic Ulcer. P. E. Truesdale.
2. Treatment of Back Injuries with Special Reference to Spinal Fractures That Are Not Associated with Cord Symptoms. Herman W. Marshall.
3. Some Incidents in the Life and Military Campaigns of Baron Larrey (1766-1842). William Pearce Coues.
4. The Technique of Citrated Blood Transfusion. Henry C. Marble.

1. The Surgical Treatment of Peptic Ulcer.—P. E. Truesdale states that when medical treatment and rest have been tried for weeks or months and the symptoms fail to yield to such measures or return after short periods of relief, the problem of dealing with the disease falls into the category of surgery. The surgical treatment consists first of all in a careful review of the clinical and laboratory record of the case. After considering this evidence the first step in the operation is to establish the diagnosis by direct examination of the stomach and duodenum through an abdominal incision. This is not always an easy thing to do because other changes often exist at the pylorus which may be mistaken for ulcer. The most common of these is a thickening at the pyloric ring from hypertrophy of the pyloric sphincter muscle or the adjacent musculature of the pylorus. To a mind that fully expects to find ulcer, a thickened muscle at the pylorus is quite liable to be satisfactory evidence that ulcer does exist in the thickened tissue although no scar is visible. Pericholecystitis with adhesion of the gall bladder to the pylorus or duodenum, with thickening and induration of the gut, may be mistaken for ulcer. Whenever one is in doubt over some indefinite tissue change, it is more judicious not to interfere. Whenever ulcer is present the signs are definite, not indefinite. In view of the tendency of the ulcer to perforate and bleed, gastroenterostomy is now supplemented by excision of the ulcer when it is accessible. Ulcer of the stomach is excised by the knife or cautery in every case. The cautery may be used for obliteration of peptic ulcer wherever located, but it is indicated in a group of cases where the ulcer is high on the lesser curvature. As a supplementary operation to excision, gastroenterostomy is sometimes done and sometimes not, depending upon the patency of the pylorus and the amount of deformity produced in the excision of the ulcer itself. Whenever the ulcer is in the pyloric end of the stomach, and the condition of the patient permits, pylorectomy is the operation of choice. Under adverse circumstances it is more prudent to do the operation in two stages. The writer has performed pylorectomy for ulcer in twenty-seven cases with but one death, which occurred from leakage of the duodenal stump. He now guards against this accident by the use of infolding linear sutures in two layers over the duodenal end; upon this is sutured a portion of the omentum. In general it may be said that operation for chronic ulcer cannot be applied by rule of thumb, and it is evident that the slowly shifting technique shows the ideal operation not vested in any procedure which leaves the ulcer. The most satisfactory method of attack aims at excision of the ulcer in a way which does not "alter the complex relations of the alimentary functions and the more complex forces which maintain these functions." Such a procedure takes into consideration the important fact that the alimentary tract is a one-way passage.

New York Medical Journal.

January 31, 1920, cxi, 5.

1. Wassermann Contradictions Considered from the Clinical Point of View. Abraham L. Wolbarst.
2. Extraction of a Rifle Bullet from the Bladder by the Natural Route. Georges Luys.
3. Unmerited Dental Syphilitic Chancre. Herman Goodman.
4. The Psychology of the Conscientious Objector. David Edward Hoag.
5. Curing the Drug Addict. James A. Hamilton.
6. Compulsory Health Insurance. Charles Howard Chetwood.
7. The Coordination of the Principles of Chemistry with the Laws of Immunity in the Treatment of Tuberculosis. Benjamin S. Paschall.
8. Futility of Intraligamentary Shortening of the Round Ligaments When Operating for Other Intrapelvic Conditions. Sigmund Goldberg.

1. Wassermann Contradictions Considered from the Clinical Point of View.—Abr. L. Wolbarst holds that the Wassermann test and the gonorrhea fixation test should be made by at least three serologists working independently, that the serum should be taken simultaneously and sent to the different laboratories under identical conditions, and that one serologist is not to be depended on, however capable he may be. From the observations detailed, the writer finds that three serologists will agree in approximately fifty-three per cent. of Wassermann tests and approximately forty-two per cent. of gonorrhea fixation tests. In other words, the chances are about fifty-three in a hundred that three serologists will agree on any given serum. Curiously enough, they are more likely to agree in the negative cases than in the positive cases. This study emphasizes the point that more attention should be devoted to the clinical features of the cases, not trusting so implicitly on the laboratory workers for diagnosis.

6. Compulsory Health Insurance.—Charles Howard Chetwood. (See MEDICAL RECORD, February 14, 1920, page 290.)

8. Shortening of Round Ligaments When Operating for Other Intrapelvic Conditions.—Sigmund Goldberg, challenging the correctness of the textbook description of the round ligaments as guy ropes or stays for the uterus, holds that by the various methods of fixation of the uterus the object sought, namely, the complete cure of the patient, is not attained. The uterus, thus fixed, has been relieved of one pathological position, and, by the art of surgery, fastened into another. Normally the uterus, poised in the true pelvis, is constantly in a state of movement of greater or less degree, and yet maintaining under all conditions a certain area of movability. Fixation by intraligamentary shortening of the round ligaments is contrary to na-

ture. In retropositions of the uterus the round ligaments are not overstretched, as in some other conditions, and, never having been overstretched, they have not lost that peculiar tonicity of plain muscle and they require no shortening or fastening for the purpose of holding the uterus when replaced. In view of this, the writer holds that it is reasonable to assume that the uterus, being released from its enforced restraint in abnormal position by the necessary operative procedures upon the concomitant pathological conditions, will rise by virtue of the inherent tonicity of the round ligaments and other normal factors, and will so remain without being fastened by any of the modern operations into another abnormal position with added dangers of intestinal strangulation, adhesions to the incision, etc. Acting upon this assumption, in twenty cases he deliberately left the uterus unsupported by any procedure, and found in these cases that the uterus would maintain a normal poise notwithstanding the Trendelenburg position. Not only that, but he found and demonstrated that when he attempted to retrovert the uterus he found that, due to the resiliency of the nonstriated muscular tissue of the round ligaments, the uterus would immediatley spring into place. In all these twenty cases the patients have been examined from one to several months subsequent to operation, and in every instance the uterus has been found in normal position and normally movable. From this experience and from the recorded experience of other observers, the writer draws the following conclusions: (1) That in retropositions of the uterus the round ligaments are never overstretched, and therefore require no shortening. (2) By virtue of the normal resiliency of the nonstriated muscular tissue of the round ligaments, when the uterus is released from its retroincarceration, it will maintain its normal position. (3) That all intraabdominal operations for the purpose of fastening the uterus when released only put it into another abnormal position and therefore oppose those natural forces which are always active.

Journal of the American Medical Association.

February 7, 1920, lxxiv, 6.

1. Relation of the Development of the Gastrointestinal Tract to Abdominal Surgery. W. J. Mayo.
2. Epidemic (Lethargic) Encephalitis: Clinical Review of Cases in the Pacific Northwest. William House.
3. The Significance of Some General Biologic Principles in Public Health Problems. Raymond Pearl.
4. The Teaching of Therapeutics. Hobart Amory Hare.
5. The Effect of Food Restriction During War on Mortality in Copenhagen. M. Hindhede.
6. Local Anesthesia in Neurosurgery, with Special Reference to Its Value in Evulsion of the Sensory Root of the Gasserian Ganglion. Charles E. Dowman.
7. The Surgical Treatment of Gummatous Osteitis of the Skull. A. W. Adson.
8. A Case of Syphilis of the Anterior Horns. George M. Goodwin.

3. The Significance of Some General Biological Principles in Public Health Problems.—Raymond Pearl holds that the great outstanding problems of public health are really broad biological problems, which can never be satisfactorily solved until they are looked at on this basis, nor until ascertained general biological principles have due consideration in their study. In particular, it must be recognized that heredity imposes a hard and fast limitation on the effectiveness of palliative or control measures in public health. What is particularly needed, as an essential and integral part of the science of the etiology of disease and of public health doctrine, is a basis collection of organized and digested facts regarding the inheritance of the diatheses of various important diseases, notably phthisis, the pneumonias, and heart and kidney affections. Such a body of knowledge can be acquired only by the slow, laborious, painstaking accumulation, by specially trained field workers, of data regarding family histories, and the searching analysis of such records by biologists and clinicians thoroughly trained in quantitative methods of research. Investigations of this sort are being actively prosecuted in the writer's department of the School of Hygiene and Public Health of Johns Hopkins University, with the support of a grant made for the purpose by the National Tuberculosis Association, and it is hoped that means will be found shortly for extending this type of work to other diseases.

7. The Surgical Treatment of Gummatous Osteitis of the Skull.—A. W. Adson bases his views on his observation of several cases of gummatous osteitis of the skull in which the necessary surgical measures were employed, namely, draining the suppuration, removing the sequestrum or dead bone, and stimulating granulation and epidermization over the denuded areas. If the fluctuating area is opened, a sequestrum and pus are usually found, surrounded by roughened edges of bone. In the older lesions these fluctuating masses will open spontaneously, and pour out thick, yellowish pus, which is caused by necrosis of the superficial tissues and destruction of bone. The ulcers do not respond to specific treatment or local applications unless the sequestrum has been removed. The necrotic areas may persist for years until sufficient necrosis takes place to loosen the sequestrum, when granulation follows. Local surgical treatment of gummatous osteitis depends on the size of the gumma and on whether or not the skin has been broken. In cases of very small gummas it is unwise to open the fluctuating areas; if the gumma is one centimeter in diameter or larger, it should be opened, the sequestrum removed, and the roughened edges curetted. In the larger exposed necrotic suppurating areas all necrotic bone should be removed, the skin edges freshened, and wet dressings applied. Sspecific treatment should be given in conjunction with local treatment.

The Lancet.

January 17, 1920, ii, 3.

1. An Address on the Application of War Methods to Civil Practice. Delivered Before the Clinical Section of the Royal Society of Medicine, January 9, 1920. Sir Anthony Bowlby.
2. Bradshaw Lecture on the Surgery of the Heart. (Concluded.) Sir Charles Ballance.
3. Treatment of Malunion of Fractures of the Femur. W. Etherington Wilson, with an Introduction by Sir Anthony Bowlby.
4. The Meaning of Tachycardia. R. McNair Wilson.
5. Dislocation of Cervical Spine. Reduction under Anaesthesia. J. Philip Buckley.
6. A Calculus of Unusual Size Removed from the Ureter by Operation. Frank Kidd.
7. Diverticulitis, Being Some Remarks Made in the Course of a Discussion at a Meeting of the Section of Surgery (Subsection of Proctology), Royal Society of Medicine, on January 7. G. Grey Turner.

1. An Address on the Application of War Methods in Civil Practice.—Sir Anthony Bowlby, after discussing the prevention and treatment of shock, the question of anesthetics, the treatment of patients with fractures, wound infection and antiseptics, expresses the belief that in the future the civilian surgeon will work even more with the bacteriologist than he did before the war, for it has been by collaboration and experiment that many advances have been maintained without risk to the patient. He warns that, as far as details are concerned, a too rigid standardization may be harmful. The only safe attitude is that one should always be inclined to believe that however good a method may be it is always possible to evolve another which may be better still. He points out that the surgery of the immediate future may well be expected to benefit from our recent experiences; that we should improve our transport service and our first-aid for the wounded in civil life; that shock can be better treated and can often be prevented; that anesthesia can be rendered safer; that no antiseptic can at once sterilize infected wounds; that in delayed suture we have an important advance in surgical technique, and that suppurating wounds can be treated by improved methods.

4. The Meaning of Tachycardia.—R. McNair Wilson calls attention to the appearance, after the influenza epidemic, of a number of cases in which a rapid pulse-rate seemed to be the chief symptom. The clinical picture was that of convalescence, a rather slow convalescence. The patients tended to be breathless and occasionally complained of feeling giddy. If their attention had been called to their pulses they usually showed anxiety at the fast rate. On the other hand, they were often quite unaware that their pulses were quick at all. Many of them were apparently well and capable of considerable exertion. Other cases of tachycardia have been met with in patients suffering from dysentery, chronic malaria, chronic trench fever, and other diseases. The chief physical sign is the quick pulse,

which may reach 120 or higher, but which is commonly between 90 and 110. This pulse quickens still further on exertion, running up often to 160, as recorded by the polygraph. Moreover, there is a normal "release" with atropine which, when given in doses of 1/33 gr. subcutaneously, produces an acceleration of 20-25 beats a minute. This normal release led to the view that the vagus nerve in these cases is normal in all respects, but evidence gradually accumulated which pointed to a different conclusion. It was found that if the patients were instructed to take a long deep breath and hold it marked slowing of the pulse or a marked loss of pulse volume with quickening was wont to occur. After atropine this phenomenon could not be elicited. Moreover, in a series of controls who had not recently suffered from any acute illness and who were not the victims of "rheumatism" no slowing and no loss of volume occurred. It was concluded that the phenomena were abnormal, and that they depended on the vagus for their production. Following this view, studies were made in augmentation and acceleration. Graphic illustrations of the findings are given. From these studies the writer was led to conclude that tachycardia in a man who is up and about is compensatory in character, the addition of acceleration to augmentation. It points to the presence of a mild infection, and can be removed only by removing the infection. There is evidence that the action of the toxin is directly on the cardiac vagus.

British Medical Journal.

January 17, 1920, ii, 3081.

1. The Treatment and Management of Diseases Due to Deficiency of Diet; Scurvy and Beriberi. W. H. Willcox.
2. The Aims and Methods of Graduate Study. Sir Humphry Rolleston.
3. The Uses of Free Transplants of the Fascia Lata in Surgery. G. Grey Turner.
4. Three Acute Abdominal Cases. J. Lionel Stretton.

1. The Treatment and Management of Disease Due to Deficiency of Diet; Scurvy and Beriberi.—W. H. Willcox, who was consulting physician to the Mesopotamian Expeditionary Force (1916-1919), states that the careful investigations made in connection with these diseases in Mesopotamia, and the results of the management—that is, the scientific rationing—of the troops, have most conclusively established that both scurvy and beriberi are essentially deficiency diseases and are due to a deficiency in the respective vitamines in the dietary associated with their causation. The old idea of sufficiency of calories, or of proteins, fat, and carbohydrates, is quite inadequate. A dietary to be satisfactory must contain proteins, fat, and carbohydrates in the proper amount, and must satisfy the caloric requirements, but it is essential that, in addition, it should be adequate as regards vitamine content—for example, it must be protective against scurvy, beriberi, and other deficiency diseases.

3. The Uses of Free Transplants of the Fascia Lata in Surgery.—G. Grey Turner, in using the term "free transplants," refers to a portion of fascia lata removed from the thigh of the patient for use in some remote part of his own body. He has used the method in arthroplasty of the elbow and in the jaw joint, with very satisfactory results, and calls attention to its uses under other circumstances which are perhaps less well known. It is valuable for protecting the deeper structures, such as sutured nerves or tendons, during the slow healing of a wound by granulation, or when the superficial tissues are so much damaged that their recovery after suture is likely to be attended with sloughing. It is also exceedingly useful for the replacement of lost tendons. Transplants are also useful to cover exposed brain, where the membranes are deficient, thus preventing it becoming adherent to the scalp. Similarly, fascia lata may be used for repairing the urethra. The writer has had no trouble associated with the area from which the flap is cut. He always exposes it through a vertical incision on the outer side of the thigh, and, except where the transplant has been a very small one, he does not resuture the fascia. He has seen no trouble from the break in the covering of the thigh muscles, though the patients sometimes complain of soreness and aching in that area for a time.

Indianapolis Medical Journal.

January, 1920, xxiii, 1.

1. Everyday Problems in Conserving the Hearing. William S. Tomlin.
2. Nasal Syphilis, with Case Report. A. Wade Thrasher.
3. Pathological Conditions Caused by the Impaction of Teeth. Charles A. Barnhill.
4. Medicine: An Art, a Science, a Trade? James C. Carter.

1. Everyday Problems in Conserving the Hearing.—William S. Tomlin reminds the reader that the prophylaxis of the hearing organs in comparative health comprises principally the hygiene of the nose and throat and mouth, together with instructions in the proper ways of performing daily functions or ordinary cleansing of these parts. In this connection he calls attention to the incorrect use of the handkerchief by the average adult, the nose being constricted instead of permitting free egress of the compressed air. The extraordinary compression at such times, coupled with the present infection and swelling around the eustachian tubes, is a baneful source of acute otitis media. Both children and adults with colds and other infections known to be active in the epipharynx should be required or encouraged to lie on the sides instead of on the back, the latter position bringing gravity in effect towards the tympanum. Faults of ventilation and drainage in the upper air passages constitute the most important menaces to the hearing organs. Inequality in the lumina of the nostrils, with resulting imbalance of atmospheric pressure, and, added to this, projections and pockets, producing whorls in the passing air, with friction here and deposits of bacteria-laden dust there, bring about an endless chain of pathological possibilities and probabilities, with a cloudy future for the hearing apparatus of the individual in a large percentage of cases. Whether hypertrophied adenoids, indurated or hypertrophied tonsils, or other conditions cause imperfect ventilation of and lead to the inflammatory material toward the tympanum and mastoid, such faulty mechanism must be corrected if infection is to be prevented. The damage to the organs of hearing in consequence of "just a cold" cannot be gainsaid, the acute cold giving rise mostly to acute types and the chronic and recurrent cold causing the chronic catarrhal salpingetic type of aural disturbance. Prophylaxis having failed to prevent otitis media, it then becomes necessary to combat the existing conditions, to endeavor to prevent further damage, and to see that the prime factors which have brought about the condition are not allowed to continue for future repetition. This may involve paracentesis, the use of vaccines, mastoid operation, or other measures according to the circumstances of the given case.

Bulletin of the Johns Hopkins Hospital.

January, 1920, xxxi, 347.

1. The Effect of Pyloric Obstruction in Relation to Gastric Tetany. W. G. MacCallum, Joseph Lintz, H. N. Vermilye, T. H. Leggett, and E. Boas.
2. Acute Chloecystitis in Children as a Complication of Typhoid Fever. Mont R. Reid and J. C. Montgomery.
3. *X*-ray Studies of the Seminal Vesicles and Vasa Deferentia After Urethroscopic Injection of the Ejaculatory Ducts with Thorium. A New Diagnostic Method. Hugh H. Young and Charles A. Waters.
4. Self-Eventration of a large Abdominal Hygroma Through a Scalpel Prick of the Peritoneum. W. S. Halsted.
5. The Upturned Edge of the Liver Over Acutely Distended. Empyematous Gall Bladders. A Diagnostic Sign of Some Value. W. S. Halsted.
6. The Fate of Bacteria Introduced into the Upper Air Passages. II. *B. Coli* and *Staphylococcus Albus*. Arthur L. Bloomfield.
7. A Case of Non-Parasitic Hæmatochyluria. H. H. Hampton.
8. A Myoma of the Uterus Showing Unusual Degenerative Changes. Leo Brady.

2. Acute Cholecystitis in Children as a Complication of Typhoid Fever.—Mont R. Reid and J. C. Montgomery were prompted by a case recently admitted to the Johns Hopkins Hospital to make a review of the cases of this nature which have been reported. Altogether they collected 18 cases of typhoid fever in children under the age of 15 who either died from, or were operated upon for, complications arising in the gall-bladder. These cases are briefly reviewed and are also given in tabular form. In one case (No. 11) of this series the acute cholecystitis did not develop until

eight months after recovery from the disease; in all the other cases the complications came on during the course of the disease. Eight patients died without operation. All of these cases were reported prior to the year 1893. Since that time 10 cases which have been treated surgically have been reported. One of these patients died—a mortality of 10 per cent. The records of the earliest cases are not supported by any bacteriological studies. In recent years cultures of the gall-bladder have usually been made at the time of operation. In this connection the leucocyte count is of interest. When the cultures have shown a pure culture of the typhoid bacillus the count has been relatively low, usually about 10,000. In one case of the series (No. 12), in which cultures were not made, there was a leucocyte count of 33,000, and in another (No. 15), which showed an organism not definitely identified, there was a count of 21,000. Six cases of the series reported were admitted to the Johns Hopkins Hospital; all were treated surgically, and all recovered. Cholecystostomy was performed in five and chloecystectomy in one of these six cases. The good results obtained in recent years are due to the fact that the operations have been performed before rupture of the gall-bladder and partly also to better surgical treatment. The writers emphasize the importance of differentiating between gall-bladder complications that do and those that do not require surgical treatment. Slight pain and tenderness in the region of the gall-bladder, associated with a slight degree of spasticity of the right rectus muscle, are not so very unusual during the course of typhoid fever. The vast majority of these patients get well. Operating on typhoid fever patients for minor symptoms of cholecystitis is probably only slightly less justifiable than operating upon all patients that have pain in order to prevent intestinal perforation. Nevertheless, the low operative mortality justifies operation when there is grave doubt as to the nature of the condition of the gall-bladder. Acute suppurative typhoidal cholecystitis should receive immediate surgical treatment, for in such cases rupture of the gall-bladder may occur, and thus lessen many times the chances of recovery. The writers believe that the best treatment is cholecystectomy.

7. **A Case of Non-Parasitic Hæmatochyluria.**—H. H. Hampton, resident gynecologist of the Johns Hopkins Hospital, bases his study of this subject upon the case of a woman, 23 years of age, from the mountains of Virginia, admitted to the clinic in August, 1919. Careful study of the case showed that it is one of non-parasitic chyluria that has persisted over a period of nine years in a young woman whose health is below par. She has a mitral stenosis that has given symptoms at intervals for more than ten years. Her chief complaint has been general weakness with frequent syncopal attacks. Just how much of her disability has depended upon one or other of these conditions, it is difficult to say. Apparently her kidney function is unimpaired. There is no evidence of renal or pulmonary tuberculosis. The leak in the lymphatic system is located in the right kidney. Upon starvation or a fat-free diet, the urine becomes fat-free, blood cells and albumin persisting. Posture influences but does not control the amount of lymph leakage. Increased water intake and urine output increases the "fat loss." The leakage of lymph in most chyluria cases is located in one or both kidneys and location of this connection in the ureter or bladder should be made with caution. The connection between the lymphatic and urinary systems, which is usually located in the kidneys, probably consists of ruptured varicose lymphatics belonging to the deep lymphatic system of the kidney. Lymph fistulæ, wherever they occur, are generally associated with mechanical blockage of the large trunks or thoracic duct.

Edinburgh Medical Journal.

January, 1920, *n.s.* xxiv, 1.

1. The Influence of Edinburgh on McGill University. Jonathan Meakins.
2. A Binet Scale for the Blind. W. B. Drummond.
3. Beriberi Among the Chinese in France. A. R. Leggate.

3. Beriberi Among the Chinese in France.—A. R. Leggate had the opportunity, in 1917, when the Chinese were arriving in France, of studying 269 cases of beriberi in the Chinese General Hospital. There are two types, the wet and dry. In the former the first symptom is anasarca. Every part of the body may be edematous, but the edema is most easily detected and usually most severe in the lower limbs. In the latter there is no edema whatever. The view that the occurrence of beriberi was intimately associated with a diet in which polished rise bulked too largely was supported by the writer's observations. Beriberi is one of the many types of peripheral neuritis, and one of its peculiarities is that it is usually, not always, associated with edema. The three main symptoms of the disease are edema, loss of deep reflexes, and paresthesia. Paresthesia takes the form of numbness and formication, sometimes the former only, less often the latter only, but usually both. Diarrhea, cardiac weakness, dyspnea, and other symptoms may occur. In uncomplicated cases there are no febrile symptoms, no loss of appetite, and no quickening of the pulse. Inability to rise from a squatting position is a symptom usually confined to the dry type. In the coolies who are fed mainly on polished rice the disease may show itself in from forty to fifty days. An important part of the treatment consists in discontinuing polished rice diet, and administering yeast, eggs, beans, and peas, and in the edematous type, purgatives.

Il Policlinico

November 9, 1919, xxvi, 45.

Atropine in General Diagnosis.—Siciliano refers to the action of atropine instilled into the eve in the diagnosis of the autonomous nervous system. The pupil may be likened to the heart in this respect. The duration of the action of the drug on the pupil is of much significance in this connection, and also the action of the large as well as small dose. One eye only is used in the test, the other serving as control. One drop of a 1 per cent. solution is first instilled and the time of dilatation noted for each eye, as well as the amplitude of the pupil and the time of return to the *status quo ante*. The author attempts to establish a scheme as follows: If the iridoconstrictor (motor oculi) innervation is intense and the sympathetic innervation slight there is notable augmentation of the pupillary diameter without extreme dilatation, while duration of dilatation is brief and return rapid. On the other hand, if sympathetic innervation is intense and motor oculi innervation slight we see the maximum of dilatation with slow return. Should both innervations be slight dilatation is of low degree and return slow, while if both are intense there is a maximum dilatation with rapid return.

Le Progrès Médical.

November 29, 1919, xlvii, 48.

Arterial Pressure in Anxious States.—Euzière and Margarot refer first to the rôle of the sympathetic in anxious syndromes. Recently the question has been brought up in connection with psychic phenomena on the one hand and internal secretions on the other. The authors have become convinced that in anxious states sympathicotonus is increased. Thus the oculocardiac reflex is inverted or abolished, the tendon and masseteric reflexes are quickened, and there are a slight hyperglycemia, anorexia, dry mouth, constipation, tachypnea, cardiac acceleration, and, finally, elevation of blood pressure. The latter has been especially studied. There are two classes of hypertensives, in one of which there is nothing to account for the increase, while in the other there is some other factor which makes for this increase. In the second class, therefore, the anxious state aggravates a condition already present. Measurements were taken in subjects with primary or constitutional anxious states, anxious psychoses and melancholia. The increased tension was transient, and when the mental state subsided the tension fell. As implied the phenomenon is not an isolated one, but part of the syndrome of sympathicotonus. It is not claimed that the increase in tension reaches any unusual figures, but simply that there is a marked rise from tensions which seem to have been rather low than high.

Book Reviews.

THE NUTRITION OF THE FETUS. By J. MORRIS SLEMONS. New Haven: Yale University Press, 1919.

THIS is the Oration in Obstetrics delivered at the annual meeting of the Ontario Medical Association held in Toronto, in May, 1919, and is reprinted from the *American Journal of Obstetrics* for August, 1919. The work is based upon investigations made by Dr. Slemons and others in the Department of Obstetrics and Gynecology in the Yale Medical School through the use of the Julia E. Brooker fund. It is not necessary to analyze the work here, for this the reader can do for himself. It is very suggestive, however, and will well repay perusal. While not setting forth any novel theories of fetal nutrition, Dr. Slemons gives an excellent summary of what is known on the subject, and disposes of several misconceptions held by some medical men as well as by the laity.

THE OXFORD MEDICINE ADVANCE PAGES. Edited by HENRY A. CHRISTIAN and Sir JAMES MACKENZIE. Vol. II, Part 1. New York: Oxford University Press, American Branch, 1919.

THIS part contains three chapters dealing respectively with "Diseases of the Heart," by Sir James Mackenzie; "Bronchial Asthma," by J. Chandler Walker, and "Hay Fever," by the same. The first article fills 112 of the 149 pages and is one of the most valuable contributions that has appeared in the work thus far. Those familiar with the author's views on the heart and its diseases, views which have received wide acceptance and have greatly modified our conception of these affections, will find them restated here in new and very lucid terms. Not the least of Sir James Mackenzie's services to mankind has been the quieting of the terror formerly inspired by the term "heart disease," a terror which he has shown to be in many cases groundless.

The chapter on "Asthma" by Dr. Walker is most illuminating and one that can be read with profit by the general practitioner of an earlier generation who is not as familiar as he should be with the rôle of protein sensitivity in the causation of this malady. The article on "Hay Fever" by the same author is treated along the same lines, the disease being regarded as a manifestation of anaphylaxis, and susceptible of cure by the same method as is employed for the relief of bronchial asthma.

THE URETHROSCOPE IN THE DIAGNOSIS AND TREATMENT OF URETHRITIS By Major N. P. L. LUMB, O.B.E., R.A.M.C.(T.C.). A contribution to Urethroscopy. Illustrated by 40 original illustrations. New York: William Wood & Co., 1919.

THIS little book has but 47 pages of text, but this is ample for the purpose because but little space is devoted to apparatus, the author merely describing and figuring the Wyndham-Powell urethroscope which has an air dilatation attachment. By reason of the large number of colored plates the work is virtually an atlas, the text tending to follow the plates rather than the plates the text. Thus visualized, the work is an excellent one. Short histories of some of the cases illustrated by the plates are given. No less than 12 of the 40 plates are devoted to the normal urethra. The more one looks into the book the better it pleases.

THE PREVENTION OF DENTAL CARIES AND ORAL SEPSIS. By H. P. PICKERILL, M.D., Ch.B., M.D.S. (Birm.), L.D.S. (Eng.), Professor of Dentistry and Director of the Dental School in the University of Otago. Second edition. New York: Paul B. Hoeber, 1919.

ALTHOUGH this is a second edition, the work is practically a new one to American readers, and indeed the amount of new matter included in it would make it of value even to those possessing the earlier edition. This new matter consists of accounts of the author's investigations into the bacteriology of the mouths of immune Maori children, the anatomy and physiology of mastication, thyroid insufficiency and dental caries, and the relationship between oral and other alimentary secretions. There is much in the book of great interest to practising physicians as well as to dental surgeons, for every day the dividing line between the two professions is wearing thinner. One very interesting chapter is that on the diet of races relatively immune to caries, in which the author shows that, contrary to the general belief, meat eaters are more subject to caries than those who are largely or wholly vegetarians, and that the most immune are those who use sapid and highly seasoned food and are given to mastication, thus stimulating the secretion of alkaline saliva. Dr. Pickerill urges that the medical curriculum should include a short course on stomatology and should receive practical instruction in the relation of diet to caries, especially during childhood. By starting the children in his clientèle on a correct diet he will go far toward saving them from much dental misery.

HALF A CENTURY OF SMALLPOX AND VACCINATION, Being the Milroy Lectures delivered before the Royal College of Physicians of London on March 13, 18 and 20, 1919. By JOHN C. MCVAIL, M.D., LL.D. Edinburgh: E. & S. Livingstone, 1919.

THIS volume is the fifteenth contribution which the author has made to the subject of smallpox and vaccination, and comes somewhat in the nature of his valedictory. For this reason, as he states in the preface, he has endeavored in the first lecture to survey the statistical and epidemiological history of smallpox in modern times. The second lecture is largely devoted to a rebuttal of the contention that infantile vaccination, while protecting the individual, makes smallpox so mild and so difficult to recognize where it is not entirely prevented, that the result is such a spread of infection from missed cases as to render the practice, on balance, disadvantageous to the community. The final lecture gives an account in considerable detail of the measures of prevention and control which, in the absence of systematic vaccination and revaccination, ought, in the author's judgment, to be adopted when the disease appears. A list of the author's previous contributions is appended to the preface. The last six of the 86 pages of the volume are devoted to correspondence concerning some of the views held by the author.

THE EXACT DIAGNOSIS OF LATENT CANCER. An Enquiry into the True Significance of the Morphological Changes in the Blood. By O. C. GRUNER, M.D., Author of "Biology of the Blood Cells," "Studies in Puncture-Fluids," "A Code System in Pathology," etc. Philadelphia: P. Blakiston's Sons & Co., 1919.

THE author devotes 79 pages, with 19 illustrations and 21 tables, to answering two questions which, as he states in the preface, sometimes arise in practice: (1) The patient or the friends ask if there is any further test for cancer by which to become quite sure that an operation is really inevitable; (2) the surgeon himself desires to know if his patient is really free of disease after an apparently successful operation. The author holds that the answer is obtained by ascertaining, from a close study of the blood, whether or not the patient is a substrate compatible with the presence of cancer. The process of arriving at a diagnosis of latent cancer involves the preparation of the patient, the collection of the material, the study of the material, the records of findings, and the building of an opinion. The degree of exactness of diagnosis of a blood state, whether it be cancerous or any other, is limited solely by the time and care bestowed upon it, by the clearness of the law of the blood cells, of the law of continuity in pathology, and by the broadness of conception which one is willing to hold in respect of problems which progressively unfold themselves as one proceeds.

LA MÉNINGITE TUBERCULEUSE DE L'ENFANT. Par le Dr. A. LESAGE, Médecin des Hôpitaux de Paris, Membre du Comité supérieur de protection des Enfants de premièr âge. Paris: Masson et Cie., 1919.

IN this small book Lesage has included a very complete discussion of tuberculous meningitis, especially as it concerns infants of less than two years. It has not been generally recognized that children of this age are often affected with this disease, but the author has had an unusual experience in this respect and feels that the small figures reported by other investigators are possibly due to incomplete or imperfect observation. There is nothing new or startling in this monograph, but it is very complete and will be found to make interesting reading.

Society Reports.

SOUTHERN SURGICAL ASSOCIATION.

Thirty-second Annual Session, Held at New Orleans, December 16, 17, and 18, 1919.

THE PRESIDENT, DR. JAMES E. THOMPSON OF GALVESTON, TEXAS, IN THE CHAIR.

The Injection of the Gasserian Ganglion for Neuralgia and Other Conditions.—DR. CARROLL W. ALLEN of New Orleans, said that the proper execution of the technic of this injection demanded a thorough knowledge of the osteology of the parts involved, also of the soft parts below the floor of the skull and within the skull adjacent to the foramen ovale, and the effects upon these internal parts of the alcohol injected. This information was acquired only by diligent study and extensive clinical experience. The method most commonly used and the one practiced by him almost exclusively was the Härtel route. This had as its external landmarks the point of entrance of the needle, which was within an area on the cheek opposite the three upper molar teeth; in many cases these teeth had been extracted in efforts to obtain relief, but their former position was easily determined. As the foramen ovale was a fixed point behind and above this area on the cheek, when the needle was entered opposite the first molar it naturally had to follow a more oblique course and traversed a greater depth through the soft parts than when entered opposite the last molar tooth, which was more nearly under the foramen ovale. As the needle which was used was long and slender, its point could be more accurately manipulated when advanced through the shorter route and the difficulties encountered were often less, as the route passed through some muscle, the contraction of which served to deviate its point, and this was more marked in the longer route. It had been found that chromium sulphate exerted a curative influence on the keratitis which sometimes followed these injections. Accordingly, he had been giving all of his recent cases a four grain tablet of this remedy three times daily as a prophylactic, advising its use for about one month. In his last twelve cases there had been no evidence of eye inflammation. From his experience, he was convinced that when the value of these injections for these conditions was recognized, they would be extensively used, as any method which afforded such marked relief was a blessing to these unfortunates in allowing them to retain their mental faculties unclouded by morphin until the disease had advanced to such a point that narcotic oblivion was to be preferred.

Gunshot Wounds of the Brain with Retained Missiles.—DR. CHARLES BAGLEY, JR., of Baltimore, stated that during the spring and summer of 1918, 175 cases of gunshot wounds of the skull and brain were studied at the General Hospital No. 2, Baltimore. Of these cases 80 required one or more operations. The total number of operations performed was 108. In this series there were 9 patients with metallic foreign bodies in the brain substance. Of this number, 7 cases were operated on for the removal of the foreign body, one case was discharged without an attempt at removal because of the small size of the missiles and their position in the brain, and the fourth case with a metallic foreign body in the right cerebellar peduncle died as a result of an abscess in the occipital lobe, although no attempt was made to remove the metallic foreign body. Removal of the foreign bodies was undertaken because of the presence or probability of infection. In one case, with a machine gun bullet in the right cerebral hemisphere, there was a small abscess which contained staphylococcus pus. In another there was a large abscess in the left temporal lobe, which also contained a staphylococcus pus. In two others the foreign bodies removed at operation gave positive staphylococcus cultures. The foreign bodies removed from the three remaining cases gave negative cultures. He was of the opinino that because of the likelihood of metallic foreign bodies of average size giving trouble even several months after the injury, they should be removed if their removal did not offer too great difficulties. He recognized, however, that metallic foreign body substances might remain encapsulated in the brain substance without giving trouble, and he gave as an illustration of this the case of a civilian in whom a large lead bullet had remained in the left occipital lobe for ten years. Of the operative cases of the series, all had recovered, or were at this time convalescing.

Spermatoceles and Hydroceles Containing Spermatozoa.—DR. RANDOLPH WINSLOW of Baltiuore stated that the occurrence of 6 cases of hydroceles containing spermatozoa, and of one of true spermatocele associated with a hydrocele, at the University Hospital, Baltimore, in the course of a few months, had directed his attention to this condition. In the cases of which he had notes, no mention was made of an injury, except in one instance, that of a man, 55 years of age, who was struck on the scrotum when he was a boy. He had had a hydrocele for 40 years, but there was no way of determining how long the spermatozoa had been present in the sac. He thought it probable that in some cases, at least, true spermatoceles ruptured into hydroceles and in that manner permitted the ingress of spermatozoa into the sac of the tunica vaginalis. In one case there was a hydrocele with clear contents and contiguous to, but not communicating with it, was another cyst containing a milky looking fluid, which showed spermatozoa when examined with a microscope. This cyst might have ruptured into the hydrocele if it had remained longer unoperated. The treatment of true spermatocele was usually excision, while that of the hydrocele containing spermatozoa was similar to that of ordinary hydroceles, namely, excision of the tunica vaginalis or suturing the tunica behind the testicle, or Andrew's bottle operation, etc., and the results appeared to be equally as good as those of uncomplicated hydroceles.

Hypodermoclysis.—DR. WILLARD BARTLETT of St. Louis stated that when continuous hypodermoclysis was used, the visible dropper and screw clamp were added. An attempt was made to get gravity pressure by placing the container directly above the patient. As to the fluid employed, Dr. McKittrick proposed plain, freshly distilled water. In view of the large amounts of fluid instilled, and the harmful effects which occasionally followed the absorption of abnormal amounts of sodium chlorid, he did not countenance its use, especially in patients already weakened by disease or surgical trauma. The water was heated to between 100° and 110° F. and then poured into the warm container. The slender needle was first thrust through the center of a square fold of gauze and was then ready for use. This prevented the hand touching the needle or contaminating the skin, which had been cleaned with alcohol, and painted with iodin diluted one-third its strength with alcohol. The fluid was then started through the tubing, and when all air had thereby been expelled, the tubing was temporarily pinched off with the thumb and finger, and the operation begun. In unconscious patients, the needle was plunged up to its flange in the subcutaneous tissue, at a point near the outer border of the pectoral muscles, midway between the nipple and the head of the humerus. By this method, the fluid extended directly into the subcutaneous tissue of both the axilla and the breast. Absorption was almost twice as fast as it was when the injection was under the breast alone. The needle was held in place by a strip of adhesive, the original piece of gauze being utilized to prevent contamination of the needle wound. If the needle remained in very long, alcohol was dropped over this region from time to time, and gauze was then placed over the exposed portion of the needle, adhesive and all. A hot water bag, wrapped with a towel, was placed directly under the axilla, and another one over the gauze, which protected the needle. The fluid should not run in so fast, but what with the aid of the hot water bottle the tissues, although very slightly edematous remained soft and pliable. Only the one side was used at a time regardless of the amount of fluid to be infused. Usually 800 to 1200 c.c. was given during one injection, though a much larger amount could be given if it was allowed to run in slowly. Between one and two hours was all the time needed in the ordinary case, and frequently one hour was sufficient, this differing with individuals. The giving of hypodermoclysis was easily accomplished without pain or distress in

most patients not under the influence of a narcotic. The procedure had completely supplanted the rectal administration in his service, and where intelligently applied, seemed not to have unduly disturbed the patient, had never been attended by an accident, and had given the greatest satisfaction.

Shoes.—Dr. Robert Carothers of Cincinnati said that the very great majority of adult Americans had some defect or acquired deformity of their feet. Abnormal feet were responsible for many of the other defects in their anatomy, and in many and most instances the foot deformity was caused by ill-shaped and incorrectly designed shoes. There was an old saying that when your feet hurt, you hurt all over. It might as truthfully be said that when your feet were deformed, there was likely to be some deformity elsewhere in the body. How frequently we found one knee sprung and bucked knees associated with and relieved by correcting flat feet. Almost as frequently did we observe some abnormality of the lumbar and sacroiliac regions caused by bad feet, and occasionally round shoulders were corrected by better feet. It was quite necessary for one to have good feet, that he might have good joints elsewhere, and that the framework of the body should be correct, and the musculature of the body be well developed. An examination of many athletes would prove this statement. Was it not possible and necessary for an individual to have good feet, good joints and well developed muscles, especially of the back and abdomen, to prevent a visceroptosis? It was.

Empyema at the Cincinnati General Hospital During the Influenza Epidemic.—Dr. Joseph Ransohoff of Cincinnati drew the following conclusions: (1) It is not the empyema which kills when it is a complication of influenza. Too early operative measures are to be avoided and to be limited to simple aspiration. (2) Operations done not earlier than the end of the second week give the best results. Rib resection is indicated only when insufficient room is at command without it. (3) General anesthesia is not necessary in most cases, but from our experience does not increase the mortality of the operation. (4) The old methods of drainage should be given up for some type of the occlusion method, by which the entrance of air into the pleural cavity is prevented and the egress of pus facilitated. A suction apparatus attached to the tube we deem unnecessary. (5) Flushing of the cavity with Dakin or other solution is unnecessary, except when defervescence does not occur, thereby indicating that the spontaneous sterilization of the cavity is not progressing normally. (6) The small pneumothorax which sometimes remains after the healing of a cavity, as has been demonstrated by the *x*-ray, is negligible, since it disappears spontaneously in a short time. (7) Twenty of the operations were performed by myself, the remainder by various attending surgeons of the hospital, to whom I am greatly indebted for carrying out the suggestions which I believed were essential in securing so low a mortality in the treatment of our empyema cases. (8) The fact that we were enabled to secure end results in all but 8 of our cases shows one of the many advantages of an efficient hospital social service.

Pseudomyxoma Peritonei.—Dr. M. H. Biggs of Ruthcrfordton, N. C., stated that pseudomyxoma peritonei had received but scant recognition by American obscers or writers. It resulted from the rupture of a pseudo-myxomatous cyst of the ovary or appendix, the epithelial cells thus discharged being implanted on the peritoneum and producing pseudomucin and tumor formation. It was originally believed to be secondary to a cyst of the ovary, but was now known to originate also in the appendix. The pathology of the condition was reviewed, and the author considered that it resulted from cellular implantation. Failure of this condition to result from rupture of a pseudomyxomatous cyst, as must often happen, was explained by infrequent rupture of the smaller loculi which contained active cells, but cells that were firmly adherent to their basement membrane; and to thinning of the walls of the larger loculi, the cells at the point of rupture being poor plants. The symptoms were those produced by mechanical interference with function. The findings at operation varied from a small amount of jelly-like material with irritation of the peritoneum, to a large quantity of thick, tenacious material and secondary tumor formation of the peritoneum covering the abdominal viscera. The author described a fine pebbly appearance of the peritoneum which he considered the early stage of pseudomyxomatous development. Age was an important diagnostic factor, the lesion occurring in advanced life, after the menopause in the female, at a time when many other conditions could be excluded. The average age in his cases was over sixty years. At operation it was important to remove all the original growth. When this was done, and a careful toilet of the peritoneum made, early cases might be cured. The following were the author's conclusions: (1) This condition is much more frequent than is generally recognized. (2) It is caused by cellular implantation. (3) It is histologically benign, but may be clinically malignant. (4) If it is considered to be a form of cancer, it must be assumed that pseudomucin inhibits its destructive power. (5) It may originate in the ovary or the intestinal tract; ovarian origin being by far the most frequent. (6) If it is appendiceal in origin, the appendix has been the seat of chronic inflammation. (7) Early invasion of the peritoneum is characterized by a pebbly appearance. (8) In early cases the condition will sometimes be cured, and at any stage it may be inhibited, by operation.

Pseudomyxoma Peritonei in Male Subjects.—Dr. M G. Seelig of St. Louis said the most striking, outstanding and characterizing feature of the disease was the accumulation in the peritoneal cavity of a colloid exudate, varying in consistency from a syrup to solid colloid masses. This exudate was the only constant accompaniment of the disease. In some instances there was a progressive cachexia, leading to death; in others the disease ran a benign course with perfect recovery after suitable operative procedure and often doubtlessly without operation. In the vast majority of cases the primary cause of the disease was the rupture of a pseudo-mucinous ovarian cyst. In a by no means small minority of the cases the cause of the rupture was a mucocele of the appendix. Up to date the latter cause was the only one that had been found to be responsible for the disease as it occurred in males. In some cases the colloid material was confined in loculi whose walls were made up of a connective tissue new growth so firm and abundant that it fused all the viscera into a solid mass, molded, as it were, into the peritoneal cavity. Some authors considered this process as a type of plastic foreign body peritonitis; others considered it as secondary myxomatous degeneration of the peritoneum; others as multiple cystic lymphangiomata; others as a type of innocent implantation metastasis; others as frank carcinosis peritonei, and still others as a specific type of peritoneal infection producing mucin. The important fact was that the appendix itself was the sole responsible agent for the disease as we encountered it in the male. Treatment consisted in removing the primary focus of disease—the appendix, and scouping out that portion of the exudate which could be reached conveniently and with safety, without any attempt to clear the abdominal cavity of its entire pseudomucinous contents.

Congenital Diaphragmatic Hernia With Report of a Case.—Dr Louis Frank of Louisville stated that a careful review of the literature since Scudder's paper revealed only 41 additional cases reported, and one of these a personal communication. He was forced to believe from conversation with some of his *x*-ray friends. that there had been others, but whether they occurred in adults, or whether they ever came to operation, he had no means of knowing. Of the additional cases recorded in the literature, only 5 were reported as congenital, those observed and operated on being accounted for largely by the trauma of war. Most of the cases occurred in soldiers as the direct result of missiles. In this type of case the hernia was almost uniformly on the left side. A study of these cases indicated that the abdominal method of approach was the most popular. This was easy to understand in the cases of traumatic origin where a missile had entered the abdomen primarily. He found also that one patient with congenital hernia was subjected to gastroenterostomy, this being the only feasible procedure to obtain relief from urgent symptoms which were present. Of the

additional cases which he had collected, two were observed post-mortem. One was advised against operation, the pathology having existed without much discomfort, according to the history, for a period of 45 years, the patient at the time of diagnosis and presentation being 59 years of age.

A Warning Against Promiscuous Uterine Curettage.—Dr. J. WESLEY BOVEE of Washington, D. C., said it was well to point out the many dangers incident to uterine curettage. Not infrequently was a pregnancy in its first month thus scraped from the uterus and perhaps never recognized. Certainly humiliation had often come to the operator by discovering during curettage that an unsuspected pregnancy had been interrupted. Very often pregnancy had unnecessarily been ended by curettage for incomplete abortion. The literature teemed with reports of cases of perforation of the uterus by the curette with or without dangerous sequelæ and even death. The cervical canal was so constantly infected that it did not seem strange infection might be carried from it into the uterine cavity by the curette, sound or dilator. Again, it was shown by Curtis that infection of the endometrium was nearly always associated with similar infection of the tubes and most often gonorrheal. Curettement under such conditions was strongly contraindicated. The dangers from curetting were ever present, whether in the hands of the skilled surgeon, or of those of the less fortunate confrère, or of the midwife, and should be practically excluded from the infected uterus. If chronic endometritis as a clinical entity was to be ruled out, one potent indication for curettage in the past would be removed.

The Operative Treatment of Pelvic Inflammation.—Dr. CHARLES R. ROBINS of Richmond, Va., read this paper, of which the following were the conclusions: "(1) Pelvic inflammation is most frequently due to one of two causes, gonorrhea or infections following abortion or labor at term. (2) These two types differ widely as to methods of treatment. Gonorrheal cases are, as a rule, local in their effect and are not attended by symptoms of absorption, Infections following abortions or labor at term, on the other hand, always manifest symptoms of intense absorption and are of the nature of a septicemia. (3) Operation on gonorrheal cases may be performed with comparative safety at any stage, but radical operation on the septicemic group in the acute stage is attended by a high mortality and should not be done. (4) Delay in operation on the septicemic group is an advantage, is less dangerous and often results in symptomatic or absolute cure. (5) The best method of treatment is that usually known as Fowler, Ochsner-Murphy treatment. (6) The cases in which operation is indicated are those which have passed into the chronic stage, but a moderate delay is permissible. (7) In operation it is seldom practicable to restore the function of the tubes. They really become the foci of infection, their removal stops the toxic process, and if they are left further trouble is liable to manifest itself. (8) The objects of the operation are to remove the tubes and preserve the essential organs of menstruation, the uterus and the ovaries. (9) The details of operation on which emphasis is laid are the complete removal of the tube by excising also the uterine portion, the attachment of the broad ligament to the horn of the uterus, thereby elevating the ovary away from pressure and adhesions and the temporary suspension of the uterus."

A New Suspension Operation for Retroversion of the Uterus.—Dr. F. G. DUBOSE of Selma, Ala., said this operation had given uniform satisfaction in more than 50 operated cases, without a failure in any instance to correct and hold in position the retroverted uterus. The following was the technique which he employed: A linen or silk thread on a full curved needle was run through the broad ligament close to and immediately underneath the round ligament, beginning at the internal abdominal ring, carried across the fundus of the uterus under the peritoneal coat, passing underneath the opposite round ligament until the other internal ring was reached. The needle was unthreaded and a ligature carrier was passed through the aponeurosis of the rectus muscle about an inch from the abdominal incision and on a level with the internal abdominal ring through the musculature of the anterior abdominal wall until it emerged from the parietal peritoneum at the internal abdominal ring. The linen suture was threaded on this carrier and drawn through the abdominal wall. The same technique was carried out on the opposite side; then both ends of the thread were caught and the uterus pulled up to the desired position. Two hemostats were then applied to the thread, one on either side, where it emerged from the aponeurosis of the rectus muscle. The peritoneum was then closed, the aponeurosis of the rectus muscle sutured, and while the forceps were still in position the linen suspension thread was tied. The placing of the forceps prevented the drawing too tightly on the suspension suture, which would bring the uterus too far forward and possibly so narrow the space between the uterus and abdominal wall as to result in hernia of the intestines or obstruction. The hemostats were removed after tying the suspension suture. The closure of the abdominal skin incision was then completed.

Unraveling the Mysteries of Right-Sided Abdominal Pain in the Female.—Dr. JAMES N. BAKER of Montgomery, Ala., stated that the most important step in the efforts to arrive at sound conclusions was the history, carefully and sequentially recorded by the surgeon himself, and going back to the very beginning of the trouble. Careful search must be made in this long trail for acute "flare-ups," the proper interpretation of which would oftentimes serve as valuable guide posts. Was the acute condition attributable to the appendix, to the tube or ovary, to a renal colic, to a pyelitis, to a ureteral stone or stricture? A painstaking history seldom failed to reveal one or more exacerbations which pointed the way to the organ involved. One should always hesitate to hold responsible an appendix for chronic right-sided pain whose history did not unfold definte acute attacks; nor should too much importance be attached to the *x*-ray findings of a distorted and stagnant appendix whose history failed to reveal either acuteness or reflex digestive disturbances. The reverse pathological condition might obtain. Instead of a ptotic and dilated condition of the cecum, one might encounter a maldescent or partial rotation of the cecum, which was bound down and otherwise distorted by bands, either congenital or acquired, or both. This gave the picture familiarly known as Jackson's veil or Lane's kink. Here also the appendix might show inflammatory changes, but could not be held primarily responsible. It was to this class of patients that most careful study should be given. The employment of both the *x*-ray and the cystoscope was mandatory. If the genitourinary tract could be shown to be free from pathology, then, and not until then, was one justified in making his attack upon the intestinal tract. The mere removal of an appendix might not bring relief. This was evidenced by the host of sufferers still clamoring for help and who presented neat scars over McBurney's point. Liberal incisions should be employed, a careful survey of the entire area made, and all needed surgery applied.

Stone in the Kidney.—Dr. CHARLES H. MAYO of Rochester, Minn., said that stones formed in the cortex, in the calices, and in the pelvis of the kidney. The kidney was constantly eliminating living bateria, so that it was always exposed to infection, and usually showed no results from it except gross lesions of rare occurrence. Stone formation might proceed with exceeding slowness, and without pain or other symptoms until marked destruction of the kidney occurred, mixed infection developed, or until the stone assumed great size or became loosened and moved into the ureter. Minute infarctions occurred, as shown at necropsy following death from an acute attack, and the results of similar lesions in the past were shown by scars or gross kidney change. Stone formation was evidently the result of the combination of two types of bacteria; the first created an infarction with minute necrosis causing mucoid exudate to form; the second factor was the elimination at the same time of the stone-forming bacteria that might come in contact with the mucoid material. If the stone originated in the cortex of the kidney, its growth would be slow, but if it originated in the calices or pelvis, growth might be much more rapid because of the ease with which its chemical material was secured.

The Results of Operations for the Removal of Stones from the Ureter.—Dr. E. S. JUDD of Rochester, Minn.,

stated that stones in the ureter might pass voluntarily into the bladder. In his experience 12 per cent. of a group of 400 persons had admitted the passing of stones. Most of these calculi originated in the calices and in the kidney pelvis, although in some cases they might arise in the ureter in association with ureteral stricture. Stones might be lodged in the ureter and produce no symptoms and again they might produce the classic syndrome of ureteral calculus. The diagnosis, however, should always be checked up by the *x*-ray and cystoscope, using ureterograms as advocated by Dr. Braasch. After the diagnosis was established, if the patient was having frequent and severe attacks of pain, it seemed advisable to observe him for a time, knowing that a certain percentage of stones would be passed. The possibility of severe pressure in ureter and kidney, resulting in a hydronephrosis or pyonephrosis, must not be forgotten. In cases in which stone was apparently causing no symptoms, it seemed advisable to remove it unless there were contraindications. There were two methods of treatment, the nonoperative and the operative. The first method consisted in the dislodging of the stone by a ureteral catheter or small sound. The contraindications to this procedure, as given by Braasch, were: (1) A stone 2 cm. or more in diameter; (2) acute ossification with continuous obstruction; (3) acute renal infection; (4) the patient's intolerance to cystoscopic manipulation, and (5) anatomical deformity. Braasch had had excellent results in recovering these stones, especially when they were lodged at the ureteral orifice. He used instruments and papaverin. A stone lodged in the ureter might lead to marked dilatation of the ureter above the stone and to hydronephrosis. On the other hand, there might be no changes in the ureter and kidney above the stone. The latter type of stone was small and difficult to locate. The kidney should not be removed unless extensively infected, as it might recover its function. If pyelonephritis had resulted from the stone and there was evidence of general infection, if the opposite kidney functionated well, it was inadvisable to remove the stone. If the stone was in the lower third of the ureter and kidney was badly damaged, it was better to remove the kidney and leave the stone. The stone might have to be removed later because of pain. When the stone obstructed the ureter so that the function of the kidney on the same side could not be ascertained it seemed best to remove the stone only. Conservative methods were justified in any case of chronic kidney infection, while radical methods must be employed in acute, severe infections. Nephrectomy was the operation of choice. In two cases cited complete anuria was caused by stone in the ureter; both recovered after removal of stone. Neither of the patients appeared to be sick as a result of the anuria. When bilateral calculi exist the operative method appeared best removing one stone at a time. The side showing evidence of acute trouble was operated on; if there was no apparent difference he preferred to remove the stone from the ureter on the side having the least function. Dr. Braasch had removed ureteral stones in about 126 cases by the nonoperative methods. During the same period 400 patients were operated on; about one-half the patients required operation to rid them of stone. Forty-eight cases (12 per cent.) of the 400 patients had passed stones with gravel before operation; in nine cases multiple stones were passed. The operative results were good, two deaths occurring in 400 cases, only one of which was directly due to the operation. The study of this series of 400 patients operated on for ureteral stone and the 125 patients treated by Braasch led him to conclude that before instituting any method of treatment for the removal of stones from the ureter it was well to bear in mind that a large percentage of such stones passed voluntarily; in the early cases, therefore, it was best to delay treatment.

Uretero-Ureteral Anastomosis.—Dr. REUBEN PETERSON of Ann Arbor, presented this communication, of which the following were the conclusions: "(1) No case of uretero-ureteral anastomosi can be classed as cured or successful until so proved by the most modern exploration of the repaired duct and the corresponding kidney. (2) A study of the literature of ureteral anastomosis by various methods shows that anastomosis by the end-to-end, end-in-end and end-in-side methods was a perfectly feasible procedure. (3) Not only can the duct be made patent with little or no stricture, but a functionating kidney and ureter can result. (4) In skilled hands the primary mortality due to any one of the three methods should be very small. (5) Leakage after uretero-ureteral anastomosis probably in the large majority of cases means failure, since it leads usually to stricture, hydroureter and hydronephrosis. (6) Judged from this standpoint the invagination methods are preferable to the transverse end-to-end method, since they are followed by fewer cases of leakage. (7) The end-in-end method of anastomosis was the operation of choice, since it was extremely simple and sacrifices the minimum amount of the ureter. (8) As claimed by Alksne, from an experimental study of the different methods of uretero-ureteral anastomosis there is evidence to show that every uretero-ureteral anastomosis, no matter how perfect may be the surgical result, will be followed by a slight degree at least of hydroureter and hydronephrosis. (9) Although such a claim is borne out by the findings in the case reported, it needs to be confirmed by careful examination of other operated cases."

Sarcoma of the Stomach, With Report of a Case and an Analysis of 86 Cases Operated On.—Dr. WILLIAM D. HAGGARD of Nashville, Tenn., said primary gastric sarcoma was one of the rarest surgical diseases. There was but one example of sarcoma of the stomach in 8,400 specimens of sarcoma in the Berlin Pathological Institute. Sarcoma was present in only four of the 921 cases of gastric cancer operatively and pathologically studied by Smithies. Sarcoma of the stomach might occur at any age in life. The youngest case was that of Finlayson, a boy of three and a half years, and it had been known to occur in a man of eighty-five. Although sarcoma had been thought to be a disease of young life, it more frequently involved the stomach after the fortieth year of life. Of the 25 cases analyzed, the age was given in 20. The youngest was a boy aged 16, the oldest a woman aged 66. Sarcoma was said to metastasize in 40 per cent. of the cases. In this regard it was not nearly so malignant as cancer. It was prone to metastasize in the skin. A certain diagnosis of sarcoma of the stomach before operation was practically impossible. Only an operative diagnosis was possible. Hemorrhage from the stomach and blood in the stools was a frequent occurrence, especially in the round cell variety, although in sarcoma it was not as frequent as in cancer. Early exploration should be invoked.

A Successful Posterior Gastroenterostomy 76 Hours Following a Rammstedt Operation Which Failed to Relieve the Obstruction.—Dr. FRANK D. SMYTHE of Memphis, Tenn., submitted for consideration the advisability of resorting to posterior gastroenterostomy as a last resort in cases having recently undergone a Rammstedt operation resulting in failure to relieve the obstruction. He was justified in assuming that the operation had failed where symptoms persisted for two or three days after the operation had been done. He did not know what per cent. of patients dying following a Rammstedt operation was due directly to failure of relieving the obstruction, but he did know that whatever the percentage might be they should be given the benefits offered by a gastroenterostomy, and the surgeon adopting that policy would be agreeably surprised at the results of his efforts, and that an otherwise hopeless case would be saved.

Ileostomy for Postoperative Obstruction Following Appendectomy.—Dr. EDWARD P. RICHARDSON of Boston, Mass., said that in considering the place of enterostomy in the treatment oi intestinal obstruction, a distinction should be made between obstruction occurring spontaneously or late after operation and that occurring early after operation during the period of convalescence. In the latter class of cases obstruction was most frequently due to recent plastic or partly organized adhesions, which represented temporary rather than permanent causes of obstruction. Seven cases of obstruction occurring during convalescence from appendicitis were reported, in five of which ileostomy was done for obstruction apparently mechanical in nature. In these five cases, four of whom were children, recovery with spontaneous closure of the fistula occurred, the patients remaining well for from one to eight years. These re-

sults suggested that ileostomy was a more favorable method of treatment in obstruction by recent adhesions than in other types of obstruction. Good results depended on operation being undertaken early, and it was far better to operate on an occasional case unnecessarily than to postpone operation until the later stages of obstruction had developed.

Intussusception Resulting from Benign Tumor of the Intestine: Report of Three Cases.—Dr. A. MURAT WILLIS of Richmond, Va., said that in approximately 25,000 operations at the Boston City Hospital, adenoma of the small intestine was encountered only once, and was not associated with intussusception. Operations for intussusception in young children were often grave emergencies, and the surgeon was chiefly concerned in making a decision between simple reduction and excision of the invaginated gut. It was reasonable to assume that many specimens of intestine removed at operation for intussusception, if carefully studied, would show a tumor or the remains of a tumor spontaneously destroyed by the pressure necrosis of the accompanying hyperperistalsis and the associated interference with its vascular supply. More and better study of a larger number of intussusception specimens was necessary to determine the relationship between tumor and invagiantion.

Perforation of the Gastrointestinal Tract.—Dr. CHARLES N. COWDEN of Nashville, Tenn., said in every case of perforation, no matter what the condition of the patient, there was an absolute indication for immediate operation. If the symptoms pointed rather definitely to perforation, but the diagnosis was in some doubt, exploration was safer than delay. Closing the opening was a *sine qua non* to success in any of our operative measures. Shock was no contraindication to operation. The operation should be as expeditious as possible, only what was necessary being done, and artistic ideals should be left to less urgent cases.

Surgical Drainage from a Biological Standpoint.—Dr. J. SHELTON HORSLEY of Richmond, Va., stated that drainage from the abdominal cavity was practically always uphill, and yet it was successful because the drainage material not only relieved the pressure, but provoked the outpouring of large quantities of lymph in an effort to extrude the drainage material, and this serum carried along with it products of bacterial infection that might otherwise be absorbed. In solid soft tissue, as in the thigh, the lymph supply was not so abundant and consequently gravity drainage must be used. In the abdomen the supply of lymph was so abundant and its pouring out so constant along the drainage tract that it made little difference whether the drainage tube was pointed up or down, so long as it was of sufficient size and of the proper kind of material to provoke the outpouring of serum. Drainage should be instituted after every radical operation for cancer of the breast or neck, as it tended to prevent the absorption of cancer cells that might be left in the wound. Drainage of infected epithelial lined hollow viscera carried off the inflammatory products, afforded physiologic rest, and also produced a reversal of the circulation of the local lymphatics, that would prevent the absorption of much of the septic products. Drainage material should be selected with a view to inducing a reversed flow of lymph to carry away the liquid products of the wound, and also with a view to injuring the wound as little as possible. Ideal drainage material had not been found, but empirically combinations of gauze and rubber tissue had been worked out that were fairly satisfactory.

President's Address: Embryology and Surgery.—Dr. JAMES E. THOMPSON of Galveston, Tex., opened his address with a reminiscent sketch of the Louisville meeting in 1892, and a eulogy on the high character of the scientific work presented before the society and its value from an educational standpoint. Some embryological aspects of surgical pathology were then considered. Familiarity with common anomalies ought to be the ordinary stock in trade of every surgeon, and the broad educational value of a minute acquaintance with all errors of development could not be overestimated. Comparative embryology must not be neglected because many anomalies, especially those affecting the genitourinary organs and the rectum, could only be explained by studying them side by side with adult conditions in the lower vertebrates. A detailed description was given of the rotation of the midgut and its effect on the final disposition of the jejunum, ileum and the part of colon involved. Nonrotation and arrested rotation were illustrated by examples taken from the human body and from the lower vertebrates. In this connection misplacements of the vermiform appendix and abnormalities of the colon were discussed; also volvulus of the small intestine and retroperitoneal hernia into the fossa duodenojejunalis. The latter part of the address dealt with the origin of some cysts of the neck of branchiogenetic origin. A type of cyst lying in the upper part of the neck under cover of the parotid gland and the lower jaw was described carefully. The cysts had thin walls lined sometimes by tessellated epithelium and the contents were thin mucus. They occupied a definite position and had the following boundaries: Above, the base of the skull represented by the under surface of the petrous portion of the temporal; behind, the anterior border of the mastoid and styloid processes and the bodies of the upper cervical vertebrae; externally, the parotid gland and the medial surface of the ramus of inferior maxilla. They often communicated by a narrow neck with a similar cyst in the submaxillary region, and occasionally by means of the submaxillary cyst with a true ranula in the floor of the mouth. Numerous examples of such cysts were displayed, which supported the view that ranula was probably derived from the cervical sinus which had been carried from its original cervical position into the tongue by migration of muscles belonging to the segments of the primitive embryo supplied by the hypoglossus nerve.

My Observation of the Carrel-Dakin Treatment of Infected Wounds.—Dr. E. DUNBAR NEWELL of Chattanooga, Tenn., said that it was almost universally observed in the hospitals of the American Expeditionary Force that patients whose infected wounds had been properly treated by the Carrel-Dakin method suffered less pain, had less systemic infection, were more alert and cheerful, had a more rapid convalescence, and the wounds closed far earlier and with less deformity and less morbidity than in those patients whose infected wounds were treated by other methods. It was his firm opinion that in the Carrel-Dakin method of treating infected wounds, whether civil wounds or war wounds, we had the most valuable contribution to the treatment of infected wounds since the days of Lister.

The Results and Feasibility of Treating Lymphangiomata.—Dr. FRANCIS REDER of St. Louis said in his service of ten years at the City Hospital he had had occasion to observe only four cases. The scarcity of patients affected with a true lypmhangiomatous growth seeking hospital care must be ascribed to some extent to the fact that these tumors seldom threatened life; that they did not cause pain, nor did they cause the individual to feel sick. Lymphangiomas were usually congenital, and the thought of a mother taking her baby to a hospital for a small tumor mass somewhere on its body which did not cause pain was rather a remote one. When confronted with a tumor of any sort the thought uppermost in the surgeon's mind was whether or not the growth was a suitable one for excision. Extirpation was the radical and most satisfactory measure in the treatment of lymphangioma, if the operation could be safely done. In that form of nevoid lymphangioma affecting the tongue, causing marked enlargement of that organ and forcing it to protrude from the mouth, partial removal by a cuneiform excision was the only measure, even at the risk of causing progressive inflammation or lymph fistulæ. A similar procedure, but with greater risk, could be undertaken when the disease had attacked the lip. In comparing the results obtained in the lymphangiomas with those of the hemangiomas it must be said that they had been somewhat disappointing. This must be attributed to the difference of the fluids in these tumors. So far eight cases had been injected with boiling water. The reaction following the injection seemed unusually severe when compared with the reaction following the injection of a hemangioma. For twenty-four hours the patient gave evidence of feeling sick and usually registered a temperature of 100° to 101° with a pulse of 100 to 110. When the reaction had passed off, which was

generally after the third day, the feeling of euphoria returned. The increase in the size of the tumor after the injection, although considerable, bore a minor ratio to the increase seen in hemangiomas after injection. Inflammatory processes seemed active and prolonged, the skin giving evidence of the severity by a marked reddish discoloration. Retrogression seemed very slow. It required from four to six months to show that the tumor had decreased in size. In the case of a baby with the left foot about four times its normal size, it required two years for the foot to attain the size to be fitted with a shoe. Subsequent injections were almost impossible to be given, if the initial injection had been a thorough one. The tumor mass was so hard that no hot water could be forced into it. Of the eight cases injected with boiling water all had been benefited, but in none had the tumor entirely disappeared.

Some Plastic Operations on the Rectum.—Dr. HARVEY B. STONE of Baltimore stated that in certain special type of structure of the rectum, an application of the principles of the Heineke-Mikulicz pyloroplasty was helpful. These strictures were of the diaphragm type; that is, firm, with small lumen, but narrow and annular in their involvement of the long axis of the bowel. The stricture was incised in the posterior midline down to its space, and the superior and inferior edges of the incision were sutured to each other, so that the line of repair ran transverse to the long axis of the bowel. After having employed this measure several times, he found that it had already been described by Dr. Arthur Dean Bevan in Chicago Clinics, 1917. In tubular strictures of the rectum, occurring in the lower four inches of the bowel in multiparous women, the utilization of part of the voluminous vaginal mucosa as a transplant into the rectum had been tried. This had been done only when long continued dilatations had failed to give relief, and where the Wassermann test had been for a long time negative. The posterior vaginal wall was incised longitudinally in the midline, exposing the strictured rectum from in front. Some of the scar tissue about the rectum was dissected away, and then it was incised longitudinally in the anterior midline. The edges of the vaginal incision were sutured to the corresponding edges of the rectal mucosa, thus forming a rectovaginal fistula, then on bearing the fistula was amputated and the stump of proximal bowel sutured to the anal skin as in Whitehead repair. The perineal incision was also closed. The advantages of this operation were direct closure of the urethral orifice, the complete removal of the fistulous area of rectum, the interposition of perineal structures between rectum and urethra, and the temporary diversion of the urine. It had proved very successful in practice.

Autogenous Bone Grafting for Repair in Fractures of Long Bones.—Dr. FRANK MARTIN of Baltimore said in removing and implanting grafts many factors could easily enter which would weaken or destroy the viability of the graft, such as chemical contact, drying or burning graft with a too hot saw, or other mechanical injury, and to achieve the best results these factors must be guarded against. The more quickly and surely the graft was implanted and definitely fixed, the more promptly was nourishment assured. Intimate apposition, which would assure early adhesion between the wound edges and the transplant, would more certainly serve the function of supplying as quickly as possible nutrition to the graft. The most important contributing factor to failure, next to improper technique, was imperfect hemostasis, as it prevented intimate adhesion of the graft with the wound edges,.and invited infection. The chief factors for successful bone grafting were perfect aseptic technique, avoidance of mechanical injury or trauma to the graft, scrupulous avoidance of traumatizing tissues, definite and firm fixation of the graft, allow a long interval to elapse after complete healing of the wound. Grafts would not remain viable where there was infection. There should be perfect hemostasis.

Oxycephaly; Report of Two Cases With Decompression Operation in One.—Dr. STEPHEN H. WATTS of Charlottesville, Va., said it was only in recent years that operative measures had been undertaken with the object of combating the symptoms of increased intracranial pressure, especially the threatened blindness. Since most observers thought that this increased pressure was due to the disproportionate growth of the brain and skull, decompression seemed to be the operation of choice; moreover, it had the advantage of simplicity and relative safety. It should be done early, for in cases with irreparable optic atrophy and no other pressure symptoms, operation was not indicated. The results of this operation in the small number of cases in which it had been done were distinctly encouraging, in spite of the fact that the optic atrophy was rather advanced in most instances. In 1916 Sharpe reported four cases of oxycephaly in which he had done subtemporal decompression, unilateral in one, bilateral in three. The three cases in which the bilateral operation was done were followed and found to be greatly improved; the other one could not be traced. The case here reported, in which the author did a bilateral subtemporal decompression, was seen about two years after this operation. The parents stated that his general condition was much better, and that he seemed to see better, as he stumbled much less in walking. He could count fingers at three feet, which he could not do before operation. Examination of the eye ground, however, showed practically no change, there being a marked optic atrophy in both eyes. An interesting feature of the case at operation was that the bulging of the brain was so marked that the temporal fascia could not be at all approximated on either side, therefore the defects were covered by transplanted patches of fascia lata. Another point of interest, Dr. Watts said, was the ossification of the tissues over the region of the decompression, this bone showing the same digital impression as the rest of the skull.

An Efficient Treatment for Carbuncle.—Dr. A. C. SCOTT of Temple Tex., said that by strong traction the mass was lifted out of its bed while the cautery swept back and forth between it and the cellular tissue below or skimmed along the fascia covering the muscle beneath or penetrating muscle, if necessary, until the entire mass was free. Should any vessels spray freely or fail to close when the dark red cautery was held in contact with them a few seconds, they should be at once seized with mouse tooth hemostats and later ligated, if necessary. A touch of the cautery for a few seconds to the end of the hemostat while in place would often render ligation unnecessary. Any doubtful places beneath the remaining skin margins should be explored by the cautery tip. If the emission of steam was noted it should be applied until the cavity was apparently dry. Such a wound was now sterile and might be handled as any sterile burn. Dakin's solution might be used to advantage to keep the wound sterile and hasten the preparation for skin grafting. As soon as all burned tissue had been cleared away, perforated skin grafts sufficient to cover the granular surface soon completed the cure. The conclusions reached by him were based on the observation of 32 cases of carbuncle treated by the application of the cautery. Compared with former experiences, the period of convalescence appeared to be conservatively 50 per cent. less than by the old methods of treatment.

Gas Gangrene in Typhoid Fever Following Hypodermic Infusion.—Weinberg and Francon saw gas gangrene develop in both thighs of a typhoid patient in the sites of infusion punctures. The substances infused were saline infusion and solutions of sparteine and adrenalin. The infection was ushered in by a drop in temperature and the patient succumbed three days later. Eberth's bacillus was found in the blood and the perfringens in the sloughs of the gangrenous process. But three similar cases are on record and of these two were reported by Brieger and Ehrlich in 1882. The rationale excluded local inoculation although the punctures were of course responsible for the accident. There is little doubt from what we know of the perfringens that it gained the blood from the intestine passing through ulcerated Peyer's patches. There was an attempt to save the patient by injecting 200 c.c. of antigangrenous serum and the specific effects upon the process were most striking, edema and crepitus promptly disappearing. Death was ascribed to the symbiosis of the typhoid and perfringens bacilli in the blood and would doubtless have occurred in the absence of the gangrene.—*La Presse Médicale.*

Therapeutic Hints.

Dorsey's Magnesia Solution.—Samuel E. Earp, of Indianapolis, states that the improved formula of Dorsey's Solution is superior to Epsom, Rochelle, or Glauber's salts, having none of the objections of these salines and possessing many advantages over them. The Indianapolis City Hospital used 250 gallons of this solution last year. All the other hospitals of the city keep it as a stock solution, as do likewise the pharmacists. For a small quantity the following is the formula, as it has been improved:

℞ Sulphate of magnesia, 1 pound,
Granulated sugar, 6 ounces,
Aromatic sulphuric acid, 1 fluid ounce,
Citric acid, 90 grains,
Water, 2 pints.

Dissolve magnesia sulphate and sugar in one pint of hot water and add acids, and the water q.s. to make two pints and filter.

This solution is more pleasing to the palate than most solutions of like character; the astringency and stimulation to the mucous membrane by the acid gives it an advantage; there is greater certainty to evacuation; if given in proper doses, suitable to the patient's condition, there need be no continuous watery stools.—*Western Medical Times.*

Injection Method of Treating Goiter.—Joseph Eastman Sheehan and William H. Newcomb have continued the investigations reported by the former two years ago (MEDICAL RECORD, October 6, 1917), with the injection method of treating goiter. Eighty cases of all forms of goiter were injected at regular intervals for the past two years, with a mixture of equal parts of phenol (carbolic acid), tincture of iodine, and glycerin. The eighty cases represented more than five hundred injections. There were no untoward results from injecting the phenol preparations.

The object of the injections is to produce an inflammation, which eventually causes a fibrosis in the gland and the obliteration of that part of the gland injected. The injections are particularly suitable in the ordinary parenchymatous goiters of young women. Of 55 patients of this type injected, 76.4 per cent. were cured. It relieves the thyrotoxicosis, as in exophthalmic goiter, but the relief is only temporary. In 14 toxic cases, relief was given in 80 per cent. It is of no avail in the cystic or colloid form, and if persisted in, in this type, may cause a sudden enlargement of the gland, seriously interfering with respiration. Sheehan and Newcomb inject all goiters to be operated on. The solution used consists of five drops of equal parts of tincture of iodine, chemically pure phenol and glycerin, and this is injected into the most prominent part of the gland. It is never safe to inject more than 12 drops.—*Journal of the American Medical Association.*

Pepsin.—In a discussion of points in the pharmacology of certain drugs used for stomach effects, Bastedo makes the following observations regarding pepsin: By the U. S. Pharmacopœia test, with 1 in 3,000 hydrochloric acid at 125.6° F. (52° C.), pepsin is required to digest 3,000 times its own weight of coagulated egg albumen in two and one-half hours, *i.e.* 1 grain of pepsin can digest at least 6¼ ounces. A specimen has been prepared 200 times as strong as this, *i.e.* 1 grain can digest 600,000 times its weight. It is activated by hydrochloric acid above 0.5 per cent. strength (U. S. P.), 0.7 to 0.9 per cent., and by sodium chloride solution of 2.5 per cent. strength. It is not only inactivated but is destroyed by alkalies; for example, disodium phosphate in ½ per cent. strength, sodium hydroxide in 0.01 per cent. strength, and sodium bicarbonate and carbonate, magnesium carbonate and limewater, when in sufficient amounts to make a persistent alkaline reaction. In the light of this destruction one wonders how Abderhalden and Meyer were able to find active pepsin in all parts of the small intestine, and to suggest that this pepsin would taken an active part in the digestion of protein wherever the intestinal contents should become acid.

In the stomach contents, it has been found absent or below normal in every one of a thousand cases of achylia gastrica (Wiltrup). It has been found absent in 3 cases and present in only very small amounts in 16 out of 22 cases of gastric cancer and in normal or above normal amounts in 65 cases of hyperchlorhydria, 37 cases of gastric or duodenal ulcer, and 85 cases of cicatricial stenosis of the pylorus (Hernando and Alday).

It is evident then that the only possible cases for the use of pepsin in therapeutics would be those of subacidity and achylia, whether cancerous or not. Its need is doubtful, but since pepsin digests protein only when this has been changed to acid albumin, if used at all it should be accompanied by a sufficient quantity of hydrochloric acid.

Pepsin preparations regularly have a milk-coagulating power. Whether this is due to admixture of rennin or because pepsin and rennin are one and the same enzyme is a still unsettled question among physiological chemists.—*American Journal of the Medical Sciences.*

Enuresis Treated by Dietetic and Hygienic Measures.—Considering enuresis an expression of neuromuscular fatigue, in which too much or too vigorous exercise, too little sleep, mental strain, and improper diet play a part, Grover advocates the treatment of the symptom by hygienic and dietetic measures, to the exclusion of drugs, operative measures, and mechanical means. The diet includes milk, butter, eggs, meat, fish, bread, cooked cereals, macaroni, vegetables, oranges, stewed fruits, and simple unsweetened desserts. Food between meals is forbidden, and meat, vegetables, and eggs are not to be taken at night. Soups, coffee, tea, cocoa, sweet, salty and highly seasoned food, sweets, pastry, cake, jellies and jams are on the list of forbidden articles. No fluids are to be taken after 4 P.M. The hours for urination are regulated. At night the hours are 7 P.M., 10 P.M., and 6 A.M., except for children whose bladders cannot hold more than from two to three ounces, in which case urination is permitted at 2 A.M. Those who require daytime regulation are allowed to urinate at intervals of from twenty minutes to three hours. The interval is gradually lengthened until proper habits are formed. It is not to be overlooked that the habit may tend to persist, even after all the factors enumerated have been corrected.—*British Journal of Children's Diseases.*

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Original Articles.

TREATMENT AND MANAGEMENT OF THE NEURASTHENIC INDIVIDUAL.*

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BEFORE attempting to outline a course of treatment for this condition, it might be well to indicate somewhat briefly just what is intended to be included under this term, and to direct attention to those factors and influences that are believed to exercise some causative relationship toward the generation of the symptom-complex that is usually found, since these would be perhaps the best indications to guide one in the selection of measures and means to be utilized.

The term is frequently applied to a conglomerate group of more or less unrelated conditions, often made to include what unquestionably are mild forms of definite psychotic states, of hysterical conditions, and also of the results of gross organic brain or nerve lesions. The term neurasthenia should be restricted to an enfeeblement or fatigue neurosis, a primary fatigue neurosis, its cardinal characteristics being an inordinate sense of physical or mental fatigue, or both, a difficulty in concentration, of attention and application to work, a sense of pressure in the head, and irritability of the spine, various paresthesias, and more or less disturbance of function of the various visceral organs, all being more or less closely related to psychogenic factors. Clifford Allbutt, in his "System of Medicine," applies the term to what he calls a characteristic series of symptoms recurring with fair uniformity. Burr states that "in neurasthenia we are dealing with a psychic disease, generally called a neurosis," which perhaps soothes the fears of the patient or the family, who fear and dread a so-called mental breakdown or mental disease; but physicians should not be misled by this fear to a nonrecognition of the fact that the most important and essential symptom of the disease is of a purely psychic character. The so-called psychasthenic states especially, which are really a phase of and should be included under the term, belong to the broad borderland between mental health and disease, and are distinguished from many forms of psychoses only by the slighter degree of their manifestations. Jelliffe writes that "in the normal individual, even with the most grievous form of bodily suffering, the mind is preserved relatively intact, so that one is able to meet the trouble by the philosophy of reason and religion, but in the neurosis, neurasthenia, the mind itself is the seat of the pathogenic disturbance, and the individual realizes that the conflicts taking place in his own mind are more or less at the root of the trouble." This is clearly indicated by the frequency with which one hears such patients repeat the cry, "If they could only forget or escape from their own thoughts how much more bearable the condition would be."

Causes.—No cause is so often assigned as overwork, but it is usually found that insufficient time for rest, insufficient sleep, days spent in feverish activity, evenings and Sundays in working out new plans, have all been factors in bringing about the final breakdown.

Conditions of great exhaustion are especially liable to follow certain severe physical diseases such as typhoid fever and influenza, and this suggests that probably certain toxines are of some importance. But since the majority of individuals who suffer from such diseases do not acquire the neurasthenic state, it is evident that there must be other underlying factors responsible. Moreover, similar conditions are found in nontoxic states, such as profound hemorrhages and painful conditions, with loss of sleep; but even here it may be that, in the modification of chemical changes resulting therefrom, toxic substances may be formed, and play their part.

Many neurasthenics connect their conditions with sexual irregularities or disturbances of the sexual functions, especially masturbation or nocturnal emissions, but since the great majority, particularly males, have performed it more or less at some time, it should not be rated very high as a causative factor, not even where it has been carried out to an unreasonable degree. It is much more probable that these are more the manifestation of an underlying irritable nervous or psychopathic predisposition or the symptom of a graver incipient, psychic disorder. Furthermore, as a rule, it will be found that the harm resulting therefrom is not due to any effect upon the physical condition, but to the mental conflicts that arise in the moral and spiritual life. This is further exaggerated by the abominable literature spread broadcast, dealing with the subject, and by the medical charlatans found everywhere, preying upon the suggestible victim; both of these only too easily form an indelible impression upon the mind, and are of great influence, since the resulting fear instilled is a constant source of irritation and unrest.

To what extent measures adopted to prevent conception may be regarded as a causative factor it is difficult to say. It seems probable that the strain on the attention, and the effect otherwise, both

*Read at the twentieth annual session of the Ohio Valley Medical Association held at Evansville, Ind., November 11 and 12, 1919.

physically and emotionally, may disagree with many, and give rise to nervous troubles. In all of these sexual conflicts it seems probable that the exhaustion is more the result of the mental struggles in the moral conflict than in the physical acts themselves, and the extra exertion necessary to furnish the excitation that comes from without.

The excessive use of such drugs as alcohol, opiates, coffee, and so forth, is also believed to have a causative relationship in some cases, but caution must be observed in determining whether the excessive use is not a manifestation rather than a cause, for it is well known that the majority of these individuals are particularly susceptible to the action of such drugs.

Trauma is one of the most important causes, particularly where the question of compensation comes into consideration. The idea that all the compensation possible to obtain is due the injured, and the mental anxiety that arises because of the uncertainty of the outcome, together with the various discussions and suggestions heard during the examinations and consultations, often do more to initiate and engender the development of the neurasthenic state than the injury itself.

It is a well recognizable fact that the neurasthenic breakdown appears more readily when intense emotional disturbances are combined with unusual or excessive demands upon the physical powers.

In the so-called constitutional neurasthenic or psychopathic constitution, general nervousness rests upon a congenital predisposition, but even in these the hereditary tendencies are often looked upon as childish misdeeds or naughtiness. In children of this makeup, furthermore, improper or perverted education and training are often among the most serious injurious influences, in that they tend to intensify or exaggerate innate potentialities. Such factors as the unnatural forcing of some manifest talent, the stern, misunderstood rebuke of some nervous condition of fear or anxiety, excessive pampering or yielding to selfish desires and whims, the habit of more or less constantly directing the attention of not only the child but also of its environment to the manifestations of nervous disorder in the child, these interfering with and preventing the employment of conscious effort and energy to overcome them, all play a part in laying the foundation upon which future trouble develops; so also do the improper demands made by improperly chosen and directed school work upon both physical and mental powers of the child. Nature usually attempts to protect such children by creating a tendency to inattentiveness where prolonged and uninterrupted concentration would prove harmful. This inattentiveness renders the task more difficult for the nervous child, and in order to overcome the difficulty it is driven to greater struggle in the effort to concentrate, thus causing fatigue sensations, and this combined with the fear of criticism, censure, or failure, often brings about the ultimate collapse. This collapse is frequently seen following the extra effort and anxiety necessitated when preparing for examinations or undertaking new and difficult obligations. Children of this constitutional makeup, as well as adults, are usually endowed with an increased or intensified sensitiveness, hence are more strongly stimulated by ordinary impressions than the normal child, thus tending to intensify further their excitability and restlessness. Their imaginative faculties, already overactive, are further incited and intensified by the character of fairy tales told them or given them to read. The same may be said of the habit many parents have in taking them to improper theaters or moving picture shows to quiet them or satisfy their desires or demands for entertainment. All such activities tend to create unhealthy thoughts, feelings, emotions and ideas of life in its reality of everyday experience. In adults of this constitutional makeup emotional excitement or strain plays a prominent, if not the chief, rôle in bringing about the ultimate breakdown. It is estimated that nearly 80 per cent. of all neurasthenia develops upon an inherited predisposition.

In summing up the probable causes of neurasthenia, it is perhaps correctly stated by one authority who says that "the theory of neurasthenia will not consist primarily in vascular or nutritive hypoplasia, nor in toxic states, however necessary these may be as aggravating factors, but it will prove to be a nonspecific state, one to which on sufficient disturbance, every nervous system is liable. Most frequently the malady depends upon a disposition of the nervous mechanism, a disposition often inherited, which is or implies liability or incapacity."

Symptoms.—A few words as to symptoms. It does not require very close observation to recognize that many of these are due as much to physiological functional activity, improperly carried out, as to actual loss of function, occasioned by disease. While there is not a function or organ of the body that may not be the seat of more or less disturbance, yet it is usually found that one or more special groups are predominately involved. The more common of these may be grouped under the following divisions: (1) Cerebral. (2) Spinal. (3) Cardiovascular. (3) Visceral. (5) Urogenital. (6) Traumatic. (7) General.

Biborwitz, in classifying a large number met with in a sanitarium, and consisting mostly of working people, found that about 31.6 per cent. came under the cerebral group, 48.3 per cent. the cerebrospinal, 6.2 per cent. gastrointestinal, 4.2 per cent. cardiovascular, and 9.7 per cent. traumatic.

In practically all cases an inordinate sense of fatigue, both physical and mental, is the dominating feature; the slightest exertion is soon interrupted by a disproportionate feeling of fatigue, regardless of the character of the work performed. That this is more a subjective sensation than an actual exhaustion is indicated by the fact that many of these individuals, apparently helplessly exhausted, by diversion of their attention are often capable of prolonged effort. This abnormal sense of fatiguability tends to render their attention more easily distracted, thus impairing their ability to concentrate and developing a loss of confidence in their capabilities. This inattentiveness tends to lessen the effect of the impressions made upon them by the incidents and experiences of their daily environment, and as a consequence these are readily overlooked or forgotten, thus creating the impression of an impairment or failure of memory. Upon this basis there readily develops indecision, uncer-

tainty, inconclusiveness, pessimism, emotional irritability, and depression, loss of emotional control, doubts and fears of various kinds, painful thoughts, impulsive and obsessional ideas. With such a state of mind, one must expect, and as a matter of fact, one finds a corresponding proportionate impairment of the various physical functions of the body.

In all neurasthenics, during some period of their illness, sleep is more or less impaired, in that, not only are they unable often to go to sleep, regardless of how wornout or sleepy they may feel, but when able to go to sleep readily soon awake, and then tumble restlessly about the remainder of the night, or the sleep is disturbed by exhausting or terrifying dreams. Partly as the result of insufficient rest from sleep, and partly as the result of mental distress, anxiety, and fear, such patients frequently complain of various disagreeable and distressing sensations in the head, such as numbness, pressure, constriction, emptiness, fullness, bursting, and so forth, leading to more or less aching and often definite pains. The special senses are frequently involved, especially sight and hearing, less often taste and smell. In one patient the vision soon becomes blurred, in another there is hypersensitiveness to light. In one the hearing is painfully acute so that ordinary sounds or noises become a source of distraction, while in another there is more or less constant roaring and ringing in the ears.

In the spinal type there is always more or less aching, pain, paresthesia, or localized tenderness along the spine, particularly over the cervicodorsal, lumbar, and coccygeal regions. These are particularly liable to appear in the patient with hysterical tendencies. Associated with this condition, one frequently finds various paresthetic disturbances in the extremities, such as numbness, burning, tingling, itching, and pressure pains. Tics of various kinds are frequently manifested, one of the most common and distressing assuming the character of a blepharospasm, or a facial tic.

Cardiovascular disturbances are rarely absent, and in some constitute the predominating features of the symptoms manifested. The rate of heart action is usually accelerated where a disturbance of rate occurs, but there may be a retardation. Often there are intermittency, pounding or flopping-over sensations, and sometimes definite pains assuming more or less the character of anginal attacks. These various disturbances are usually not associated with any physical evidence of organic disease, or where some degree of pathology does exist, are out of all proportion to the gross changes.

In the respiratory system, one frequently finds superficial breathing or shortness of breath, a tendency to sighing respiration, and at times symptoms resembling hay fever or an asthmatic attack.

Gastrointestinal disturbances in some form are rarely absent. Erratic appetite, gaseous fermentation with its secondary pressure effects, bloating, belching, nausea and vomiting, sour stomach, various types and degrees of pain in the epigastrium or throughout the abdominal cavity, constipation, diarrheal attacks, and mucous discharges, are some of the more common conditions complained of, while frequently there is also found a more or less general systemic toxicity from the absorption of chemical products of fermentation or decomposition of the intestinal contents. Many of these symptoms are no doubt due in part to the secretory and motor disturbances resulting from an impairment of the nerve regulation, but also in part to the peculiar anatomical makeup, since many of these patients show a marked tendency to a ptosis of one or more of the abdominal visceras.

In the urogenital sphere one often meets with an excessive secretion of a limpid, low specific gravity urine, with the accompanying frequency of micturition. In others there occur over or undersensitive sexual impulses, resulting in seminal emissions, frigidity, or other impairment of the sexual function. This probably occurs more frequently in males, and forms the predominating characteristic of the so-called sexual neurasthenic, in whom the fear of the possibility of the loss of manhood makes him one of the most difficult of this class of patients to treat.

Diagnosis.—Where one meets with an individual manifesting the neurasthenic complex, in attempting to arrive at a diagnosis it is most essential to determine whether or not there is present some incipient or underlying gross physical disease. Among the more common possibilities may be mentioned tuberculosis, syphilis, arteriosclerosis, chronic renal disease, hyperthyroidism in its various phases, local infection, drug addiction, peripheral points of irritation such as refractive errors, hysteria, or incipient psychoses.

Treatment.—It has been well stated by one authority that whoever cannot rid himself of the prejudices in regard to the nervous person, who has not the patience to listen to his complaints in so far as this is necessary, who from the first does not make it the aim to educate systematically the patient toward health and to combat autosuggestion, had better forego the attempt to treat nervous diseases; and this is particularly true of the neurasthenic state. Another writer has the following to say of neurasthenia: "There is hardly any malady that receives so little understanding or even common sympathy, its unreality being assumed even by most physicians to contain something of a farce, to be a craving for sympathy, to be more under the control than the patient is willing to admit; or the patient could do better if the effort would only be made, the result of all of which is that many medical men treat it lightly, and fail to look upon it as a disease, and this attitude often serves to intensify or exaggerate the underlying anxiety or suffering of the patient.

It is generally recognized that one of the first essentials in the treatment of the neurasthenic is for the physician to win the confidence of the patient, hence it has frequently been stated that the physician who contemplates treating these patients should undergo preparatory treatment first. Without that confidence a physician will not be able to reach the fundamental sources or underlying causes, since most of these patients feel that their condition is not understood, and fail to express openly fears and thoughts that are fundamentally responsible for much of their distress, and this often leads them to direct attention to other features in order to avoid having them revealed.

On the part of the physician, a thorough, detailed

examination, during which all relevant data are noted, a proper diagnosis made, a deliberate plan of procedure faithfully and pertinaciously carried out, combined with the fullest possible cooperation of the patient, is essential. To be avoided are such conditions as the following: A discussion of the patient's symptoms with others, arguments over conditions previously considered, inconsistent methods and frequent changes in therapeutic procedures, and similar activities.

So far as the patient is concerned, in the acute condition, absolute rest, both physical and mental, is necessary, so far as it is possible to obtain this, and under conditions to avoid what some patients call a rusty sluggishness. Just how to bring this about is almost always a difficult problem, and can be solved only by a careful study of the makeup and personality of the individual patient. As a rule, this cannot be obtained under the conditions and amid the environment in which the neurasthenic state develops, and a removal from this environment is often necessary, or separation from the family and from the petty annoyances of everyday life; in other words, more or less complete isolation, a new environment being nearly always more favorable for the physician to secure more easily mental and moral control of the patient, thus enabling him the more readily to infuse into the patient not only confidence in the physician but also confidence in his own physical and mental capabilities. It has been well said that a healthy physical, intellectual and moral environment is an essential factor, not only in the prevention but also in the cure of psychoses and neuroses, because it tends to strengthen and develop the body and mind, the deliberation, judgment, and the higher controlling functions of the brain. The advisability of isolation combined with nutritional building up was emphasized years ago by Playfair and Weir Mitchell, who formulated the triad of basic principles in the treatment of these patients, namely, isolation, full feeding, and massage.

Sometimes, however, isolation becomes disagreeable and unbearable, especially when conditions are uncongenial and unattractive. The solitude may become almost intolerable. Business and family worries, contact with outside incidents which tend to excite or stimulate the imaginative faculties must be eliminated. A congenial, companionable, commonsense nurse, tactful, determined, yet sympathetic, a combination unfortunately not often met with, can do more by her ingenuity and thoughtfulness to bridge over a crisis than any other one factor. Entertaining conversation, interesting light reading, both by the nurse and by the patient, will often serve to dispel distressing, gloomy thoughts and drive away dreaded fears.

The regulation of the diet is also an important factor, since the majority of these patients are not only undernourished, but also suffer from more or less digestive disturbances. The diet should be nutritious, easily digested, readily assimilated, and given in more or less graded quantities. Stimulants, such as wines, liquors, and strong tea and coffee, should be avoided. The chief indication is to force the feeding so far as it can be assimilated. Meat should be used in moderate quantities—once a day is, as a rule, quite sufficient. In addition to the ordinary rations at regular meal time, milk, plain or modified in various combinations with cream, rice, cocoa, or soups, up to four to five pints daily is often beneficial. This is often best accomplished by giving a certain amount at regular intervals, say three to five ounces every three hours.

Massage, especially in the weakly, should take the place of more active muscular exercise. This to be effective must be selective, and the person giving it should be endowed with an agreeable manner, have a delicate touch, and possess the technical knowledge of its uses and the manner of its being given. The individual who assumes to take up massage also should possess adequate muscular strength, sufficient endurance, a cheerful disposition, and a wholesome temper.

After the acute manifestations have subsided, and the patient's condition warrants it, more active measures must be considered. Graduated methodical exercises incorporating constructive ideas and activities are to be preferred, since those that are aimless and objectiveless, such as ordinary gymnastics, aimless walking, and so forth, are often worse than useless. In selecting any particular line of activity, either physical or mental, one must be guided by the inherent likes and dislikes of each patient. Vocational therapy should be the goal sought for. Gentle hill climbing, boat sailing, riding, gardening, carpentering, basket weaving, photography, painting, music, nature study are a few of the activities that are available. Just here it might be well to emphasize one point wherein there is an almost universal tendency to err. We are all more or less inclined to lose sight of the fact that these patients lack incentive, lack initiative, lack confidence in their capabilities, lack the ability to arrive at a definite decision or conclusion, lack the judgment necessary to determine to what extent or how vigorously to carry on the activities; hence, when such responsibilities are placed upon their shoulders, the worry and anxiety induced nullify any benefit that might otherwise accrue. The best results are obtained when there is someone who can assume these responsibilities, and instead of telling such patients to do these things of their own accord, will take the initiative, work along with the patients, supervising, directing, and regulating their activities, whatever they may be. The regulated control of the patients' muscular activities tends to develop a similar control of the mental and emotional faculties, gives them encouragement, instills into them confidence, and infuses them with hope, all of which must be generated as the patient struggles up the road to convalescence and recovery.

Hydrotherapy and electrotherapy also have a place as therapeutic measures, but must be selective. Given indiscriminately, they usually do much more harm than good, since when no benefit is derived they only serve to impress more deeply upon the mind of the patient the hopelessness of the condition. Wet sheets, baths of various kinds, hot and cold packs, showers, douches, and sponges, all have their place. As a rule these patients bear cold water badly, hence when these applications are desired it is advisable to begin with warm water, gradually lowering the temperature by the addition of cold water to the point desired. The results of

electricity depend to a great extent upon the tact, confidence, and experience in its use. The faradic bath, lasting from twenty to thirty minutes, sufficiently strong to produce tingling but no muscular contractions, at times soothes nervous irritability, lessens muscular weakness and fatigue-sensations by bringing about muscular relaxation and lessening of so-called nervous tension, improves the appetite and general tone, and creates a feeling of sleepiness. In other cases the galvanic current applied along the course of irritable nerves lessens their exaggerated functional activity, such as hypersensitiveness, excessive sweating, and so forth. In other cases the high frequency, the autocondensation, and other forms prove beneficial.

Drug administration must be determined mostly by the character and intensity of the individual disturbances manifested by the different organs of the body. There is probably not a drug in the U. S. Pharmacopœia, not to mention many proprietary remedies, that has not at some time or other been administered.

Bromides are frequently required to lessen the nervous restlessness and so-called tension which is almost constantly complained of. Also in the so-called cerebral group where patients complain of vague sensations of fullness or emptiness, vertigo, subjective feelings of failing memory, of confusion, and so forth, the bromides, either alone or combined with valerian or some of its modifications as valyl, bornyval, and so forth, are beneficial. It is generally recommended that the bromides be given in small doses, and over short periods of time, but one often finds that relatively large doses are required to produce the desired muscular relaxation, and lessening of the nervous excitability. Their action is often assisted by dissolving the salt in hydrobromic acid and combining with quinine or bismuth where indications for these are found. Where there is evidence of considerable vasomotor instability, the addition of ergot often serves to ameliorate or dispel disturbances dependent upon these conditions.

Strychnine, which is so frequently given to those patients complaining of weakness and exhaustion, often does more harm than good, for the reason that the great majority are already overstimulated and require soothing remedies instead. It is beneficial in those cases where there is more or less atonia with mental and muscular relaxation.

Sleeplessness is, as a rule, one of the most difficult disturbances to control. So far as possible, sleep should be secured by such measures as baths, massage, exercises, or nourishment. Where hypnotics are required, it is found that veronal, trional, sulphonal, and similar remedies are serviceable. At times it becomes necessary to resort to more active remedies, such as paraldehyde, chloral, and even morphine, but the latter should be used only as the last resort, since, as is well known, this drug affects unfavorably many of the secretions, and besides there is always the grave danger of inculcating the drug habit.

The gastrointestinal disturbances nearly always require remedies to relieve the distress and to regulate the impaired functional activity. In the selection of remedies to be used one must be guided not only by local but also by general conditions, as well as the reaction of the patient to the particular remedy used.

The question of climate, when a change of environment and climate is advised, is also of importance. Generally speaking, a dry, sunny, mountain country has been found to be the most beneficial, especially in the summer time. Where a change to a higher altitude is made, it should be taken up gradually until an altitude of about 3000 feet is reached, this, as a rule, being the most satisfactory. The action of sea air is said to be uncertain, and while at times it proves beneficial, it is often found to intensify the restlessness, tension, and sleeplessness. In the later stages, when good progress has been made on the road to recovery, sea-bathing at times is very beneficial. Winds are said to be harmful, as a rule, tending to intensify existing disturbances. From the frequency with which traveling and sea voyages are advised, it requires a word of caution to consider the other features necessary before deciding upon them as a therapeutic measure. Much more depends upon the companion, the food, and the weather than upon the journey itself, but where the companion is congenial and entertaining, the food attractive and tasty, and the weather pleasant, benefit must accrue therefrom, but such a combination is rather a matter of chance than the result of human ingenuity.

Psychotherapy, as a rule, can best be carried out where institutional care, with its supervision and management, is possible. It is always a difficult and painstaking procedure to carry out a satisfactory and reliable psychoanalysis, and this is essential before efficient psychotherapeutic measures can be applied. It is always difficult, often impossible, to acquire and maintain satisfactory psychic control of these patients in their home environment or in the environment where the illness has developed. In addition it is frequently much more difficult to regulate the influence of the environment, often exercised with the best intentions and the purest motives, but at the same time the most harmful results, than it is to manage the patients themselves, hence the necessity of absolute isolation to which reference has already been made.

Organotherapy as yet has not produced any results that offer much encouragement along these lines. If it should be finally shown that certain disturbances of the functional interactivity of the internal grandular secretions are more or less responsible for producing the symptom-complex under consideration, and if it should be determined what brings about those disturbances of glandular activity, it may be possible that a therapy along these lines will be developed, but as yet very little is offered. True, in thyroid gland conditions we find some evidence of this possibility, but at best it must be admitted that this phase of it is as yet in its infancy.

In conclusion, something should be said concerning prophylaxis. In children manifesting neurotic tendencies it is a mistake to remind them constantly of their inherent tendencies, either by direct assertion or by discussion of their condition with others in their presence. In such individuals there should be inculcated regularity in habits, deliberation and regulation in all of their physical activities, and the exercise of control over their emotional life. As

stated when discussing the etiological factors instrumental in bringing about the neurasthenic state, the foundation is often laid by injurious tendencies and habits inculcated by improper and unwise education and training, and such individuals should not be called upon to meet conditions suitable only for the normal child, and applicable only to such. More careful consideration must be given children so endowed in preparing for them special methods of training and education.

HUME-MANSUR BUILDING.

THE CANCER ENIGMA.

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THE medical fraternity would seem, from lack of proper guidance, to have lost its way in a maze formed by a network of theories and conjecture bearing upon the natural history of cancer, these having been arrived at and resulted in such a variety of so-called conclusions that bewilderment and perplexity militate against our obtaining a sane view of the situation.

The unfortunate circumstances are that the majority of these theories rest upon the assumption that they are worthy of being accepted and adopted as "working theories," whereas they would appear to be more comparable to blossoms of the imagination rather than to the fruits of careful research.

To name a few of the theories above referred to and which, so far, have failed to be productive of an atom of evidence to suggest even that they have in any way advanced our knowledge of the subject at issue, I may be permitted to mention the assertion which has been made by not a few writers that the disease is due to a germ of one kind or another, or to a parasite, and this, notwithstanding the fact that neither of these entities has so far been recognized by the most ardent of microscopists. Yet many aver that this negative result is of no consequence, and that there can be no doubt but that a microbe of one form or other is the factor at work; moreover, that this being the case—where there is no case—accounts for cancer being of an infectious and contagious nature—which is also a fallacy. Among other theories advanced may be mentioned eating salt bacon, and the employment of salt, as a condiment, acting as predisposing causes of the disease; another that the presence of lime in the blood is a predisposing cause, notwithstanding the fact that the bones of the body are composed, for the most part, of phosphate of lime. Again, exposure to the rays of the sun—one of God's greatest gifts—have, by at least two writers, been stated to be factors in the production of cancer. Tomatoes and other wholesome edibles also have been charged as responsible for the prevalence of this, so far, intractable disease, to which may be added many other equally innocuous substances, without evidence to support such conditions being forthcoming; though these have been adjudged as guilty in promoting the incidence of the malady, while the more palpable causes have received little or no attention. Therefore, the scourge, though avoidable, is allowed to continue its ravages unchecked.

Now all these, from my point of view, untenable theories have been advanced and circulated since that pioneer of the science of pathology and master of his subject, Sir James Paget, stated, "The condition of the blood is the predisposing cause of cancer," and I have no hesitation in affirming that his opinion still is accepted as final by all who have given prolonged study to the subject. The question therefore arises: What is the *fons et origo* of this pernicious condition of the blood stream which converts it into a predisposing cause of cancer?

"The blood is the life" is a trite saying, and with that statement the matter, with some people, would appear to end. It, however, must be admitted, even by the most casual, that healthy life is compatible only with an uncontaminated blood current. And it is obvious that if the blood can be maintained in a pure conditions the cellular tissues would, in consequence of their component cells being supplied with the most invigorating form of nourishment, be enabled to carry on their functional activity in the most perfect manner, and therefore be capable of resisting the invasion of disease no matter what form it might assume. In short, belief in the existence of a morbid condition in an individual in such happy circumstances would be an insult to one's intelligence.

It is impossible, with our present information, to be oblivious to the fact that the healthy vital condition of the blood, and therefore one's freedom from disease, is dependent upon the more or less functional activity of the endocrinic (internal secretion) glands, to each of which is allotted the presiding influence over certain dominant factors concerned in maintaining, by their harmonious efforts, a united front against the access of disease in its multitudinous forms. And in this connection I may be permitted to emphasize the supreme importance of taking advantage of the means within our reach to give every possible impetus to these important organs by, in the first place, attending with the greatest solicitude to the expectant mother's health, and also to the child's diet and hygienic welfare, so as to give it a good start in life, and exert a more powerful influence in promoting and establishing a healthy and vigorous maturity than can ever be obtained by the fussy and futile efforts at present so much in vogue, most of which are the outcome of immature knowledge of the subject so many would-be reformers have taken in hand.

It goes without saying that these endocrinic glands are entirely dependent upon a pure blood supply to enable them to extract from it the elements necessary to produce their special secretions, which are intended to fortify the identical fluid from which these elements were obtained. Now, if the blood stream, which is circulating in these glands, contains toxic material, this having been conveyed to it either by the mouth, from the air, by water, or by absorption from the colon, it stands to reason that the secreting power of these glands must be handicapped *pro rata*, and the general health will suffer accordingly. And it is not difficult to comprehend that if this toxic condition of the blood is permitted to continue for a prolonged period, not only will the secretions of these glands be decreased in quantity, but also suffer in quality,

and the enfeeblement, which might have been recovered from, had measures been adopted to restore the quality of the blood to its healthy condition, will, otherwise, tend to develop into disease.

It is in such circumstances that the question of diet, also the sanitary condition of the colon, fresh air, and a clean skin, come into such prominence; and in this connection I venture to call especial attention to the skin as an organ of excretion, being quite equal, I may add, to that if the kidneys in many essential points. Take, for example, the part it plays in the endeavor to get quit of the poisonous material circulating in the blood during an attack of any of the eruptive fevers, and in acute rheumatism. Moreover, we often have experience of the disastrous effect its activity produces upon its own cuticle, due to the effect of the irritant in process of being eliminated; in scarletina, for example, and other of these fevers. Moreover, its power of elimination is easily recognized by the odor of the perspiration in rheumatic fever. Again, we can never overestimate the value of the skin as the means of regulating the heat of the body, when it is exposed to high temperature, by evaporation from its surface. Therefore, I submit that a clean skin is one of the essentials to perfect health.

The defensive power of the cells of the body against disease is entirely dependent for its potency being maintained upon strict observance of the above conditions. This can easily be effected by employing a little common sense, and by a successful attempt to obey nature's (which are God's) laws; these laws can never be *broken*, although they may be ignored at times with seeming impunity. On the other hand, if broken, they will, as sure as fate, *break* the transgressors, and this result is apparent on every hand, as exemplified by the terrible prevalence of disease from cancer downwards, and by the evidences of senility in place of a green old age; all of which demonstrate the fact that he who attempts to break nature's laws will most assuredly be the victim of his own temerity.

Materia medica is the oldest example of the "wait and see" policy, and it only requires a little wholesome self-restraint, and as I have already mentioned, the exercise of common sense to convert it gradually into an antique.

Man, as is the case with other members of the animal kingdom, is entitled to a longevity equal to eight times the length of time occupied in attaining his maturity, which may be taken as twenty years. Therefore, I believe it is within the province of reason that if he strictly adheres to the observance of nature's laws he should enjoy good health until he celebrates his 160th birthday.

I may be permitted to state that the above observations are the outcome of twenty-five years' close study of several hundreds of cancer patients that have come under my care, with the result that I have no alternative but to pronounce it as being a self-inflicted disease. Many writers on the subject have referred to it as a disease of civilization; and this is, unfortunately, too true. But does this not imply that it is our conventional mode of living that is at fault? For my part I feel it is to a very considerable extent—if not altogether—the most potent factor or rather combination of factors responsible for the terrible prevalence of this scourge. It is no use mincing matters, so we must stare glaring facts in the face, and make up our minds to mend our ways if we mean to exterminate—which is quite within our power—this terrible penalty inflicted upon disobedience to those physiological laws upon which the healthy functional activity of our various organs depends. And we know, to our cost, by the numerous ills that attack our flesh, how exacting these laws are, and permit me to add in passing that it is a grave mistake to accept the dogma that flesh is *heir* to any such ills, which is so plausibly and extensively quoted. I repeat, those who attempt to break nature's laws shall assuredly only succeed in being broken by them.

If we look around we shall find that man is the only member of the animal kingdom who destroys his food value by cooking. He ignores the fact that the calls of his body, like those of every living creature, are only able to retain a healthy functional activity if they are provided with pabulum from which the living principle has not been destroyed by heat. Moreover, the natural organic salts must also be left intact, these also being essential to healthy cell metabolism. In short, a considerable amount of our food should be consumed in its natural condition, which is already sufficiently cooked for us by the sun. In fact, our cells, if they are to be continued in healthy vital activity, must be provided with *live*, not dead, material. The importance of this I shall endeavor to prove later on. It is quite a mistake to imagine that ripe fruit and vegetables are more difficult to digest in their natural condition than when cooked. The very opposite is the case. (Just try this form of diet on a chronic dyspeptic and you will not regret it.) Of course, it goes without saying that complete mastication must be employed. Even unfired bread is preferable to baked, but in any case whole wheat meal, and that stone ground, only should be allowed. As for peas, I very much prefer to eat them fresh out of the shells. Some people may view this as a Spartan diet, but this conclusion has been arrived at before giving it a trial. I don't wish, however, to burden my readers with a lecture upon dietetics, but I can assure them a diet based upon the above principles will go a long way towards eradicating cancer, not to mention other maladies due to indulging the palate more than the stomach, the normal capabilities of which are limited.

During the period dating from 1894 a very considerable number of cases of cancer in its various forms and positions have come under my observation, many of which had been turned out of hospitals as being inoperable. And I am convinced that a judicious dietary has exercised a more potent influence in arresting the disease and in effecting a cure than the supplementary measures simultaneously employed. And I may safely affirm that, had the conventional diet been permitted to be indulged in, not one of my cases would have recovered. Indeed I am daily becoming more and more convinced that a reformed diet has a greater therapeutic effect than the combined accessory measures employed in the treatment of not only cancer but many other diseases as well. And it will be admitted that this view is not unreasonable when we consider so many diseases take origin from loading and, frequently, overloading the stomach with material

which it is impossible for it to utilize in a satisfactory manner.

I remember the case of a patient suffering from carcinoma of the rectum, being carried into a nursing home in the country, to which I was called in consultation. It was the first time I had seen the patient. There could be no possible doubt of the diagnosis. She was in such a state of emaciation and so weak that she was unable to sit up even in bed. Such being the state of affairs, it will be admitted that the case seemed hopeless. She, however, was a most determined person, and would not consent to undergo any treatment except by diet. She was, therefore, put upon a diet restricted to fruit and vegetable juices with fresh milk superadded. Fortunately it was summer time and there was an abundance of fruit and vegetables at hand. The result of this was that she speedily began to put on flesh, the disease was arrested, and complete convalescence was attained in five months from the date of her admission to the home, and she was able to run a distance of 300 yards round the grounds attached to the home.

The unfortunate circumstance is that ignorance of food values is so prevalent, and that flesh meat is considered to be more nutritious and sustaining than vegetable material, and this notwithstanding the fact that it is the product of the lower grades of vegetable matter.

Of course one employs therapeutic aids towards fortifying the blood, but these are only of second rate importance to diet. Yet they have their value. These, in my opinion, should consist mainly of organic salts, together with a preparation of the expressed juice obtained from vegetables, and occasionally from seaweed, in its most concentrated form, so that it is reduced to a powdered condition, and then preserved in gelatine capsules in palatinoid form, each capsule containing the equivalent of half an ounce of the *cold* drawn expressed juice of various plants and algæ. (The latter I have found useful in the treatment of goiter.) These are administered with, or after, meals. Another valuable source of this preparation is yeast, reduced to a powder by evaporation without the aid of heat, this also being administered in palatinoids. Two or three of these may be swallowed after meals. It is, as a rule, in cancer subjects that hypothyroidism exists, when the addition of half to one grain of thyroid extract is advisable. Indeed, I have had every reason to attach great importance to thyroid medication in this malady; so much so, that it has proved in my experience to be in many instances almost a specific when combined with a regulated diet. At all events, it has been the means of accelerating recovery.

One illustration will be sufficient to demonstrate its value. This was the case of a poor woman, who, after having undergone a laparotomy, but without anything more having been accomplished except that a correct diagnosis of carcinoma involving the wall of the stomach, with extension to certain glands, was obtained. This diagnosis the registrar of the hospital kindly sent to me. On being discharged from the hospital she was told that her case was hopeless and that she would probably not live more than two months. She was brought under my care immediately upon leaving the hospital, being then in a most attenuated condition, having lost thirty-two pounds in weight, and being unable to retain any ordinary food. She was put upon fruit and vegetable juices, and egg flip composed of the white of an egg beaten up in a teacupful of fresh milk. Of these articles very small quantities at a time were taken, alternately, every two hours. Therapeutically, a teaspoonful of elixir of thyroid (gr. v. to the teaspoonful) was administered three time daily. Within a month gradual improvement began to take place, which, fortunately, was maintained, until at the end of seven months the patient had regained her former weight, and was able to retain and digest a normal quantity of food in sufficient quantity at meal times without intermediate feeding.

While the above constitutes what might be designated my routine treatment, there are instances where I have obtained evidence that recovery might be hastened by employing, in conjunction with the foregoing, one or other of the following measures: For example, in breast cases, considerable benefit has been afforded locally by exposing the tumor daily, if possible, to a strong current of air heated up to 170 deg. or 180 deg. Fah., great care being taken not to scorch the skin. This is quite possible if the hot aid douche is not allowed to play too long on one portion of the tumor at a time. It is also essential that the hot air be driven under some pressure, otherwise the heat will not penetrate the skin. I have also found this of considerable service in epithelioma. In addition to the above, gratifying results have been consequent upon the subcutaneous injection of 2 c.c. of magnesium colloid. This should be boiled for a few minutes to render it sterile. The injection gives little or no pain, and may be repeated two or three times a week. I have also obtained very satisfactory results, especially in sarcoma, from the injection deeply into the gluteals of 1 c.c. of atoxyl in iodolysin. If the latter is not available distilled water might, with little disadvantage, be substituted.

15 Half Moon Street.

BLOOD COUNTS IN DIAGNOSIS AND TREATMENT.

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While all admit that blood counts are indispensable in the primary blood diseases, the fact that they are made in such a small proportion of other conditions in which they supply information of great value testifies that the practice of regarding such work as a superfluous refinement is common.

Attending physicians, nowadays, may rarely base a diagnosis of anemia upon an inspection of the lips and conjunctiva, but there are certainly many cases treated for blood impoverishment with iron and other therapeutic agents without a single examination of the blood having been made. In such cases not only is the diagnosis in doubt, but also the degree of improvement, if any, effected by the medication.

In a case with nothing more definite in the symptoms than a recent advent of poor health one might, by neglect to make a blood count, easily miss an

incipient case of one of the primary blood diseases —pernicious anemia or leukemia.

Then there is the host of infectious diseases and localized inflammatory conditions in which marked and sometimes distinctive changes in the leucocytes occur, a knowledge of which is often of great assistance in the diagnosis; and, in the second class of conditions, particularly, in the prognosis, and as an index of the need for surgical intervention. Finally, there are many obscure cases of illness upon which light may be shed by a blood count—in any event such a procedure always excludes some conditions which could cause the symptomatology.

With the idea, therefore, of calling more attention to changes in the blood in various common conditions, and the advantages of blood counts in connection therewith, the present article has been written.

Blood Counts in Health.—As a preliminary to a discussion of the significance of changes in the blood count, a table is given in which the origin and usual numbers of the cellular elements of the blood and concentration of hemoglobin is listed.

THE BLOOD IN HEALTH.

Element.	Origin.	Quantity in Health		
		Children (Under 12).	Women.	Men.
Erythrocytes	Bone marrow	3,500,000-4,500,000	4,500,000-5,500,000	4,500,000-6,000,000
Hemoglobin	Erythrocytes	11.5 grams in 100 c.c. of blood	13.5 grams	14.5 grams
Placques	Bone marrow (megacaryocytes)	150,000 in 1 c.mm.	150,000	150,000
Leucocytes		8,000	8,000	8,000
		Per cent.	Per cent.	Per cent.
Polymorphonuclear neutrophiles	Bone marrow (granular myelocytes)	48.0	60.0	60.0
P. basophiles*	Bone marrow (granular myelocytes)	0.3	0.3	0.3
P. eosinophiles	Bone marrow (granular myelocytes)	3.7	3.7	3.7
Small lymphocytes	Lymphatic glands	30.0	25.0	25.0
Large lymphocytes (younger lymphocytes)	Lymphatic glands	10.0	3.0	3.0
Large mononuclears and "transitionals"	Endothelium of lymph spaces, particularly of spleen. So called "transitionals" are most probably young large mononuclears showing indented nuclei.	8.0	8.0	8.0

*Number found depends much upon technique of staining.

The "color index" in a given blood examination, being the quotient of the hemoglobin percentage of the normal divided by the red cell percentage of the normal, is supposed to serve a useful purpose in showing the relative values of red cell numbers and their hemoglobin contents. Since necessity is said to be the mother of invention, this term is to be blamed entirely upon a father, as so practical a mother could never be credited with such a useless and misleading creation. Thus while we find that the color index of normal blood is around—

$$\left(\frac{100,\ \text{erythrocyte per cent.}}{100,\ \text{hemoglobin per cent.}}\ \text{equals}\ 1\right)—$$

we also find that the "color index" of the disease most markedly affecting red cells and hemoglobin, pernicious anemia, approximates the same, since the erythrocytes and hemoglobin decrease together, and so long as the percentages of these elements are about equal we will have a normal "color index," a result which well illustrates the worthlessness of the figure. One well understands the meaning of a red cell count of 2,500,000 (50 per cent. normal), and the relation thereto of a hemoglobin percentage of 50, or whatever it may be, is seen at a glance, since there is no difficulty in recollecting the average normal number of erythrocytes, and the arithmetic necessary in order to figure that 2,500,000 is 50 per cent. of 5,000,000 is easily carried on the fingers of one hand. While the proportion $\frac{50}{50}$ if given in a report, might save this mental calculation, the quotient 1, the "color index," fails to convey any idea of the condition of the blood examined. For these reasons no further mention will be made of this term.

Nonpathologic Variations in the Blood Count.—Repeated counts (for the erythrocytes counting the contents of 200 small squares and for the leucocytes of 100 large squares of the apparatus) of either the red or white blood cells of the same person, made at the same time, vary within 2 per cent., owing to mathematical considerations.

In cold weather, and after either hot or cold applications or vigorous rubbing, a greater concentration of cells in the vessels of the part affected develops so that variations in the count, even as great as ten per cent., may be so explained. Blood drawn from dependent parts, such as the foot, or from congested (actively or passively) areas shows a like increase of cells.

The above considerations apply to both red and white cells.

The slight increase in the leucocytes of the blood during active gastrointestinal digestion, which may reasonably be ascribed to the mobilization of those elements for their function in destroying noxious elements absorbed with protein food, is within a similarly small percentage.

The average number of red cells is greater in inhabitants of high altitudes (5,000 feet) than in those living near sea level, by often as much as one-third. Infants, during the first few days of life, frequently give counts of erythrocytes as great as 6 to 8 million per cubic millimeter. They also usually show a slight neutrophile leucocytosis.

Women are usually stated to give counts showing the red cells to be on the average 10 per cent. less than in the case of men, but there are many exceptions to this supposed rule, and as 10 per cent. is within a normal physiological variation which covers the periodical blood loss due to menstruation, no allowance should be made on account of sex.

Old age in itself probably has no direct influence upon the blood elements. However, since chronic disease becomes common as persons advance in life so do blood changes, such as secondary anemia, directly due to these ailments.

The blood placques, so far as is known, show no physiological variation in their number (estimated to be normally from 100 to 300 thousand in a cubic millimeter), except in women after the menstrual period and after parturition, when they are usually considerably increased.

THE BLOOD IN DISEASE.

Element.	Normal Adult Blood.	Infection Leucocytosis.	Secondary Anemia, Including Hodgkin's Disease.	Chlorosis.	Pernicious Anemia.	Leucocythemia.
Erythrocytes	5,000,000 per c.mm	No change.	Moderate decrease; changes in character of cells variable.	Moderate decrease.	Great decrease (as much as 80 per cent.) Cells irregular in shape, and staining; nucleated cells present.	Considerable decrease. Cells vary in character as in pernicious anemia. Nucleated cells constant.
Hemoglobin	14 grams in 100 c.c.	No change.	Moderate decrease.	Marked decrease.	Decreases with cells.	Decreases with cells.
Leucocytes	6,000–10,000	Increased, rarely to over 50,000.	Depends upon associated conditions.	No change.	Decreased.	Marked increase (to 100,000 or 300,000).
Polymorphonuclear neutrophiles	60.0 per cent	Increased.	.....	.....	Decreased.	Decreased, their bone marrow precursors (neutrophile myelocytes) usually make the bulk of the increase in myeloid variety.
Eosinophiles	0.7 per cent.	Decreased.	.....	.....	Decreased.	Increased in myeloid variety.
Basophiles	0.3 per cent.	Decreased.	.....	.....	Decreased.	Increased in myeloid variety.
Lymphocytes	31.0 per cent.	Decreased. (Increased when glands are involved.)	.....	.....	Increased.	Greatly increased in lymphatic variety.
Large mononuclears (including "transitionals")	8.0 per cent.'	Decreased. (Increased early in typhoid, and in malaria.)	Increased in Hodgkin's disease.	.....	No change.	Decreased.
Placques	200,000	Variable.	Variable (increased in Hodgkin's disease).	Variable.	Decreased.	Increased.

NOTE.—Terms "increased" and "decreased," as applied to varieties of leucocytes in this table, relate to percentages.

Pathological Variations in the Blood Count.—Erythrocytes.—After extensive hemorrhages there is, of course, a temporary diminution of the red cells in proportion to the blood lost. In good health this is rapidly made up, and during the most active part of the process a blood examination may disclose, besides the reduced number of red cells, some that have entered the blood stream prematurely in the nucleated form, from the bone marrow.

The poisons of chronic disease, such as lead poisoning, malignant growths, leukemia, etc., vitiate the plasma so that the usual supply of normal erythrocytes is interfered with and a slight to moderate anemia results. The changes in the character of the red cells in such conditions are usually slight, variable, and not pathognomonic.

In that clinical condition of uncertain etiology known as chlorosis a similar diminution in the number of the red cells is observed, but the chief change is in their quality, since a marked reduction in the content of hemoglobin is constant.

It is in pernicious anemia that the red cells are most markedly affected by disease. As the cause of this malady is unknown, be it toxin with special affinity for the erythrocytes or microbic infection of the bone marrow, and the commonly sudden onset and rapid progress suggests an infectious origin, one cannot certainly diagnose the condition until it is well along and, perhaps, as great diminution of the red cells as 50 per cent. has occurred. Of course, besides the reduction in number, these cells show the effect of disease by irregularity in size, shape, and even in staining, and some of their progenitors of the marrow, nucleated red cells, are found in the blood stream. The effect of the malady upon the bone marrow is such that, in well developed cases, all the other blood cells (granular leucocytes and placques) that originate therein are also considerably reduced in number.

Leucocytes.—A total leucocyte count of over 7,000 per cubic millimeter may be regarded as a pathological leucocytosis if there be a simultaneous disturbance in the ratio of the five varieties of these cells; otherwise 10,000 or even 12,000 may not be said to indicate disease.

Infections quite generally produce leucocytoses which vary, frequently, according to the nature of the infectious agent, according to its location, according to the extent and acuteness of the process, according to the stage of the disease, and according to the activity of the patient's leucocytic resistance. The extent of a leucocytosis is usually to not more than 30,000 leucocytes per cubic millimeter of blood.

Typhoid fever, typhus, tuberculosis (without secondary infection), malaria, measles, the tropical diseases, kala-azar and dengue, are commonly said to show a diminution in the leucocyte count. However, the facts seem to be as follows: In typhoid, at the onset and for a few days thereafter, there is usually a slight increase of from 2,000 to 3,000 in the leucocytes. This increase is due entirely to increased production of cells by the lymphatic glands (including Peyer's patches) caused by the stimulus from the irritation of the typhoid bacilli present therein. Frequently there is a coincident increase of the large mononuclear, including "transitional," leucocytes, the cause of which is evidently the early effect of the infection upon the spleen, the supposed place of origin of these cells. There is a simultaneous reduction in the polynuclear neutrophile variety of leucocyte, probably due to the greater effect of the typhoid poison upon these cells and their parent cells in the bone marrow. A typical count during the first few days of an attack of typhoid is as follows:

Mrs. E. (patient of Dr. B. Vogt, Woodhaven, N. Y.), sick seven days, Widal positive, 1-40, in 20 minutes. Total leucocytes, 9,725; polymorphonuclear neutrophiles, 47 per cent.; eosinophiles, 1 per cent.; basophiles, 0; large lymphocytes, 17 per cent.; small lymphocytes, 33 per cent.; large mononuclears, 2 per cent.

Later in the course of the disease, as prostra-

tion of the patient and destruction of the lymphatic and bone-marrow cells progresses, a subnormal number of leucocytes is found. After convalescence begins, all the leucocytes that have fallen in number during the course of the malady increase, and this reaction always carries the count considerably beyond the normal, producing a distinct leucocytosis.

In typhus fever the leucocyte count is similar to that in typhoid fever, and varies in much the same fashion.

In miliary tuberculosis a great fall in the normal leucocyte count (affecting principally the polynuclear neutrophiles) is met. This is, of course, due to the swamping of leucocyte resistance and production by swarms of tubercle bacilli. That a pure tuberculous process is capable of inciting a leucocytosis is seen in cases of exudative tuberculous meningitis. Glandular tuberculosis causes a distinct increase in the lymphocytes unless extensive destruction of glands has taken place. In cases of tuberculosis, as of the lungs, where secondary invaders (micrococci, etc.) are present, the effect of the disease upon the leucocytes is a resultant of the specific action of all the organisms concerned.

The effect that malaria has upon the leucocyte count seems to be due to the damage done the bone marrow by the infection. However, there is no distinct lowering of the leucocyte count except in severe cases. In malaria and some other protozoal infections there is often a characteristic increase of the large mononuclear leucocytes to 10 per cent. and over.

During the incubation of measles there is a slight polymophonuclear neutrophile leucocytosis, which has disappeared by the time of the onset when a distinct reduction of the count of these cells is usually found.

During the height of the tropical diseases, kala azar and dengue, the leucocyte count often falls below 2500 per cubic millimeter.

Diseases which cause a destruction of the leucocyte-forming organs (bone marrow and lymphatic glands), such as pernicious anemia and general lymphatic-gland carcinoma, naturally cause, when advanced, a distinct reduction in the total number of cells originating in the part affected.

Any infection, which ordinarily causes leucocytosis, if fulminating, may overpower the leucocytic-reaction mechanism and show a reduction instead of an increase in the number of these cells.

Chronic alcoholism, through injury to the leucocyte producing areas, may be the cause of a reduction in the leucocyte count.

Various drugs, such as benzol and large doses of quinine, act to reduce the number of leucocytes. The former, benzol, is so active that after the administration of a few doses, in cases of leukemia in which the blood leucocytes have increased to as much as 200,000 per cubic millimeter, the count of these cells may fall below 5,000 per cubic millimeter.

Except with diseases that tend to attack or irritate specially the lymphatic glands (tuberculosis, typhoid, syphilis, plague, etc.) and thereby directly affect the production of the lymphocytes, all infectious leucocytoses are of the polymorphonuclear-neutrophiles, and, therefore, due to the effect of soluble poisons upon the cells of the bone marrow. Typically illustrative of this is the leucocytosis that promptly begins at the onset of lobar pneumonia, which usually regularly increases up to the crisis of the disease, and then promptly declines. In this and other infections the degree and continuance of the leucocytosis are of prognostic value, since with an apparently mild case a moderate leucocytosis indicates good resistance; with an apparently severe case a marked leucocytosis the same; while serious symptoms with a slight or a diminishing leucocyte count point to a poor or a failing resistance.

One of the most important uses to which the information obtained from a leucocyte count can be put is in the diagnosis and prognosis of infections connected with surgical conditions. In addition, information so obtained is of great value in judging of the need for immediate operative interference, as in acute appendicitis, mastoiditis, etc.

While a marked increase in the total leucocyte count indicates only an active infection and good resistance, variation in the percentage of neutrophiles is a reliable guide to conditions at the focus of inflammation. As a rule, when suppuration or gangrene impends, as of an acutely inflamed appendix, a marked and hourly increasing rise of the neutrophile percentage is to be found. It may be confidently stated that no such development ever threatens unless this percentage is over 80. As the percentage rises above 80, the probability of the presence of a purulent or gangrenous process increases. If the rise in the percentage of neutrophiles is of greater degree than the rise in the total leucocyte count poor resistance is indicated; and, consequently, any neutrophile percentage above 80 with a low total leucocyte count (under 12,000) points more strongly to suppuration or gangrene than a similar neutrophile percentage with a proportionate increase in the total number of leucocytes.

Progressive extension of an inflammatory process, such as local peritonitis or mastoiditis, is indicated by progressive rise, both in the total leucocyte count and in the percentage of neutrophiles.

In inflammatory processes of low grade, such as chronic appendicitis or arrested (not extending) acute inflammations of small extent—mastoiditis, etc., one finds but small increase in either the total leucocyte count or in the neutrophile percentage.

Besides infectious processes, there are certain other causes for neutrophile leucocytosis. Thus any severe hemorrhage is immediately followed (within 24 hours) by an increase in these cells. Such a leucocytosis may reach 20,000 per cubic millimeter, and lasts as long as 24 hours after the bleeding has stopped.

In practice, physicians frequently have to differentiate between intraabdominal hemorrhage, such as may be caused by an extrauterine pregnancy and other conditions. When such a hemorrhage is suspected, a leucocyte count is of the greatest assistance, as a neutrophile leucocytosis without fever, or with a very slight elevation (within one degree F.) of temperature, is strong corroborative evidence.

Ether or chloroform narcosis causes an apparent

slight leucocytosis (due to increased mobilization rather than to increased production) subsiding, however, within a few hours.

Whether we believe that eosinophiles are modifications of the neutrophiles or not, we recognize that certain variations in their numbers are of importance in differential diagnosis.

Increase of these cells to greater than 5 per cent. of the total leucocytes is usually indicative of animal parasite infection (such as trichinosis, tapeworm, hydatid, etc.) unless otherwise explainable. Thus in severe bronchial asthma eosinophiles have been often found to exceed 10 per cent., and they are considerably increased at the height of an attack of scarlatina, or during the course of some skin diseases such as pemphigus. The eosinophiles are said to be more numerous in the blood of children, but this is most probably due to the greater prevalence among them of the conditions known to cause increase of these cells. The increase of eosinophiles in leucocythemia will be mentioned later.

No importance has been attached to variations in the basophile count.

The lymphocytes are specifically increased, as previously explained, in any condition irritating the lymphatic glands or producing hyperplasia thereof, and the number found in the blood is consequently abnormally high in nasopharyngeal inflammations, in many acute intestinal disorders (especially of children), and in whooping-cough where the lymphocytes not uncommonly increase 5 to 10 fold; often also, at the onset of typhoid, and always during convalescence.

During the acute glandular involvement of early syphilis these cells are moderately increased, sometimes doubling in number. In toxic goiter there is a slight increase, as also in beginning cases of Hodgkin's disease. The lymphocytosis of leukemia will be considered later. An abnormally low number of lymphocytes indicates a destructive affection of the lymphatic glands, such as may be caused by extensive tuberculosis.

The large mononuclears (including so-called "transitionals"), as previously mentioned, are often found to be increased in typhoid and malaria and some other tropical protozoal infections.

When we find a marked increase of leucocytes (over 30,000) and a differential count not typical of any known infection, and no symptoms of such a process, we are justified in suspecting beginning leucocythemia (leukemia), *provided* the differential count shows the presence of unusual numbers of lymphocytes or of bone-marrow cells in considerable numbers. Since both varieties of leucocythemia tend to be progressive, confirmation or refutation of the diagnosis is always to be obtained through a later blood count, which, in the case of leucocythemia, would show a still greater increase in numbers of the cells concerned. However, cases of leucocythemia are usually not recognized until the leucocyte count is over 100,000 per cubic millimeter.

In the variety of leucocythemia (lymphatic) in which the overproduction of leucocytes arises from the lymphatic glands and other lymphatic tissue, we find a great increase of the lymphocytes (either small, large, or both). This increase has to be distinguished from the temporary and moderate increase of the lymphocytes due to known irritants, such as an infection of a chain of glands, hyperplasia of such glands from any cause, etc., previously mentioned. In either acute or chronic lymphatic leucocythemia, the lymphocyte increase is progressive until the numbers of these cells in the blood reach several hundred thousand per cubic millimeter, and this fact is sufficient to prevent mistakes in diagnosis. The rare condition denominated malignant lymphoma is probably but an atypical early-stage lymphatic leucocythemia.

Diagnosis of leucocythemia due to affection of the bone marrow depends upon finding the white-cell increase to be due to increased numbers of those leucocytes which originate in the bone marrow, and especially the presence of the parent form of these cells, myelocytes (mononuclear granular cells) which usually appear preponderatingly neutrophile, but which may be principally eosinophile or even basophile, and varying numbers of nucleated red blood cells. In acute and late stage myeloid leucocythemia, nongranular bone-marrow cells (myeloblasts) are also common.

Placques.—As the function of the platelets is to inaugurate the clotting of the blood by their disintegration, we would expect to find them increased, as we do, in all conditions in which hemorrhage has occurred. After such loss of blood as usually accompanies a major operation it is common to find the platelets increased 2 or 3 fold.

From some studies published in 1915 by Duke (*Archives Int. Med.*, Nov., 1915) and in 1916 by Minot and Lee (*Archives Int. Med.*, Oct., 1916), we may conclude that in purpura hæmorrhagica there is an almost complete absence of placques from the blood. It seems that purpura hæmorrhagica may be brought on by bacterial infection, such as Vincent's angina, illustrated in the case of a physician reported by me (*Am. Journal Med. Sc.*, May, 1919) who died from a chronic infection with the spirilla-bacillus of Vincent, and the well-known fact that the blood extravasations (of purpura hæmorrhagica) are commonly preceded by an attack of sore throat.

This is in agreement with Duke's experimental demonstration that various bacterial poisons injected into animals reduced the number of placques.

The toxins of bacterial infections generally act to reduce the number of placques during the height of such diseases. For instance, in diphtheria the number of placques is reduced as much as one-half, as a consequence of which convalescence brings an equally great increase, to several times the normal number.

In chronic tuberculosis with hemorrhage (not necessarily external), the placques are much increased.

Blood placques are reduced in number in pernicious enemia and increased in leukemia, greatly so in Hodgkin's disease.

According to Minot and Lee hemophilia is due to an hereditary defect of the placques which, while present in normal numbers, do not disintegrate under hemorrhagic conditions and, consequently, fail to bring about clotting.

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FOCAL INFECTIONS OF THE HEAD AS SOURCES OF SYSTEMIC DISEASES.*

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ASSUMING that the relationship of focal infections to systemic diseases is now an accepted fact, we desire to present in its broader aspects the subject of focal infections of the head as sources of systemic disease and to bring before you several new and important developments.

The subject is not new, for casual observations on this relationship are found in the older literature. In 1789 Eyerlin, of Christiania, in his "Materia Rheumatica ad Tonsillitas," considered the relationship of tonsillitis to rheumatism as clinically evident. In 1818, Benjamin Rush[1] reported a case of rheumatism of the hip accompanied by toothache, which was promptly cured by extraction of the decayed tooth.

For nearly one hundred years after the publication of "Medical Inquiries" by Rush, the literature has little or nothing on the subject. The review of the literature up to 1909 reveals the fact that no scientific proof of the connection between focal infections and systemic diseases had been published. It was clinically evident that certain infectious diseases followed tonsillitis and the same organisms had been found in the tonsils and the secondary lesions. There had been so much clinical evidence up to 1909 suggesting this etiology that scientific proof seemed scarcely necessary.[3]

From 1899 to 1909 over one hundred writers presented clinical evidence linking tonsillar infection to other diseases. In spite of all this clinical evidence, however, the majority of the medical profession remained skeptical up to ten years ago. During the last ten years many scientists, working in different fields, have presented an abundance of evidence to establish the scientific proof. To be more specific, during the past ten years more than fifty authors have contributed data based upon research and clinical work to prove the case from a scientific standpoint.

Under focal infections in the head, we include infections of the tonsils, including all lymphoid tissue in Waldeyer's ring, teeth, gums, nasal accessory sinuses, middle ear, mastoid, and lateral sinuses; in fact, all cavities communicating with the mouth, nose, or nasopharynx are included. Pus enclosed in any of these cavities is, for all clinical purposes, one and the same problem.

Consensus of opinion gives the tonsils first rank in importance as foci of disease; then follow the teeth, with the nasal accessory sinuses and middle ear coming in for third and fourth honors.

The late Dr. N. B. Potter, formerly Professor of Clinical Medicine in Columbia University, said in 1916: "Wherever the infection may be, one or more of the foci of the central cause radiate to a vicious circle of complex pathological conditions and frequently result in life-long invalidism. The list of diseases in which oral sepsis may prove to be of considerable or paramount etiological significance is as follows:[4]

1. Neurasthenia.
2. Neuritis, reflex or remote result.
3. Neuralgia.
4. Myalgia.
5. Myositis.
6. Arthritis, acute, subacute, or chronic.
7. Osteitis.
8. Periostitis.
9. Gout.
10. Basedow's disease.
11. Furunculosis.
12. Sepsis.
13. Endocarditis.
14. Pericarditis.
15. Myocarditis.
16. Chorea.
17. Arteriosclerosis.
18. Meningitis.
19. Pleuritis.
20. Bronchitis.
21. Asthma.
22. Pneumonia.
23. Nephritis.
24. Pyelitis.
25. Cystitis.
26. Gastric neurosis.
27. Peptic ulcer.
28. Appendicitis.
29. Colitis.
30. Cholecysttis.
31. Herpes zoster.

Long as this list may seem, it is not complete—for the writer could add dacryocystitis, conjunctivitis, and urticaria, all of which have been recently cured by removal of infected tonsils. We believe now that practically all diseases are influenced by focal infections.

In a recent contribution, Robert T. Morris, in speaking of gastric ulcer and cancer, urges a search for foci of infections, especially mentioning the teeth.[5]

In an address before the American Medical Association, C. H. Mayo recently said: "Disease, then, is an inflammatory process from infection and the efforts at repair. Infections which produce the greatest number of diseases enter the system by way of the alimentary and respiratory tract. Somewhere in the line, then, of the alimentary and respiratory tracts and in the excretory ducts of the body lie the sources of the entrance of the organisms which terminate life in the majority of instances. In view of what is known concerning infections and their mode of entrance, the infected and diseased mouth and respiratory tract must be looked upon as serious menaces. More general and effective school inspection is recommended as a valuable prophylactic measure. Teeth, adenoids, and tonsils require supervision and correction in the fight against preventable diseases of various kinds. The mouth is the harbor of many varieties of bacteria. The nasal sinuses and chronic mouth and throat infections develop anaphylaxis from the constant poisoning and these results are shown in hay fever, asthma, urticaria, etc. The infected mouth shows a tendency to acid reaction, and this acid change involves an additional danger in cell degeneration of malignant type, from chronic irritation. Bacteria are constantly taken into the stomach in the process of eating."[6]

Rosenow, whose experimental work has done so much to put the relationship of focal infections to systemic diseases upon a scientific basis, has said: "In the light of our present knowledge the argument that infections in the mouth are so common in individuals in apparent health does not minimize their importance. These or other foci are so common in patients suffering rom arthritis, neuritis, appendicitis, ulcer of the stomach, cholecystitis, goiter, etc., and so rare in individuals who have had superb health for years, that their direct etiologic rôle can scarcely be questioned.

*Read before the joint session of the American Academy of Ophthalmology and Otolaryngology at its twenty-fourth annual meeting, Cleveland, Oct. 17, 1919.

"The most common location of the focus or source of infection probably is in the mouth, and the teeth as well as the tonsils must always be carefully examined with this object in mind. However, the question of the focus of infection is a matter not only for the stomatologist or the dentist, but for the general practitioner, the surgeon; every branch of medicine needs to be taken into consideration in order to trace the focus from which the organisms gain entrance to the body. The focus of infection must be regarded not only as the place of entrance of the bacteria but also the place where the organisms acquire the peculiar property necessary to infect."[7]

The results of eradicating foci of infections in the insane by Cotton,[8] is a brilliant chapter in psychiatry. At the New Jersey State Hospital, the average rate of discharge of patients from the Hospital was 42 per cent. That is, for a period of years previous to 1915, forty-two out of every hundred patients admitted were discharged; fifty-eight out of each hundred remained in the hospital for a period of years and died there. Since 1915, Cotton has searched for foci of infections in these insane patients and eradicated them. Since this practice was inaugurated, he has discharged 87 per cent. of the patients admitted to the Insane Hospital cured, or so improved that residence in a madhouse was no longer necessary.

In a notable paper,[9] "Relation of Teeth, Tonsils, and Intestinal Toxemias to Diseases of the Eye," Bell of New York reports a number of eye diseases cured by the eradication of foci of infection.

Reyfuss[11] has proven scientifically what we suspected five years ago.[12] We made the observation in 1914 that patients with stomach complaints—such as dyspepsia or indigestion—with foci of infections in tonsils, sinuses, or teeth, reported almost unanimously that the stomach condition had improved or disappeared after the foci of infection in the head had been eradicated. By his fractional examination of the stomach contents, Reyfuss has found the same infections present in the stomach as were found in the head. He has had remarkable success in the treatment of these stomach and intestinal disorders by having the primary foci in the tonsils, teeth, and sinuses eradicated. In this study, Reyfuss says that the stomach is protected from ordinary infection by the following barriers: (1) Acid secretion, (2) abundant blood supply, (3) more or less constant peristaltic motion, (4) thin coat of mucus lining the stomach wall. The constant swallowing of infected secretions of the mouth, tonsils, and sinuses is, however, sufficient to overcome the natural barriers.

His work confirms that of Smithies, who is quoted in Mayo's article.[6] Smithies, in an examination of the extracts of 2,406 different individuals with stomach complaints (dyspepsia, indigestion, etc.) showed that irrespective of the degree of acidity of such gastric extracts, bacteria were present in 87 per cent.; cocci and diplococci in 83 per cent.; short and long rods, often of the colon group, in 58 per cent.; typical streptococci and staphylococci in 17 per cent.; and *Leptothrix buccalis* in 24 per cent. In fifty-four cultural studies of saliva from dyspeptic patients, streptococci and staphylococci were demonstrated in over 80 per cent.

Carriers of Infection.—The mobilization of our great army and the requirements made upon our medical men to keep the millions of men efficient and in good health have demonstrated the menace of carriers of infection. By cultures made from the throat and nasopharynx of men in the military camps last winter, diphtheria, and meningitis carriers were discovered and isolated. Epidemics of diphtheria and meningitis were thus prevented. Men who developed tonsillitis probably were infected by hemolytic streptococci. In many cases the infection remained in the tonsils, reinfecting the patient as well as others. The writer saw many such cases in Camp McClellan among the 30,000 soldiers there and its real danger was brought home to us during the epidemics of influenza, pneumonia, empyema, measles, and scarlet fever. Death following a variety of acute infections, like measles or scarlet fever, is at present believed to be due to a secondary invader, usually in the guise of a streptococcus, rather than to the primary etiological agent.

The investigations of Pilot and Davis[14] and of Nichols and Bryan[15] point to the tonsils as the principal foci of these hemolytic organisms which are so frequently found in cultures taken from the different parts of the mouth and throat. The evidence is in accord as to the predominance of the streptococci in the crypts of the tonsils, and it appears that the frequency of these bacteria is decidedly less in the throats of persons whose tonsils have been extirpated than in the throats of persons having normal tonsils. Outbreaks of disease due to the entrance of foreign virulent streptococci unquestionably do occur at times, as the epidemics of septic sore throat testify, but in general the streptococcal infections are presumably associated with preexistent foci, like the tonsils, which harbor the bacteria in the body.

Identical strains of *Streptococcus hemolyticus* were found in the crypts of tonsils and in pus from empyema, and in fatal cases of bronchopneumonia, as a complication of measles.

Pilot and Davis[14] thus summarize the possible factors responsible for the secondary streptococci infections: "The existent dormant organisms in the tonsils may become enhanced in their virulence through symbiosis or in some unknown manner by the primary virus (measles, scarlet fever, smallpox) or by the bacteria, such as the *Bacillus diphtheriæ*, the pneumococcus, or the *Bacillus influenzæ*. They may become active through the lowered resistance of the local tissues of the respiratory passages; they may attain increased invasive powers through the lowering of the general resistance of the host overwhelmed by the acute or chronic toxemia. Probably all three factors are combined in certain cases, although one factor often appears to be more important than the others. Thus, in acute respiratory and throat infections, streptococci seem to spread from the tonsillar crypts to the adjacent mucous surfaces, descend into the bronchi and lungs, and enter the blood stream from these tissues. In chronic diseases, on the other hand, the diminution of the resisting power of the blood may admit the streptococci directly into the circulating blood stream without any marked local change in the throat.

Methods of Examination.—The examination of

the tonsil consists of inspection, pressure for pus within the crypts, and plate culture from the crypts.[12]

The examination of the teeth consists of an inspection of the mouth clinically by both physician and dentist, and by a radiograph of all the teeth. Experience has taught us that suspicious areas around the roots of teeth, as revealed by the *x*-ray, are generally worse than the films indicate. The nasal accessory sinuses are investigated by inspection of the interior of the nose, by transsillumination, and by radiographs. The nasal accessory sinuses, with the exception of the ethmoid, may also be studied by irrigating them in the usual way.

Treatment.—The treatment consists in eradicating the focus or foci of infection, practically ignoring which one is the instigator. In the case of tonsils where the crypts are infected with *Streptococcus hemolyticus*, or as in diphtheria carriers, the only effective means of curing them is their complete enucleation. In meningitis carriers, in whom the meningococcus was found in the nasopharynx, the method practised in the army camps consisted in isolation and treatment with such antiseptics as dichloramine-T, 2 per cent., in chlorazone as a spray. At the Rockefeller Institute, the carriers are placed in a humidor whose air is saturated with a 1 per cent. watery solution of chloromine-T. They are kept there for about twenty minutes once or twice daily. A few days of such treatment is unusually effective, as shown by several successive negative cultures. In others more obstinate, or for whom this treatment is too irritant, local applications of such preparations as argyrol and peroxide are used.

In tonsillar infections of the cocci group (streptococcus, staphylococcus, diplococcus), we have found autogenous vaccines of distinct value in raising the patient's resistance. As our experience has increased, we are convinced that many sinus infections are secondary to primary foci in the tonsils or teeth. In such cases the sinus is curable by removing the primary focus, combined with appropriate local treatment.

Conclusions.—1. During the last ten years over fifty writers have presented scientific proof of the relationship of focal infections to systemic disease. This, in addition to the voluminous clinical evidence, has established beyond a reasonable doubt the etiological relation of primary foci of infection to systemic disease.

2. In order to cure patients, the primary focus or foci must be found and eradicated, practically ignoring which one is the instigator. With our broader conception, we endeavor to look over the whole body and correct what is obviously pathological. A certain amount of enthusiasm and generalship in the cooperation of different specialists is eessential. The focus is dealt with according to its location, by methods well known to all of us.

3. The new developments in this field are: (*a*) The broad application of this principle, now accepted by all progressive medical men. (*b*) The proof of stomach and intestines becoming infected by deglutitions of infected secretions from tonsils, sinuses, and teeth. (*c*) The relation of primary foci in the tonsils to the mortality rate in such acute infections as measles, scarlet fever, pneumonia, and influenza. (*d*) Its field of application is unlimited. We are just beginning now to appreciate its value.

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ANESTHETICS IN OBSTETRICS WITH SPECIAL REFERENCE TO NIROUS OXIDE.

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WHETHER the suffering of the parturient woman is a curse of God, or a penalty of civilization, does not concern the physician of to-day in his rôle as such. One of the great aims of the profession is the relief of pain, and while the obstetrical patient has not received her proportionate consideration heretofore, the time has now come that she may, and should, be placed upon the same plane in this respect as her more fortunate surgical sister.

The fundamental requirements for anesthetics in obstetrical practice are widely different from those in general surgery, hence the anesthetics and methods of administration must likewise be varied to fulfill properly the special requirements in this particular field. Failure to differentiate between the proper adaptations for the surgical patient and for the obstetrical patient has been the cause of much of the complacency with which the travail of the parturient woman has been viewed. The average obstetrical patient to-day is permitted to suffer far more pain than her primitive sister and progenitor endured, while her surgical sister, not because she is more deserving, is afforded complete relief. The profession ought to consider it a special duty to extend to mothers the same service in this respect it extends to surgical patients. Not to attempt to do this when it is possible shows lack of the higher appreciation of motherhood.

The pain of the parturient patient, for the most part, is intermittent in character, and extends over some hours, with considerable longer intervals without pain than with it. Even if her physiology, especially that concerned in elimination, is normal, it is close to pathological, on account of the ever-increasing burden that has been thrown upon it for months. In addition, there is the baby and its welfare. These are all very important matters to consider in connection with anesthetics.

Chloroform formerly held the same relative position in obstetrical practice that ether held in general surgery. Latterly, ether has been recommended in obstetrical work in preference to chloroform. But neither of these anesthetics fulfills the special requirements of parturition except for a brief time at the end of the second stage of labor, that is, while the head is passing over the perineum, and for the repair of the lacerations, if any occur. If ether or chloroform is given in the earlier stages, the force and frequency of the contractions of the uterus are decreased, greatly decreased, if either anesthetic is given to the extent of relief of the patient of any consequence. Besides, the period for which relief is needed extends over considerable time, especially in the primipara. Ether and chloroform, when given over a considerable period, further impair and irritate the organs of elimination, being in themselves very toxic; and, given at a time when the eliminating organs have been overtaxed for months, their administration over a considerable period to the obstetrical patient is more questionable than their administration to the average surgical patient. Ether and chloroform, inhaled for a length of time, lower the patient's vitality. This is clearly established scientifically by the lowered blood pressure that follows their administration by the usual methods. This lowering of the blood pressure, or translating it into its real meaning, this lowering of the patient's vitality, does not cease with the withdrawal of the anesthetic, even with ether, but the blood pressure continues to fall for some time, unless counteracted by special treatment, as was demonstrated in a recent investigation on carbon dioxide, suggested by, and in cooperation with, Prof. Yandell Henderson and his staff, of Yale University, the report of which will be published in another paper.

Ether and chloroform lower the patient's resistance against infection—not an insignificant effect when the total of infections that follow confinement is considered, and not just simply puerperal infection.

Probably the most serious objection to the use of ether and chloroform is that they delay the progress of labor by decreasing the contractile power of the uterus, if they are given in such amount as to relieve the patient to any extent.

The fleeting character of the anesthetic properties of nitrous oxide makes it especially adaptable for obstetrical conditions. It requires only a few inhalations to relieve the patient, and only a few exhalations to remove the gas entirely from the patient's system. Even in an administration covering several hours the patient is actually inhaling nitrous oxide only a small fraction of the time, and the patient should be conscious *all* of the time, that is until, at least, the head is passing over the perineum. It is the analgesia, and not the anesthesia, that is desired to relieve the pain of the contractions, and nitrous oxide does this without interfering with the contractile force. The analgesic state, that is, where the patient is relieved of pain but is still conscious, is reached just before unconsciousness and anesthesia. With such a quickly acting agent this may seem a fine distinction, but with a little experience the distinction is readily made in practice.

The chief point in the technique of nitrous oxide analgesia is to begin the administration at the first indication of a uterine contraction, so that the patient may inhale sufficient of the gas before the maximum of the contraction is reached, and thus prevent actual pain from being experienced, and then discontinue the administration before unconsciousness is produced. In some patients two or three inhalations of nitrous oxide are sufficient to ward off the pain of a contraction, while in other patients six or eight inhalations are needed. At the end of the required number of inhalations the patient should be instructed to hold her breath as long as possible, and to bear down. Securing the cooperation of the patient in this way materially shortens the period of labor, as nitrous oxide so administered does not retard the expulsive effort; and herein lies the great difference between the results of nitrous oxide and those of ether or chloroform in this phase of obstetrical practice, as both ether and chloroform decidedly decrease the force and frequency of the

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contractions, and thereby, of course, prolong the period of labor.

Let it be distinctly emphasized that until the head is passing over the perineum it is a state of analgesia, and not of anesthesia, that is desired during the contractions. That is, consciousness should be maintained throughout, with pain assuaged or obliterated. Loss of consciousness, of course, destroys the cooperative effort of the patient, and the conscious cooperation is a great factor in shortening the period of labor.

Nitrous oxide analgesia should be instituted as soon as the contractions produce a decided pain. This will vary considerably with different patients. With primiparæ when "four-finger" dilatation is reached, the pain is usually pretty acute, while multiparæ usually do not have much pain till after considerable more dilatation has occurred. The object of the analgesia is to relieve pain, so unnecessary suffering should not be allowed before instituting it. On the other hand, the administration should not be begun until the patient, on account of the pain she experiences with the contractions, is willing and anxious to cooperate in obtaining relief and in assisting the expulsive effort. Considerable patience is sometimes required to get proper team work instituted, and without the cooperation of the patient this intermittent administration for each individual pain cannot be made a success. As the labor progresses and, of course, as the pain becomes more severe, there is an increasing tendency for the patient to cooperate.

When the head is passing over the perineum, many obstetricians prefer to have their patients anesthetized, and some prefer to have them at this time rather deeply anesthetized. This can be done by adding ether to the nitrous oxide, or by giving straight ether. The response of the patient, as well as the requirements of the obstetrician, determine how the administration should be conducted at this stage, and the same applies to the administration of the anesthetic for the repair of the lacerations, if there be any, nitrous oxide, of course, being the preferred anesthetic.

Conserving the patient's vitality is another very important benefit of nitrous oxide analgesia. Many patients, especially primiparæ, are so exhausted by their suffering that before the end of labor they are physically unable to cooperate in the expulsive effort, and this at the very time when cooperation renders the maximum benefit. Not only does this unnecessary exhaustion of the patient delay the progress of labor, but often necessitates the use of forceps which otherwise would not be required. The exhausted parturient patient is also much more liable to hemorrhage, infection, and the latent ills to which she may be subject, than is the one whose vitality is conserved by the prevention of her suffering. With the patient's vitality so conserved, there follows, of course, a more rapid convalescence. In other words, nitrous oxide analgesia, in a measure, is life insurance.

Apparatus for the administration of nitrous oxide varies about as much as styles of dress. I prefer and use a very simple design. Elaborateness does not establish efficiency. Many of the different kinds of apparatus on the market were designed for use in general surgery, where a continuous administration is desired, and so they are not well adapted for the brief, intermittent administrations in obstetrical analgesia. Little oxygen is required for the majority of patients until the stage is reached where a continuous analgesia or anesthesia is indicated, that is, when the head is passing over the perineum. Cyanosis, however, should not be permitted at any stage. Oxygen and air are the antidotes, and the latter is always available. Analgesia is usually produced before cyanosis develops.

What are the comparative effects of the different anesthetics on the baby? In the brief, intermittent administrations of nitrous oxide as herein outlined, very little nitrous oxide reaches the baby, for its administration is not begun until uterine contraction has commenced, and its administration is discontinued before the contraction ceases. Spontaneous respiration in the baby appears to be as quickly and as easily established after intermittent nitrous oxide analgesia as when no anesthetic is administered. Ether and chloroform, on the other hand, are a distinct deterrent to spontaneous respiration, as is generally observed. The length of time over which nitrous oxide analgesia is maintained does not affect the spontaneity of the baby's respiration. The longest period for which I have maintained nitrous oxide analgesia is nine hours, with several other cases nearly as long. Yet in these prolonged administrations there was no difficulty in establishing the baby's respiration.

"The proof of the pudding is in the eating," is an adage to which most all will subscribe. That is the kind of proof the mothers and babies offer concerning nitrous oxide analgesia. Let me reiterate briefly the salient points: Freedom from pain of any consequence, vitality conserved, no extra toxic burden on the already overburdened organs of elimination, period of labor shortened, resistance unimpaired, more rapid convalescence, spontaneous respiration of the baby. This is not an *ideal* picture, but a *real* picture. Is it, then, too much to claim that nitrous oxide analgesia is the greatest contribution to obstetrics that has been made in the present decade?

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WILLEMS' METHOD OF ACTIVE MOBILIZATION IN SURGICAL JOINTS.*

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THE vast amount of clinical material afforded by the World War made possible the completion of many pieces of research work and the development of many new ideas in the treatment of medical and surgical conditions. In the surgical field, the work of Carrel and Dakin on wound disinfection, the new and radical procedure in chest surgery, and the treatment of shock by blood transfusion and gum injections have all been written of so often that the principles involved are common knowledge.

*Read at the meeting of the Ohio Valley Medical Association at Evansville, Indiana, November 12, 1919.

Along with these and many other notable advancements stands the work of the Belgian surgeon, Willems, a work which has been accepted by the French and by the English and which will cause to be rewritten all the chapters on joint surgery.

It is unnecessary to review the old teachings of the treatment of surgical joints, teachings which had become so dogmatic that they varied but little in the many treatises on surgery. It will suffice to recall that the principles were free drainage, drains, frequent irrigations, fixation for an indefinite period to be followed later by passive motions, massage, and baking. The end results of this form of treatment are also equally as well known to the surgeon, especially in cases of purulent arthritis and intraarticular fractures. The most hopeful prognosis that one could give was a limitation of motion in the joint while the surgeon keenly realized that even more serious things might happen. The treatment as conceived by Willems will, no doubt, at first appear as most radical in the face of our former teachings but to those who have been so fortunate as to have seen the end results of joint injuries as treated in Willems' hospital and to have had the opportunity to apply these same principles in one's own work, the skepticism and doubt are entirely removed.

The Willems treatment of surgical joints is *immediate, continuous, active mobilization.* This phrase is to be translated in the most literal sense. By *immediate* mobilization is meant that the joint shall be moved as soon as the patient has awakened from the anesthesia. By *continuous* mobilization is meant that the joint shall be moved as often as the muscle power of the patient will permit. By *active* mobilization is meant that all motions shall be made by the muscles which control that particular joint; that at no time shall the nurse or the surgeon or the patient use in any way passive motion.

Prior to the war, Willems had used with success his treatment in the simple traumatic effusions of the knee. The great variety of joint lesions as a result of war injuries gave him an opportunity to extend his treatment to the more serious type of joint wounds and thus to prove the soundness and the practicability of his theories. It is not the purpose of this paper to describe in detail the treatment of each of the different joint conditions, but to outline the general principles which underlie the method as it applies to all conditions, leaving to the surgeon modifications which will readily suggest themselves. In the purulent arthritis the best results have been obtained in the knee and in the elbow cases.

It is important to remember that Willems' treatment is applicable only in acute conditions. After firm adhesions have been formed in the joint cavity, changes in the periarticular tissues have developed and atrophy of the muscles has taken place Willems' treatment has no value. Many have failed to obtain results with this method and have condemned it because they have overlooked this point and have tried to apply the principles to the old chronic cases. This was especially true in England, where the cases were received late from the front line hospitals. Willems was especially fortunate in that his hospital was situated within a few miles of the front line and he could also keep his patients as long as he desired. This made possible his receiving his patients immediately after they had been wounded and also gave him an opportunity to see the end results of his work.

In order to present in detail the principles of Willems, a knee type of purulent arthritis will be used. The knee is prepared as in a clean case, the author preferring the iodine preparation of the skin. Before opening the joint aspiration should be done in order to determine the character of the fluid. Frequently, a hemarthrosis will present all of the symptoms and signs of a purulent fluid and, of course, should not be opened unless infected. If there has been a small puncture wound the tract should be carefully located by a small probe that the tract may be fully excised later. If pus is found in the joint, a long longitudinal incision should be made on the outer side of the knee. It is important to carry this incision well up the thigh to the top of the bursa which lies beneath the quadriceps femoris tendon as this bursa is a part of the joint cavity and must be drained. In most of the cases a single arthrotomy will give sufficient drainage but should an incision be necessary on the inner side of the knee, care should be used to damage as little as possible the important internal lateral ligaments. The U-shaped incision involving the patellar ligaments will rarely if ever be required to give perfect drainage. Unless there is some foreign material present in the joint, irrigation of the joint cavity is not done. Drains are not used either in or to the joint. The dressing consists of large quantities of plain dry sterile gauze so placed that motion at the joint level will be free. Antiseptic solutions are not used and the dressing is changed only as it becomes soiled.

As soon as the patient has awakened from anesthesia the active mobilization is begun. It is during the next forty-eight hours that the most important phase of the treatment is developed. In order to give a satisfactory end result and to carry out the schedule of the active mobilization, it is absolutely essential that the cooperation of the patient be obtained as he alone will have all of the work to do. In order to gain his co-operation the patient must from the first have confidence in himself and in his ability to move the joint. Unless the surgeon is willing to give the time necessary to obtain these two important factors, he cannot expect results other than he would have had with fixation, irrigations, and drains. If possible a special nurse should be on every case for at least four days in order to see that the orders of the surgeon are carried out by the patient.

At first the patient is required to bend the knee but slightly, the heel resting upon the bed. This will demonstrate to the patient that it is not only possible for him to move the knee but that the motion is not extremely painful. This will also make him understand that he will at all times have full control of the situation in that neither the surgeon nor the nurse will touch the leg. As soon as these two points are made, the patient then locks his hands behind the thigh and lifts the leg into the air with flexion at the hip and holding the knee fully extended. With the leg in this position, he is then urged to bend the knee and then bring it back into extension by the action of the quadriceps. At

first this flexion movement will be slight but is gradually increased in its arc until a considerable degree of flexion is obtained.

In order that the active mobilization be carried out, it is best to have a regular schedule. In Willems' clinic the motions were made every hour until the muscles were fatigued, the patient, however, not being disturbed during the night. In De Page's clinic at La Panne, Belgium, a two-hour schedule was maintained both during the day and the night. The active mobilization is continued until the arthrotomy wounds are healed and the patient is able to leave the hospital without the use of cane or crutches.

The pain which is occasioned by the active mobilization is during the first few days rather severe, but not of the unbearable type which characterizes an acutely inflamed joint nor that which comes later in the use of passive motions. Inasmuch as the patient has full control of the situation he is more willing to bear the pain and especially so as he finds that it is less each day. At the end of the third day, the pain is a negligible factor.

At the end of the fourth or fifth day the patient may be allowed to take a few steps and there is nothing more striking than to see the patient walking about the dressing room with the pus pouring from the open knee joint and running down the leg. In one case on my service at De Page's hospital the pus would be expelled in spurts at each motion of the joint.

Fever is not a contraindication to active mobilization in purulent arthritis. If the drainage is good, the temperature falls rapidly to 99° or 99.5°, and any long continued high elevation of the temperature will indicate the pocketing of pus, the most common place being in the bursa beneath the quadriceps femoris tendon or an extension up the fascial planes of the thigh.

In intraarticular fractures the same principles of treatment will apply, providing the active mobilization does not disturb the fragments to a considerable degree. In compound fractures into the joint, it is advisable to enlarge the wound, excising all devitalized tissue and removing all foreign material. The joint is then washed with ether and the capsule closed tight with catgut sutures. It has been shown most conclusively that the joint can take care of slight infections as well as can the peritoneum or pleura and that the tragic end results of entering the joint cavity are not the result so much of the opening of the capsule as of not closing it tightly.

If any small pieces of bone are found lying free in the joint cavity, they should be removed and after the wound has been closed tightly, active mobilization should be begun at once. In Willems' clinic I saw some cases in which one entire condyle of the femur had been removed and the patient had as an end result 75 per cent. of motion in the knee joint, a lateral iron being used to prevent a lateral bending of the knee.

The principles of the treatment of surgical joints as outlined by Willems are, though they may not be entirely new, most radical compared with our former conceptions in the cases. However, they have been given a most thorough investigation and in the hands of many other men have given the same gratifying results as are obtained by Willems. The advantages of this method of joint treatment may briefly be summarized thus:

1. Adhesions of a serious nature are reduced to the minimum. One of the most striking observations during the treatment is to watch the open knee joint during motion and to see the breaking through of the soft fibrous adhesions which had formed during the interval of rest.

2. The most thorough drainage of the joint cavity and the pockets of pus is given through the active mobilization, as at each movement the shape of the cavities is changed and the pus is expressed. Popliteal space involvement is thus less apt to occur.

3. Atrophy of the muscles is prevented. This is one of the most important phases of the treatment. The tone of the muscle is retained in a way that it cannot be through simple massage and hot applications.

4. The retrogressive changes in the highly specialized tissues of the joint and the muscle and tendon tissues, which come through disuse, are also eliminated. This factor should be emphasized as it is not generally recognized by the surgeon and is one of the most common causes for the stiffness in joints which follows long fixation.

5. With the simple dry dressings the pain which comes through drains and irrigations is prevented. This is an important factor in regard to the comfort and to the general physical condition of the patient.

408 Hume-Mansur Building.

Medicolegal Notes.

Expert Testimony as to Cause of Condition.—The New York Appellate Division holds that it was improper, in a personal injury action, to permit the attending physician to testify that the plaintiff's condition of edema of the legs was not due to other cause than the accident; that question being for the jury. An objection to the question, on the ground that it was improper in form and called for incompetent testimony, was held sufficiently specific to call the court's action to the fact that it was the form of the question that was being objected to.—Broderick v. Brooklyn, Q. C. & S. R. Co., 174 N. Y. Supp. 571.

Proof of Cause of Hernia.—The Kentucky Court of Appeals holds that proof that the insured was suffering from a hernia about as large as an egg one day, and that on the following day it had developed to the size of a half-gallon cup, causing loss of time, was insufficient to show that the enlargement was caused by external, violent, and accidental means within an accident policy; although a case might arise where the character of the injury was such that it could not have been caused in any other way than by external, violent, and accidental means.—Transylvania Ins. Co. v. Allen (Ky.) 209 S. W. 44.

Husband's Liability for Medical Services to Wife.—The Georgia Court of Appeals holds that upon the trial of an action against a husband for medical services rendered by the plaintiff to the defendant's wife, evidence that before the date of the services by the plaintiff the defendant left the state as a fugitive from justice, taking his wife with him, and that she later returned to the former community and lived upon land belonging to her husband, the husband still remaining away, does not necessarily demand the inference that the parties were living in a state of separation as husband and wife under such circumstances that the husband would not be liable for necessaries, such as medical services furnished by the plaintiff to the wife.—Ward v. Johnson (Ga.), 8 S. E. 405.

MEDICAL RECORD.

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THE DIAGNOSIS OF SYPHILITIC SUBOCCIPITAL POTT'S DISEASE.

GIVEN the extreme infrequency of syphilitic suboccipital Pott's disease, when compared with tuberculosis or certain forms of rheumatism in this region, it is evident that its diagnosis offers much difficulty. However, the relatively advanced age of the patient, the specific antecedents and evidences of luetic stigmata, should lead the clinician to suspect a suboccipital syphilitic process when certain symptoms are accentuated, such as spontaneous painful stiffness of the neck from the onset, made worse by rest in bed, a sharp pain on pressure over the spinous apophyses of the first cervical vertebræ or over the upper part of the pharynx, with a satisfactory general physical condition. A positive Wassermann would, of course, be in favor of the specific nature of the process. An important sign of suboccipital localization of syphilis is that the patient supports his head in his hands. Radiography will reveal the site and extent of the lesions.

The differential diagnosis must be made from traumatic lesions, but above all from chronic rheumatism or gonorrheal infections, spondylosis, and especially tuberculosis. In some cases syphilitic suboccipital Pott's disease has been complicated by fracture or subluxation, when, on palpation, a vertebra projecting into the pharynx will be detected.

Torticollis does not give rise to localized pain over the vertebræ, while the lateral inclination of the head in no way resembles suboccipital disease in which the head is in hyperextension or hyperflexion.

Gonorrheal rheumatism has a rather sudden onset and there is a more decided febrile movement than in the process under consideration, and it does not give rise to localized pain in the cervical vertebræ. In spondylosis the stiffness is usually generalized, and the patient walks as if made of a single piece.

The differential diagnosis between syphilitic and tuberculous suboccipital Pott's disease is delicate, but the tuberculous syndrome is quite different from the luetic. In the tuberculous subject there will be the history of scrofula, enlarged lymph nodes, and repeated attacks of bronchitis. The tuberculous subject can be quite readily distinguished from the syphilitic. The latter is usually an adult in fairly good physical condition, the former will be a puny child in bad physical condition, offering at the same time evidences of pulmonary, lymphatic, or other manifestations of tuberculous infection.

The symptomatology of the suboccipital lesions is different in the two processes. In syphilis the pain is spontaneous, and worse at night and during rest, but the pain is relieved by rest in tuberculosis and is more likely to be provoked than spontaneous. Bacillary lesions frequently suppurate, sinuses form, and occasionally, but infrequently, large sequestra are eliminated. Gummata, on the contrary, give rise only to a bloody serous fluid, or to a small amount of thick pus; abscesses are rare, and quickly heal, while the sequestra are multiple and small. Antisyphilitic treatment will improve, or even cure, the process, or at all events never aggravate it, as it does tuberculosis of the bones.

Finally, the laboratory may be resorted to in doubtful cases, especially when the symptoms are not so distinctly manifest, and do not clearly indicate the nature of the process. The microscope will reveal the tubercle bacillus or the pallid spirochete, as the case may be. When positive, the Wassermann is a valuable diagnostic aid. The intradermic reaction, if negative in a subject suspected of syphilis, will confirm the diagnosis, especially when the Wassermann is positive.

VENEREAL DISEASES IN THE ANTENATAL PERIOD.

GONORRHEA and syphilis during pregnancy are of grave import to both child and mother. Of these syphilis is the more dangerous and the greater menace. Gonorrhea is more dangerous by far to the mother than to the child. In fact almost the only risk that the child runs from a case of gonorrhea in the mother is eye infection. On the other hand, infection with the disease during pregnancy is serious because of the danger of extension of the infection to the tubes, ovaries, and peritoneum. Dr. Mary Raw writing on the subject in the *Journal of the Royal Sanitary Institute* November, 1919, points out that it was the opinion of several authorities who gave evidence before the Royal Commission on Venereal Diseases, that "somewhere about 25 per cent. of all the serious inflammations and abscesses which may affect the internal generative organs of women are due to gonorrhea." Gonorrhea is serious because of the danger of sterility, but syphilis is of the greatest importance from the antenatal standpoint. Dr. Amand Routh says that "in urban districts 25 per cent. of the total antenatal deaths and deaths during the first month after birth, are due to syphilitic infection of the fertilized ovum or fetus, and that probably 20 per cent. would be a fair percentage over the whole of England and Wales. This would mean that about twenty-seven thousand deaths would occur annually in England and

Wales during the ante-natal period and first month of life."

Dr. Raw classes pregnant women suffering from syphilis as follows: (1) Those who have definite clinical signs such as chancre, rash, or other local manifestation. (2) Those who present no obvious signs of the disease, but who have a history of miscarriages, still births, or premature births. In regard to diagnosis in these cases careful questioning will sometimes elicit particulars of a previous illness, or local lesions that are very suggestive. In many cases, however, no such data can be obtained. As for treatment Dr. Raw holds that there is no reason why, if care is exercised, a course of treatment with arsphenamine and mercury should not be given to pregnant women. Special attention should be paid throughout the course to seeing that the drugs are being well borne, the danger of miscarriage from toxic causes being kept in mind. If these patients come under treatment early in their pregnancy, there is time for a sufficient course to be given to warrant the hope that a healthy child may be born.

INTERNAL REMEDIES IN PSORIASIS.

THE vexatious subject of the treatment of psoriasis is discussed by the distinguished dermatologist Sabouraud in *La Presse Médicale* for January 21, 1920, xxviii, 6. The disease probably never undergoes spontaneous recovery, and it is generally regarded as incurable. Benign cases apparently yield to treatment, but this is often the result of an illusion, for the nature of these cases is to present periods of latency; they may improve under local treatment, but recurrence sooner or later apparently is inevitable. The results obtained are hardly worth the trouble taken. The author does not include diet under internal treatment; it is, of course, admitted that under certain severe regimen relapses may be warded off for prolonged intervals, but it has not been satisfactorily proven that regimen can really cure the disease. From another viewpoint there is no known factor which can aggravate the disease, for if there were it might give us a line on successful treatment.

When a psoriatic contracts syphilis it has been noted with surprise that the specific treatment will clear up the skin of syphilides, psoriasis, and all. This hint has been utilized, and some cases of psoriasis in non-syphilitics have cleared up under calomel injections while others have not. This fact seems to hold good for all antisyphilitic remedies, and Danlos has reported some quite remarkable results from the use of cacodylate of sodium, but the more powerful arsenicals like salvarsan apparently hold out no real hope. The author notes that intercurrent typhoid fever has cleared up a psoriasis, with reappearance during convalescence, but he does not mention the apparent cures obtained by the injection of anti-typhoid vaccine. Bory believes that in colloidal sulphur he has found an antipsoriatic of merit, but Sabouraud believes the results to be inferior to those obtained by arsenicals. He does not mention the ordinary use of Fowler's solution or of arsenical mineral waters, but the well-known sulphur springs have some repute in this direction. The *x*-rays applied to one extremity may clear up the spots, and recently Danyzs has applied an autogenous vaccine made from the patient's intestinal microorganisms with alleged benefit. Sabouraud has studied the results of this treatment, but is not enthusiastic over the resource as a routine procedure, although he concedes that it may have power over the disease when used persistently for a long period.

In this country some quite remarkable results—only time will enable us to pronounce them cures—have been obtained by the injection of antityphoid vaccine and nonspecific proteins, especially those derived from vegetable seeds and grasses, the so-called proteals. Sabouraud appears not to have heard of this method, but it is well worth his study.

MEDICAL HISTORY.

POSSIBLY, if we search long enough, we may succeed in finding a medical school which gives a place in its curriculum to medical history. The place is necessarily small, for goodness knows it is hard enough to get present-day medical facts before the students, let alone the humors and boiling oil of the ancients. Still, it is at least a recognition of the value and interest of the subject even in these hard-pressing times. The subject is of great and really vital importance, and that it is interesting to a fascinating degree no one will deny. Moreover, to the majority of medical men it is absolutely unexplored ground. Lawyers may know their Roman law or any other part of legal history; ministers may know church history backward, but the average doctor could not tell you any more about Hippocrates than that he wrote an oath; nor about Galen than that some veins were named for him. A few remarks about history prefacing the text-book discussions of the various diseases—and there you are! The result is that our graduates in medicine miss much which is of real charm and cultural value, and by no manner of means devoid of utilitarianism. Witness the various "discoveries" heralded from time to time, which are found, after a little research into the records of the past, to be merely reincarnation of long-dead theories.

At present, undoubtedly the best way to get medical history before the undergraduates is to offer them a course of, say, six lectures designed to awaken their interest in the subject, and acquainting them with the most readable medical histories. Then those sufficiently interested among both faculty and students could make good use of a club, like the Charaka, for instance, at whose meetings papers would be read by members or guests on medical-historical subjects. A few such clubs have been formed, and they have proved to be of great value. The establishment of a Section of Historical Medicine of the New York Academy of Medicine is an

important advance in this direction, and its work will undoubtedly stimulate research in medical history. Certainly, chairs of a history of medicine are needed in our schools to-day. The makers of the profession's strenuous present should not forget the makers of its fruitful past.

Clinical Research.

To the vanishing element of the medical profession which may be said to belong to the "old school"—those who exercise that power, intuitive and unteachable but capable of development, which the late Dr. Emil Gruening was wont to call the "*imponderabilia*"—the establishment of the St. Andrews Institute for Clinical Research comes in the nature of a vindication. This element has long known that instrumental methods of diagnosis alone are insufficient in a large proportion of cases of a goodly number of diseases. To this class belongs the physician who, for example, having been accustomed to study minutely the symptomatology of disease, recognizes typhoid fever and is well along with its treatment before the instrumental diagnostician delivers his pronouncement. It may be vouchsafed, too, that many a "new school" practitioner of medicine of more or less philosophical trend of mind has often felt the need of something more than the modern diagnostic laboratory to aid him in the quick recognition of disease. Both the old and the new schools of medicine, therefore, may watch with interest the development of the new institution whose aim is the prevention of disease through a study of its clinical manifestations first. Sir James Mackenzie, founder and director, formally opened the Institute with a masterly address on clinical research, which is published in full in the *British Medical Journal* and abstracted in this issue of the Medical Record.

Encephalitis Lethargica Diagnosticated as Cerebral Influenza.

Although many, especially in England, think that sleeping sickness is much more closely related to infantile paralysis than to influenza the idea that the affection may be grippal will not down, especially among those acquainted with the history of former epidemics. A case which was originally reported in an Argentine journal and is found in abstract in *El Siglo Médico* for January 7, 1920, lxvi, 3445, occurred in a woman of 22 with negative antecedents who was two months pregnant. She was seized with headache and fever and suddenly bilateral ptosis supervened. There was quiet delirium with somnolence. The latter symptom was early and continuous, and before taking to her bed the young woman was continuously dozing in her chair. She conversed at times and spoke distinctly. As she was gravid the scanty urine was at once examined and proved to be normal. However, renal complications were feared and energetic derivative treatment was practised. The only response was that abortion occurred, but there was no resulting improvement in her condition. To the ptosis was added some internal strabismus. Inspection of the mouth revealed the socalled "grippal arch" on the palate with mild pharyngitis. The "porcelain tongue" of Faissans was in evidence and the conjunctivæ was suffused. Uremia and meningitis were now definitely excluded. Another affection excluded was botulism, as were also cerebral syphilis and abscess and tumor of the brain. There was no examination of the cerebrospinal fluid. After twenty-eight days of somnolence the patient suddenly expired. Clinically the case was lethargic encephalitis. Influenza was epidemic at the time in the vicinity, and there was absolutely no other causal factor to invoke.

A Symptom of Hyperthyroidism.

Dr. Maranon of Madrid has described in the *Revista Española de Medicina y Cirugia* for November, 1919, ii, 17, an induced symptom which he found present in 92 out of 100 cases of hyperthyroidism, irrespective of the clinical type of the latter. By slightly rubbing or pressing with the fingers the integument of the throat an intense vasomotor reaction may be provoked. It is not confined to the area rubbed but may extend to the anterior wall of the thorax. In goitrous subjects the distribution is markedly influenced by the area of the goiter, whether unilateral or bilateral. The red area may be continuous or dissociated, and in certain cases an urticarial component is evident, the area showing slight elevation. The mere fact that the practitioner is about to compress or stroke the skin may cause the phenomenon without actual contact. A blush may appear independently on the thorax or other distant point. A proportional or quantitative behavior has not been seen, and the vasomotor irritability is quite independent of the degree of hyperthyroidism in a given case. The author claims a certain priority in calling attention to this symptom, although Chvostek has called attention to the unmotivated blushing of the hyperthyroid subject. The author belives that excess of thyroid or altered thyroid secretion has sensitized the vasomotor apparatus and he would place the phenomenon under sympathicotonic (?) manifestations. It is seen predominantly in women, in the young and at the menopause. The author is silent as to any possible relationship to dermographism.

News of the Week.

Health of the Troops.—The following report of disease among troops is given by the *Army and Navy Journal* of February 21: Influenza continues at many of the large camps and stations, principally among the eastern and southern stations, having decreased in the camps and stations located in the central part of the United States where the present epidemic first appeared. Although there were fewer new cases of influenza reported during the week ending Feb. 16, the number of new cases of pneumonia is double the number reported the previous week. The admission and non-effective rates show a slight decline while the death rate is more than double that of the previous week, due to seventy-two deaths from pneumonia and six from influenza against thirty-three from pneumonia and one from influenza in the week of Jan. 30. Special

diseases were reported as follows: Influenza, 1347; pneumonia, 211; measles, 33; meningitis, 1; malaria, 5; scarlet fever, 7; diphtheria, 7. There is a marked decline in the number of new cases of influenza, measles and pneumonia among the American Forces in Germany and a corresponding increase in the death rate for disease. There were only two deaths from disease reported this week against five in the previous week. Among the American Forces in Siberia influenza shows a slight increase, but there is a decrease in the number of pneumonia and measles. No deaths were reported among these troops for the week.

Examination for Scientific Aid. — The United States Civil Service Commission announces an open competitive examination to be held March 16 for scientific aid in the Division of Anthropology, National Museum, Washington, D. C. The salary is $1,500 per year. Both men and women are eligible. Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R. Applications should be properly executed, including the medical certificate, and must be filed with the Civil Service Commission, Washington, D. C., prior to the hour fo closing business on March 16, 1920.

Ophthalmic Examinations. — The American Board of Ophthalmic Examinations will hold an examination at New Orleans, April 26, at the time of the meeting of the American Medical Association. Candidates who wish to take the examination for the certificate of the board must have their application and the necessary credentials in the hands of the secretary, Dr. William H. Wilder, 25 East Washington Street, Chicago, at least sixty days before the date of examination. The three chief functions of the board, which was organized in 1916 by committees from the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Oto-Laryngology, are: *First.* To establish standards of fitness to practice Ophthalmology. *Second.* To investigate and prepare lists of medical schools, hospitals, and private instructors recognized as competent to give the required instruction in Ophthalmology. *Third.* To arrange, control, and conduct examinations to test the qualifications of those who desire to practice Ophthalmology, and to confer a certificate upon those who meet the established standards.

Warning Against Ripe Olives.—Federal and State food inspectors in fifty-two towns of eight States are said to be making an effort to locate and destroy dozens of bottles of ripe stuffed olives containing the *Bacillus botulinus*. The brands involved are "Batavia," "Ferndell," and "Richelieu." Only ripe olives, stuffed with pimentoes and sold in bottles are said to be affected. New York State: Richelieu Brand—Auburn, 12; Utica, 2; Malone, 3; Geneva, 10; Gloversville, 3; Ferndell Brand—Syracuse, 12; Oneonta, 6; Lockport, 12. Indiana—Richelieu Brand—Monticello, 4; Ferndell Brand—Fort Wayne, 12; Batavia Brand—Indianapolis, 6.

Ten Thousand Defectives at Large in New Jersey.—The State Board of Institutions and Agencies of New Jersey has submitted a report to Governor Edwards and the joint legislative appropriations committee stating that there are approximately 10,000 feeble-minded, epileptic, insane, unstable, and "unadjusted" persons and incipient and advanced tuberculosis patients at large in the state and unprovided for. The board asks that $2,500,000 be provided for 1920 and $1,500,000 for each year thereafter until 1931, for a construction program giving adequate facilities for caring for such persons.

Expansion of State Health Department.—In a message to the New York State Legislature on February 17, accompanying the report of the Reconstruction Commission on Public Health, Governor Smith reiterated his strong advocacy of a broad public health policy and urged that the state assume greater responsibility. He suggested that the state should subsidize local health affairs and co-ordinate private and public health facilities, and urged liberal financial provision for the Department of Health.

Rabies Dormant Two Years.—A negro in Alabama is alleged to have developed rabies two years after he was bitten by a pet dog. He was sent to a hospital in Montgomery, where he attacked the nurses and other attendants. In attempts to subdue him he was shot and killed by officers.

Influenza in Germany. — According to press dispatches under date of February 15 the epidemic of influenza in Germany has spread alarmingly. The number of cases in Berlin had risen to over 700 daily, and during the week there were about 100 deaths in the city's hospitals. The epidemic had spread to many places west of Berlin. At Dortmund, where it was most severe, there were 115 deaths during the week, the victims being either children from one to ten years of age or persons between thirty and forty years of age. In the majority of cases the disease is accompanied by pleurisy.

Food Cards in Italy.—The card system for the necessaries of life has been re-established in Italy under the same conditions as during the war. Bread, rice, maccaroni, coal, lard and fats are issued by card. This has been rendered necessary by high rate of exchange, the difficulty of obtaining transport, and the scarcity in supplies.

German Children and the War. — Professor Abderhalden of Halle is reported as having declared that but for the war 2,000,000 children would have been born in Germany between 1914 and 1918. Half a million children were suffering from starvation at the time of the armistice, over 100,000 of whom would have died but for steps then taken. Tuberculosis and rickets were prevalent to a terrible degree among the youth of Germany. Contrary to all reports, declared the professor, food conditions were better in Vienna than in Germany.

Work for British Disabled Soldiers.—It is reported that since the national scheme for employment of disabled men was started in Great Britain last September, 9500 firms have agreed to employ a stated percentage of disabled men. The quota is generally 5 per cent. Employment has been guaranteed for 97,000. There are still 40,000 disabled men waiting for work, and the hospitals have many more to discharge.

Esthonian Relief Work Halted.—Typhus and influenza, which are raging among the remnants of the Yudenitch anti-Bolshevik army in Esthonia, have caused the collapse of the Russian relief organizations caring for the refugees in that country, according to news received by the American Central Committee for Russian Relief in New York. About $10,000,000 are available for the work for the next five months, but the Esthonians, faced with caring for their own people, are unable to take over the relief work of the Russians. The only agencies operating in the country are temporary civilian organizations. Of the 28,000 refugees who are being fed, 16,000 are said to be ill, most of them suffering from typhus fever.

Woman Trustee of Bellevue Hospital. — Mrs. Benjamin Lissberger has been appointed by Mayor Hylan of New York City as a member of the board of trustees of Bellevue Hospital to serve for a term of seven years. This is the first time in the history of the institution that a woman has served in this capacity.

Association of American Peroral Endoscopists.—The next meeting of this association will be held in Boston on June 1, under the presidency of Dr. John M. Murphy of Cincinnati. The secretary is Dr. Samuel Iglauer, 701 Race Street, Cincinnati.

Dr. Stephen Smith of New York City celebrated his ninety-seventh birthday February 20 en route to California. Dr. Smith was born on a farm near Skaneateles, N. Y., in 1823, coming to the city when he was a young man. He has long been the dean of the New York medical profession.

Dr. Mabel Ulrich of Minneapolis, Minn., has been appointed director of health service for the American Red Cross in Minnesota, North and South Dakota and Montana. Her principal task will be to coordinate the work of the various committes, agencies and organizations engaged in public health work in the territory to which she is assigned.

Forty Thousand Cripples in New York City.—The Committee on Survey of Cripples has been listing the cripples in New York City, with a view to determining whether these individuals are being properly looked after medically, educationally, and industrially. It has been found that the average ratio of cripples to total population is 7 to 1,000, or more than 40,000 on a population basis of 6,000,000. More than half of the cripples are under 15 years of age. It was found that in a district of sixteen blocks in Greenwich Village, whose population as estimated by the canvassers is 18,609, there are 178 cripples, only ninety-two of whom are being treated. On the East Side ten blocks showed a population of 20,503, with ninety-three cripples, forty-nine being under treatment. In Harlem the same number of blocks gave a population of 13,364, with 134 cripples, seventy-three being treated. The Red Hook district of Brooklyn showed a population of 15,690 living in seventeen blocks, with eighty-four cripples. Twenty-four blocks in the Bronx with a population of 22,002 had 121 cripples, fifty-seven of whom were being treated, and fourteen blocks in Williamsburg with 15,066 population had 130 cripples. The majority of the cases not being treated are neglected because there is no agency to search them out. This committee, of which Thomas S. McLane is chairman and Henry C. Wright director, represents forty-one hospitals and associations dealing with cripples. The other members of the committee, of whom the first five, together with the chairman, constitute an executive committee are: Dr. Thomas J. Riley, representing the Brooklyn Nursing Agencies; Dr. S. S. Goldwater, the General Hospitals of New York; Douglas MacMurtrie, the Federation of Associations for Cripples; Dr. E. H. Lewinski-Corwin, the Out Patient Hospital; Alexander M. White, treasurer of the committee; James H. Perkins, representing business interests; William Church Osborn, philanthropy in general; Mrs. Henry B. Barnes, nursing agencies; Mrs. John S. Sheppard, hospital social service; Dr. Virgil P. Gibney, orthopedic hospitals of Manhattan; Dr. Jacques Rushmore, orthopedic hospitals of Brooklyn; Dr. Andrew W. Edson, Board of Education.

Influenza Epidemic in New York City Officially Ended.—Commissioner Copeland of the New York City Board of Health has declared the epidemic of influenza officially at an end. Orders relating to closing hours and other restrictions have been withdrawn.

Children's Hospitals in Lille.—An appeal has been made to Americans to contribute to the fund being raised for the Children's Hospitals in Lille, France. It is estimated that the rebuilding of the city will require at least two years, and during that time the inhabitants will be unable to support the hospitals. Checks may be sent to W. R. Grace & Co., Hanover Square, New York City.

Doctors' Service Corps Organized.—According to recent announcement, a group of physicians, surgeons and dentists who served in the Army and Navy during the World War have organized this national body, with headquarters in New York City. The purposes of the organization are said to be to promote public health, to relieve the doctors of the business side of their work, to combat quackery, and to advance scientific standards and professional ideals.

Results of Bulgarian Occupation of Macedonia.—The Greek government recently completed a census of the survivors of the Bulgarian occupation of Macedonia, from which it is learned that of a total population of 315,000 living in 339 villages, more than 32,000 Greeks died of hunger, assassination, and disease.

Medical Society Elections.—The MEDICAL SOCIETY OF THE COUNTY OF HERKIMER on December 3 elected the following officers for the coming year: *President*, Dr. H. H. Halliwell; *First Vice-President*, Dr. J. H. Sheffield; *Second Vice-President*, Dr. Harry W. Vickers; *Third Vice-President*, Dr. Frederic S. Cole; *Secretary*, Dr. A. Walter Suiter; *Treasurer*, Dr. George Graves.

THE NEW HAVEN (CONN.) MEDICAL SOCIETY, at its annual meeting January 21, elected the following officers for the ensuing year: *President*, Dr. Robert E. Peck; *Vice-President*, Dr. Raynham Townsend; *Recording Secretary*, Dr. Frank L. Phillips; *Financial Secretary*, Dr. Samuel J. Goldberg; *Treasurer*, Dr. Frank H. Wheeler.

THE ASSOCIATED PHYSICIANS OF LONG ISLAND, at their twenty-second annual meeting held January 31, 1920, elected the following officers for the ensuing year: *President*, Dr. Henry Goodwin Webster; *First Vice-President*, Dr. Harris A. Houghton; *Second Vice-President*, Dr. Hugh Halsey; *Third Vice-President*, Dr. Joshua M. Van Cott; *Secretary*, Dr. James Cole Hancock; *Treasurer*, Dr. Edwin S. Moore.

THE NEW BRITAIN MEDICAL ASSOCIATION, at its annual meeting January 22, elected the following officers for the coming year: *President*, Dr. W. J. Robbins; *Vice-President*, Dr. F. J. Mann; *Secretary-Treasurer*, Dr. George W. Dunn.

THE ST. CROIX (MAINE) MEDICAL SOCIETY recently elected the following officers to serve for the ensuing year: *President*, Dr. F. A. Duston; *Vice-President*, Dr. H. R. DePue; *Secretary-Treasurer*, Dr. J. W. J. Marion.

THE BERRIEN-COOK COUNTY (GEORGIA) MEDICAL SOCIETY, at its annual meeting recently held at Cordele, elected the following officers for the next year: *President*, Dr. H. W. Clements; *Vice-President*, Dr. M. L. Weeb; *Secretary-Treasurer*, Dr. M. R. Hutchinson.

Obituary Notes.—Dr. RICHARD F. BOONSTRA of the health department died of pneumonia in Detroit, Mich., January 30, at the age of 31. He was graduated from the Medical Department of the University of Michigan in 1913. During the war Dr. Boonstra was in the aviation service.

Dr. RIDGELY BROWN WARFIELD of Baltimore, Md., was found dead in bed February 4. Dr. Warfield was graduated from the University of Maryland Medical School in 1884, and for a number of years was professor of surgery in that institution. He was senior surgeon at the Maryland General Hospital. He was a fellow of the American College of Surgeons, and member of the American Medical Association.

Dr. EDWARD A. ARNOLD of East Orange, N. J., died from influenza-pneumonia February 5, in his thirty-second year. He was graduated from Cornell University Medical College in 1909.

Dr. HERBERT E. GARDINOR of New York City died suddenly on December 1, at Jerusalem, Palestine, at the age of 48. He was graduated from the College of Physicians and Surgeons in 1891.

Dr. B. HOLLY SMITH, president of the faculty of the Baltimore Dental College, was found dead in bed at his home in that city on January 22. He was 61 years of age. He was graduated from the Baltimore College of Dental Surgery in 1881, and two years later from the College of Physicians and Surgeons, New York City. He was widely known as an oral surgeon and as a teacher of this subject. He was a member of the National Association of Dental Faculties, the National Dental Association, and other organizations.

Dr. JOEL J. FOULON of East St. Louis, Ill., died of heart disease January 23, at the age of 58. He was graduated from Missouri Medical College in 1887, and had been associated with his twin brother, Dr. Z. S. Foulon, in the practice of medicine in East St. Louis for thirty years.

Dr. FRED J. BOWLES of New York City died January 28. He was graduated from New York University Medical College in 1884, and specialized in ophthalmology and oto-laryngology. He was a member of the American Medical Association, the American Academy of Ophthalmology and Otolaryngology, and other organizations.

Dr. HENRY RUDOLPH WIDMER of Newark, N. J., died suddenly January 31. He was graduated from the College of Physicians and Surgeons, New York City, in 1903.

Dr. WILLIAM E. HOWLEY of New York City died February 1. He was graduated from New York University Medical College in 1891.

Dr. CARY HAMILTON WILKINSON died at his home in Galveston, Texas, February 2, at the age of 76. He was graduated from Jefferson Medical College, Philadelphia, in 1869, and had practised in Galveston continuously since his graduation.

Dr. JOHN JASPER SEWALL of Newport, Me., died February 3, after a long illness. He was born in 1857, and was graduated from New York University Medical College in 1884.

Dr. FRANK C. HERSHEY of Carmel, Indiana, health officer for Hamilton County, died of blood poisoning February 4, at the age of 53. He was graduated from the Medical College of Indiana, Indianapolis, in 1894.

Dr. EDWARD H. LAKE of Ross, Calif., surgeon on the Union Steamship Company's liner *Tofua*, died of heart disease on board the vessel January 28, when several hundred miles from port, en route from Wellington. His body was buried at sea. He was graduated from the St. Louis College of Physicians and Surgeons in 1895.

Dr. ERNEST HENRY NOYES of Newburyport, Mass., died February 8, after a long illness. He was born in 1853, and was graduated from the Medical School of Harvard University in 1880. Dr. Noyes was a member of the American Medical Association, the Massachusetts Medical Society, and other organizations.

Dr. WILLIAM A. MYERS of Brooklyn, N. Y., died from cardiac disease February 15, in his fifty-fourth year. He had been ill since 1904, when he fell and injured his spine. Dr. Myers, who was one of the founders of the Bushwick Hospital, was graduated from the New York University Medical College in 1888.

Correspondence.

LETTER FROM GENEVA.

GENEVA, SWITZERLAND, February 5, 1920.

As in all other medical centers, the dermatological and syphilidographic clinic of the University of Geneva has given much attention to the study of the Wassermann reaction and its clinical value. But for the uninitiated, this test of the activity has its dangers and Prof. Oltramare frequently relates in his lectures that many of his former syphilitic patients come to him for a Wassermann on their own account, without troubling themselves

even to know if the data obtained can be relied upon. For them a negative result is synonymous of a cure, while the contrary means an uncured or even serious syphilis. For this reason Oltramare very rightly objects to telling patients the results of the examination because of the deplorable results that may accrue. For example, he mentions a patient formerly under his care who returned to him with the mouth garnished with mucous accidents and denied their specific nature because a few days previously a Wassermann made at Zurich had been found negative. The test was repeated at Geneva and was found very positive, while the lesions quickly disappeared under specific treatment. But this proof was necessary to convince the patient.

Many similar mistakes doubtless can be recorded and they are entirely comprehensible when the real delicacy of the technique of seroreaction is considered, and the little confidence to be given it unless every precaution be taken. Freudenberg has related the history of two patients whose sera examined in a number of laboratories gave absolutely discordant results. Wassidlo made a systematic serodiagnosis in twenty cases and in 66 per cent. the results were contradictory. Many others have recorded similar diagnostic difficulties with the Wassermann. To explain these mistakes the antigen, the complement, the amboceptor, and above all the simplified rapid methods still resorted to by many laboratories under the name of the Wassermann test, have each in turn been more or less incriminated.

Then, as Golny of Geneva points out, besides the cases giving a distinctly positive or negative result, it must be recognized that there are other instances where doubt will exist, due either to previous treatment of the patient or to some peculiar state of his serum which is often but temporary and therefore requires a second or even a third essay, which, perhaps, will settle the question. This fact is so true that all the statistics published before 1910 gave insufficient results, with the exception of that due to Boas, which gave 100 per cent. of positive reactions in untreated cases presenting secondary accidents, while Fleischmann found only 96 per cent., MacDonagh found 97 per cent., and Blascheo, Citron, and Ledermann each found 98 per cent.

The statistics of the laboratory of syphilidography of the University of Geneva gave 98 per cent. up to 1911, but since this year, thanks to a very careful technique, Prof. Oltramare has had 100 per cent. positive results, and it is maintained here that a laboratory not obtaining these results must commit some technical error. Regardless of such mistakes, it must be admitted that the Wassermann reaction is an element of the highest order in the diagnosis of syphilis and the progressive extension made by this infection in the etiology of many morbid processes and dystrophies obliges the clinician to resort to it in a great number and variety of cases as it is frequently the only diagnostic means at our disposal in obscure pathological states.

It goes without saying that the case history and clinical signs retain all their value and the test treatment, so greatly in honor before the discovery of seroreaction, will still render appreciable service, but a positive Wassermann furnishes a confirmation which is far from being unimportant. It is, however, a method the exact clinical value of which must be known and appreciated in order order not to exact services from it which it is incapable of rendering.

The positive Wassermann is truly a cardinal symptom of syphilis, which may, however, be absent, just as the exanthema of scarlet fever may be wanting in some cases. When positive it greatly helps; its absence does not imply an absolute negation. It can be safely affirmed, according to the teachings of the Geneva school, that a positive Wassermann obtained in a chronic affection creates the obligation of regarding the case as having a syphilitic basis, and consequently a specific treatment is to be essayed.

Cases of psoriasis, lupus, or epithelioma which, after the discovery of a positive seroreaction, have been submitted to mercurial or arsenical treatment and have been cured or greatly benefited, often to the great astonishment of many, are now not uncommon. It is well known that psoriasis always gives a negative seroreaction, while on the contrary, psoriasiform syphilides give a positive Wassermann, and some are even of the opinion that this test is the best means we as yet have of differentiating between tuberculosis or cancer and syphilis.

In numerous instances of positive reaction, the syphilitic nature of a lesion of the aortic orifice will be made, the consequences of a specific aortitis the clinical diagnosis of which had previously been very doubtful. Besides such examples, we now know the immense service that this seroreaction can render in neurological and psychiatric practice, in the diagnosis of locomotor ataxia and general paresis.

The percentages of positive results obtained at the syphilidographic clinic of the University of Geneva, based on a total of 4500 Wassermann reactions, were:

During the primary lesion, 69; secondary syphilis with symptoms, untreated, 100; treated or not, 89; treated, 79; without symptoms, treated, 47. Tertiary syphilis in activity, 64. Tertiary syphilis without any evident lesions, 47.

UNIFORMITY NEEDED IN SHAPE AND SIZE OF PROFESSIONAL REPRINTS AND CIRCULARS.

To the Editor of the Medical Record:

Sir:—This is a plea for uniformity in size, shape, and arrangement in printed data which the physician may wish to preserve, conveniently file, and promptly refer to; such as: (*a*) Reprints of papers and (*b*) advertising data describing objects which deserve preservation and prompt reference.

The object of collectanea is convenience for filing and for reference. Heretofore I made recommendations that advertisers adopt a suitable system whereby descriptive matter, memoranda, etc., could be readily filed. One measure has been extensively adopted, viz., index filing cards of standard size, 3 x 5, also small, closely printed circulars or descriptive

booklets of the same size, 3 x 5, and containing several pages of outline. The fact is that many physicians now use index filing systems, kept in the drawer of a desk for short case notes, also another for other data. Inquiry and experience teach me that this custom of filing data is becoming nearly universal, and will become more so in proportion as the material is supplied in filable shape. Meanwhile all heterogeneous printed stuff in odd sizes and forms is thrown in the scrap, where it deserves to go.

Reprints of valuable medical articles suffer in much the same way. To collect and attempt to arrange them causes suffering, vexation, and loss of time to those who wish to preserve and later read them. Surely the editors or managers of medical journals should be at least as cooperative as some manufacturing concerns have now become. The subject is no trifling matter; is of fundamental significance.

J. Madison Taylor, M.D.

Philadelphia, Pa.

CLINICAL CURE OF MALARIA.

To the Editor of the Medical Record:

Sir:—All the remarkable cures are not reported through the medical societies or clinics. This is one I overheard in a Broadway car. The speaker was a man about sixty, earnestly giving information to his friend.

"Aw, the climate is different now. Why, years ago you'd get the agyer. It'd grab yer right on the sidewalk, and y'd shake for fifteen minutes, and nothin' u'd' stop it. I had it awful. I tuk everything that I heard of. And then I got the malaria. That's worse. It had me all the time. I went everywhere that anything was advertised, and to doctors who'd say they could cure malaria. But it was no use.

"Then a feller told me what to do. 'What you want ter do,' says he, 'is to git good and drunk. That'll knock the malaria out of yer.' So out I goes and starts it. I went up the line, takin' beer, gin and everything. And I kim down ag'in. And at Eighty-second Street corner I went into a place where was about forty steps goin' down to a cellar or basement. I tuk a big drink of whiskey there and started down the steps. What I wanted ter do, yer know, was to get them fightin' to knock out the malaria.

"I never knew nothin' till I woke up. I had nearly trun up me insides. Everything I had et for ten years musta come up. There was blood, too. A regular hemorrhage. It seems I tumbled down the steps. Well, I gets up and tuk two big drinks of French brandy and a chunk of ice as big as yer fist. That stopped the blood, and I've never had no malaria since."

For those who wish to try the remedy I would simply say that it is probably a trifle harder to follow the plan since January 16, and the exact location of those steps is not clearly indicated in the case as reported. But maybe any forty—count them—steps will do.

John G. Coyle, M.D.

220 East Thirty-first Street, New York.

Progress of Medical Science.

Journal of the American Medical Association.

February 14, 1920, lxxiv, 7.

1. Tuberculosis as a Focal Disease. Edward Jackson.
2. A Modified Technique in Operation for Oblique Inguinal Hernia. William A. Angwin.
3. Spina Bifida Oculta in a Child with Incontinence of Urine and Feces; Improvement in Vesical Control After Operation. Jerome S. Leopold.
4. Mesenteric, or Enterogenous, Cyst. Charles Stanley White.
5. The Mesenteric Nerve: A Discussion. C. K. Dickinson.
6. Intrathoracic Hodgkin's Disease: Its Roentgen Diagnosis. Harry Wessler and Charles M. Greene.
7. Hemolytic Streptococci in the Normal Throat After Tonsillectomy. H. B. Van Dyke.
8. The Rehabilitation of a Medical Reserve for the Army. Sanford H. Wadhams and Arnold D. Tuttle.
9. The Broad Tapework in Minnesota; Further Facts and Considerations. W. S. Nickerson.

7. Hemolytic Streptococci in the Normal Throat after Tonsillectomy.—H. B. Van Dyke, in view of the reports from civil and military observers during the last two years of the rôle of hemolytic streptococci, especially as secondary invaders in such diseases as influenza, lobar pneumonia, and measles, made a study of the incidence of these organisms in the throats of tonsillectomized individuals in good health. The series of fifty-five cases includes five females and fifty males, ranging in age from seven to thirty-three years. He found that in nine, or 16.4 per cent., there were markedly hemolytic streptococci. In sixteen, or 29 per cent., of the throats were the Brown's Alpha prime type. Thirty, or about 55 per cent., of the throats examined revealed no hemolytic streptococci. There seemed to be no significance in the time elapsing between the removal of the tonsils and the bacteriological examination of the throat for hemolytic streptococci. In several of the cases the Beta type of hemolytic streptococci was present in the absence of clinically visible changes in the throats. The fermentation reactions of these streptococci were typical of hemolytic streptococci. According to the classification of hemolytic streptococci by fermentation reactions as suggested by Holman, the organisms tested would be divided into two groups, *Streptococcus anginosus* (fermenting lactose, but not mannite and salicin) and *Streptococcus pyogenes* (fermenting lactose and salicin, but not mannite). The method employed by the writer differs from that of most investigators in that a routine preliminary cultivation of the throat cultures in blood broth was made.

The Lancet.

January 24, 1920, i, 4.

1. A Lecture on Pulmonary and Other Forms of Tuberculosis: Some Facts, Theories, and Hypotheses. H. Batty Shaw.
2. Carbon-Monoxide Poisoning in Warfare. W. J. Rutherfurd.
3. Rickets in Germany: A Study of the Effects of War on Children. Professor Dr. Engel.
4. A Case of Severe Cerebral Toxemia, Following an Intravenous Injection of Novarsenobillion. R. J. G. Parnell, with a Note by Sheldon F. Dudley.
5. The Schick Reaction for the Determination of Susceptibility to Diphtheria. H. Mason Leete.
6. The Treatment of Malaria in Macedonia. Arthur G. Phear.
7. Bilharziasis: Its Incidence and Eradication. Frank Milton.
8. The Abuse of Passive Movements. E. Stanley Brentnall.

5. The Schick Reaction for the Determination of Susceptibility to Diphtheria.—H. Mason Leete gives the results of an investigation made with a view primarily to the forming of some opinion as to the reliability of the Schick reaction, its difficulties, and its suitability for application in general and hospital practice, together with the advantages that might be expected to arise therefrom. The test is performed by injecting a very small dose of diphtheria toxin into the skin, and noting after a certain lapse of time whether there is a reaction produced or not. If there is a reaction the test is said to be positive, and this result indicates that the subject lacks natural antitoxin immunity, and is therefore more likely to be susceptible to diphtheria. This reaction is due to the irritating effect of the toxin on the skin cells. When the patient has circulating in his blood natural diphtheria antitoxin the injected toxin is neutralized, so that no local reaction is produced. The test is then said to be negative, and the subject

to be immune to diphtheria. The toxin injected is a ripened one which has been recently carefully standardized and its minimal lethal dose accurately determined. The minimal lethal dose is the smallest amount of toxin that will produce death in a 250-gram guinea pig within four days. Such a toxin is taken, and suitable dilutions made until the diluted toxin contains one-tenth of a minimal lethal dose in one cubic centimeter. The amount actually injected in the test is 0.2 c.c. of this diluted toxin, which therefore contains one-fiftieth of a minimal lethal dose. The tests were performed in the Edinburgh City Hospital, the majority upon patients newly admitted to the scarlet fever pavilions. In addition, tests were carried out in other wards for the purpose of detecting susceptibles and protecting them with prophylactic doses of antitoxin, the need having arisen. Some tests were performed on the medical and nursing staffs. In 57.2 per cent. of the scarlet fever patients the reaction was positive, and it was noted that the positive reactions diminished with increasing age. They were more frequent among scarlet fever patients than among normal adults. In a series of sixty normal adults only seventeen were positive, which gives a percentage of 28, as compared with 37.5 in the corresponding group of scarlet fever patients. One hundred and ten cases, all of whom had previously received therapeutic doses of antitoxin at periods varying from one to seventy days before the performance of the test, were tested, and all except one gave a negative result. Among the series of 500 cases tested eleven cases of mild diphtheria, confirmed by bacteriological examination, occurred. Of these ten had given a good positive Schick, and the other one had been classed as doubtful. Among a series of tests performed on members of the hospital staff, one subject who gave a negative result developed clinical diphtheria. This may be explained on the basis of the small margin of error that is always to be reckoned with. Among thirty-two carriers eighteen were negative and fourteen positive to the Schick test, showing that immunity may depend upon other factors than the presence of antitoxin. From this study the writer concludes that the Schick test appears to be of definite value in detecting diphtheria susceptibles, and as such has many possible applications. It is easy to perform and free from danger. A reliable toxin and careful technique are essential. Once the differences between a positive and a pseudo reaction are appreciated reading is easy, but if there is any doubt controls of heated toxin should be used. The best times for readings are twenty-four hours, three days, and ten days after the test.

8. **The Abuse of Passive Movements.**—E. Stanley Brentnall thinks it is time that the phrase "massage and passive movements," as loosely indicating a form of treatment upon which responsibility for future failure may be thrown, should disappear forever. While of value in a few cases, not only is it useless as a routine therapeutic measure, but in many cases it does definite and positive harm. It is for these reasons that machinery of the Zander type has been excluded from up-to-date physiotherapeutic departments. Voluntary movement, on the other hand, whether reinforced externally or not, undertaken at the right moment, is a valuable method of treatment, physiologically correct, carrying with it its own guarantee of safety. Considerations such as these emphasize the necessity of a single control——that of the surgeon—over the treatment of a patient, no matter whether in the outpatient department, the ward, the massage and electrical department, or the gymnasium. There is no doubt in the writer's mind that the system of "watertight" departments with separate heads is to be held to blame for a certain degree of permanent disability following injuries.

British Medical Journal.

January 24, 1920, 1, 3082.

1. An Address on Clinical Research. Sir James Mackenzie.
2. Points in the Early Diagnosis of Pulmonary Tuberculosis. Thomas Beattie.
3. The Routine Treatment of Malaria in Uganda. J. A. Taylor.
4. A Comparison of Two Methods of Administering Arseno-benzol Compounds in Syphilis. H. E. Gibson.

1. An Address on Clinical Research.—Sir James Mackenzie, director of the recently organized St. Andrews Institute for Clinical Research, delivered this address at the opening of the Institute, his purpose being to give the reasons for such an enterprise. The many stumbling-blocks in the path of medical progress, he holds, are mainly due to the lack of understanding of the distinctive character of the science of medicine. The knowledge of disease is so incomplete that it is not yet known what steps should be taken to advance knowledge. It has been assumed that the methods which are suitable for various branches of science—as chemistry and physics—should be applied to medical investigation, but the methods of these sciences are not applicable to the investigation of the most important phenomena of disease. The methods which have helped some sections of medicine—as physiology and bacteriology—are not applicable by themselves to the wider fields of clinical medicine. The present-day conception takes too narrow a view of the field with which medical science has to deal. It assumes that instrumental methods are of necessity the only scientific methods. It has been assumed that because recording and measuring instruments and other methods have greatly advanced such limited fields of medicine as physiology, bacteriology and chemistry, therefore clinical medicine should adopt the same method. In medicine there are phenomena which the scientific instruments of to-day, however delicate, can neither register nor measure, and there are methods necessary for the investigation of disease which no laboratory experience can supply. As an outcome of this misunderstanding, large fields for investigation which are essential to the progress of medicine have been ignored, methods and principles have been unrecognized or imperfectly applied, while the appropriate investigator has been neither trained nor encouraged to do the work which he alone has the opportunity to perform. The present scheme, the writer declares, is not antagonistc to the investigation in other fields of research, nor is it the intention to substitute this scheme for others. The contention is that there are fields essential to the progress of medicine which have been neglected, and to some of these fields it is the intention of the Institute to devote itself, using the methods which are suitable for the purpose. The aim is the prevention of disease, and therefore the relief of suffering. The problem being the prevention of disease, a complete knowledge of disease in all its aspects is necessary before steps can be taken to prevent its occurrence. The first principle laid down is that as disease is made manifest only by the symptoms it produces, it is imperative that the first step should be to understand the nature and significance of symptoms. Developing the subject from this point, the writer discusses the early stage of disease; the nature of the predisposing conditions; the neglect of symptoms; the test of experience; the choice of the general practitioner as investigator; the training of the observer; the principles of investigation; differentiation; classification; the law of progression; the law of associated phenomena; the significance of symptoms (prognosis); the use of laboratory methods; the class of patients. Regarding the expectation of results, Sir James warns against any immediate achievement of the chief aim in medicine, the prevention and cure of disease. A long and weary road must be traveled. Being trained in the detection of symptoms, the immediate object is to find out the nature of the symptoms of disease, by discovering their mechanism, and by watching individuals to see what happens. In this way the onset of some diseases may be detected. After that it will be necessary to search for those who show the early signs of a particular disease, and recognizing these signs, seek then for the cause and the factors that favor its onset. If the contemplation of such work seems discouraging, it must be borne in mind that all great enterprises are based on work that has been done by individuals whose part is lost in oblivion.

4. **A Comparison of Two Methods of Administering Arseno-Benzol Compounds in Syphilis.**—H. E. Gibson made a comparative study of the administration of arseno-benzol compounds by the "concentrated course" and the "prolonged course" methods. In the first series of cases treatment consisted of one dose of 0.3 gram of kharsivan, followed at weekly intervals by doses of 0.6 gram, until a total of 2.7 grams had been

given, but an interval of fourteen days was allowed between the third and fourth doses. This course was thus completed in five or six weeks. In the second series of cases, three injections of 0.3 gram were given, then two of 0.4 gram, and two of 0.5 gram, all at weekly intervals, except for a fortnight's rest between the third and fourth injections, as in the other series. This course lasted about eight weeks, and the drug was given intravenously, as in the "concentrated course." Further treatment, if necessary, consisted, as a rule, of intramuscular injections of novarsenobillon, at weekly intervals, generally one of 0.3 gram and one of 0.6 gram. The criterion of cure was a negative Wassermann reaction. From this study the writer concludes that advantages seem to lie with the prolonged course, partly owing to the lesser incidence and violence of reactions, and partly because the total results are better than with the concentrated course, especially in secondary cases. Should a patient showing only a primary sore have urgent reasons for wanting a short course, the concentrated course may be given, but otherwise it is better to spread the treatment out over a longer period.

Revue Francaise de Gynécologie et d'Obstetrique.

November, 1919, xiv, 11.

Sensibilization of Mucous Membranes of the Guinea Pig to Gonococcus Infection.—Besse and Christides of Professor Buettner's Geneva Clinic report numerous experiments on the guinea pig in reference to the laboratory diagnosis of gonorrhea. In the work of others it does not appear that this line of investigation was promising, but apparently the experiments were limited to inoculation of the conjunctiva. The authors made use additionally of inoculation of the vagina with subsequent study of the uterus and tubes and have satisfied themselves that the guinea pig is the only animal which can be made to take gonorrhea. To make the animals more susceptible they were given a diet rich in sugar, while at the same time their ordinary food was reduced to a minimum. However, it was thought best to guard against emaciation. Gonorrhea pus was smeared on the cervix uteri and conjunctiva and both a cervicitis and conjunctivitis was produced. The experiments were varied in various ways, as by the use of pure cultures instead of smears of pus, by introduction beyond the cervix and into the rectum, etc. Two out of three pigs died of general gonococcic infection. The authors concluded that despite the interesting results the method could not be used in laboratory diagnosis. The work on the predisposing influence of diet will be continuued and beer and malt tested for this purposes, since beer will arouse the latent disease in man.

Schweizerischer Medizinische Wochenschrift.

January 8, 1920, 1, 2.

What Are Vitamines?—Tschirsch carries this subject back to the labors of Eijkman in 1897 and Stepp in 1909. We have knowledge of two groups of these bodies of which one is soluble in fats and insoluble in water and alcohol, while the other is soluble in water and alcohol but not in fats, ether, or acetone. It is certain that the animal body cannot form vitamines and that they reach the body through vegetable foods. We know little about them save that they can act in minute quantities and are fairly resistant, requiring a heat of 120° C. to destroy them. It seems evident that they are close to the enzymes. The animal is notably a much poorer chemist than the plant, and even the algæ are better chemists than the body of man; for they can utilize the nitrogen and carbon dioxide of the air. Study of plant chemistry shows that something in the vegetable kingdom can close the ring in hexacyclic compounds. The author gives many examples, as when acyclic lysin is transformed to cyclic piperidin and pyridin and acyclic hexose into cyclic inosite and pyrogallol, gallic and benzoic acids, etc. We may therefore assume that vitamines are necessary in the animal organism to close up certain half-closed ring combinations. The author terms them cyclocliases and assumes temporarily that they are enzymic, although he does not regard them as mere catalysts. The reactions which they make possible need not be limited to ring closure.

La Presse Médicale.

December 24, 1919, xxvii, 79.

Complemental Factors of Growth and Equilibrium.—Thiébaut begins his article with an allusion to vitamines. It has been shown that these mysterious substances occur in the vegetable as well as animal kingdom. Here, however, they are known as auximones to prevent confusion. The two substances are known as secondary factors of growth and equilibrium. Primary factors are of course protein, fat, carbohydrate, etc., and the vitamines behave as complemental to these. The great question relates to the mechanism, for thus far we know a vitamine chiefly through deficiency symptoms. We may think of a catalytic or diastasic activity, using the two terms as for the time synonymous. The rapid extension of our knowledge of electrons in physics makes it possible to think of the action of vitamines in the same connection. But while we have been accustomed to state that enzymes act by catalysis the author points out essential differences. Thus a diastase acts in a colloid medium and the quickness of action varies with the viscosity of the medium. It has recently been shown that every isomere of an organic combination has a specific diastasis, and this law brings the subject nearer the domain of electronics. In other words, the molecular grouping in stereochemic isomeres can only be motivated by electronic grouping on a colloidal surface. Aside from this specific behavior of isomeres, diastasic and catalytic actions are of the same type.

A New Phenomenon of the Pyramidal Tract.—Barré sums up a clinical study of a new leg maneuver practicable in paralyses and pareses as follows: The question posed is the effect of voluntary impulses on the muscles of the lower extremities. When fairly elicited the sign means that voluntary motricity is paralyzed and is of value in discriminating between functional and organic states and in excluding organic spastic hemiplegia, etc. The patient lies prone, with the legs flexed at right angles to the thighs. He is told to hold the pose and then at a word to relax. The normal man will hold his leg vertical for a long time without effort, but if there is any impairment of the pyramidal path the leg will begin to lower itself, the phenomenon varying with the severity of the case. In total paralysis the leg drops instantly and in minor degrees may slowly sag down or fall in a cog wheel manner of intermission. Upon this basis an entire series of induced phenomena may be isolated in nervous affections..

Archives Mensuelles d'Obstétrique et de Gynécologie.

November, 1919, viii, 11.

Value of Different Incisions for Laparotomy.—Rouffart at the close of a long article on this subject concludes that the median longitudinal incision while responding to every exigency of the operative act, gives occasion at times to eventration, which is especially frequent in healing by second intention. Every longitudinal median incision should therefore be sutured by a method which permits the reinforcement of the cicatrix by the muscular tissue of the recti. Every longitudinal extra-median incision which divides the muscles and disturbs their nutrition by section of the nerves should be rejected as predisposing to eventration. The superiority from the anatomical and clinical viewpoints of the transverse incision over the longitudinal incision should make it preferable in the majority of obstetrical and gynecological laparotomies.

Radium Therapy of Cancer of the Uterus.—Degrais in his brief article considers primary epithelioma of the cervix and postoperative recurrences. The former he divides into operable and inoperable. In the former the surgeon believes that his cases which escape operative death and ordinary recurrence will survive from 6 to 8 years and radium can hardly better such a result. It is true that we have but few cases to serve as a basis of study—cases in which the knife has been point blank refused. The author has cases of primary

epithelioma in which radium alone was used which are living 5 or 6 years after the application of radium, and one case in which survival is now 8 years. This was a papillary growth in which not even a preliminary curettage was used. As a rule the author makes use of the curette under the circumstances. The results in the author's series of cases have been typical throughout, the appearance of the cervix depending on the amount of tissue originally involved. Thus in certain cases the cervix was almost as if amputated. In the use of radium in recurrence the author does not speak of cure but has invariably secured benefit and prolonged life, often over long periods. The curette is always used as accessory. In the third type of case, the postoperative recurrence, radium has its peculiar usefulness. He cites one case of precocious recurrence in which radium stepped in and gave the patient at least 6 years more of life.

Il Policlinico.

November 30, 1919, xxvi, 48.

Injection of Adrenalin in the Diagnosis of Latent Diseases.—Dazzi refers to the value of this and similar resources in obscure affections, with especial reference to chronic malaria. The basic disease-process may of course be masked by some other more accidental condition. The practitioner may feel quite certain that a given subject has latent malaria but if he finds no parasites in the blood he is nonplussed for the moment. There may be present oligemia, enlarged spleen, fever having no special type and urobilinuria. The blood count and the pigmented leucocytes may strengthen the supposition. It is true that we have provocative tests of some value such as cold baths and various serum inoculations while adrenaline has been used as a hypertensive for this purpose as have also pituitrin and ergot. Numerous other attempts have been made with a view of mobilizing the hematozoon in the spleen and driving it into the blood, there to set up a malarial chill and fever. The spleen has been faradized and the various fever producing substances injected. The author has injected sterile milk, strychnia, iron, iodides, salvarsan, ergotine and adrenaline in the search for a provocative and finds that 1 mgm. of adrenalin is most dependable. He reports twenty cases in which he used the resource. He was guided by the appearance of the parasites in the blood rather than by clinical manifestations. The temperature rise seems to have been very slight but the spleen became reduced in size as a result of the injection while parasites appeared, at first one or two to a field and later 6, 8, or more. In but one case did the injection cause a typical malarial paroxysm.

Norsk Magazin for Laegevidenskaben.

December, 1919, lxxx, 12.

Cancer of the Rectum.—Bull reports a series of forty-four operative cases of this affection which include seven forms of intervention. The favorite was the Kraske with fourteen cases and three operative deaths and next came the dorsococcygeal or Kocher operation without mortality. The third in frequency was the combined method, six cases with one death. There were five perineal interventions without removal of the coccyx and four others in which the bone was removed —no operative deaths in these perineal cases. There were four cases of anal intervention with one death and one abdominal case without mortality. Total five operative deaths. In regard to remote results there were twelve clean cut recoveries while seven others survive but have not passed the three year mark. Eighteen patients are dead of recurrence and two others have died from causes not connected with the cancer or its treatment.

Influenza Pneumonia.—Hatlehol reports a large material of cases from Professor Laache's clinic at the Rikshospital, Cristiania. Instructive is the comparison with the pandemic of 1890. Warfvinge at that period recorded 325 cases of pneumonia from Swedish sources with a mortality of 25.5 per cent. During the recent pandemic figures from four leading Scandinavian clinics give 814 cases with 296 deaths, a mortality of 36.4 per cent. In the author's clinic the total number of cases treated was ninety-four and of these twenty-seven ended fatally. The third decade of life gave the highest incidence as well as the highest mortality save that naturally the percentage death rate was higher in the elderly. The third decade was the deadliest of the first four decades. Of the author's ninety-seven cases eleven were pneumonias from the start while the balance were secondary or complicating cases. It is of interest to learn that in 1803 one Nelson described a form of influenza accompanied by hemoptysis. Nearly half the author's cases showed hemorrhagic sputum although this term comprises everything from reddish expectoration to pure blood. The percentage of empyemas was eleven.

Dangers of Infection from Various Common Articles Contaminated by Tubercle Bacilli.—Lawrason Brown, S. A. Petroff, and Gilberto Pesquera of the Trudeau Sanatorium report the results of inoculation into guinea pigs of various substances and washings of objects that are ordinarily presumed to be contaminated with tubercle bacilli. Dust collected by a vacuum cleaner from the rug of a living room in the sanatorium was negative; swabbings from the mouthpiece of the sanatorium public telephone were negative. Washings of spoons, forks, glasses, and cups, that had been used at meals by patients and had not been cleansed were positive; those of knives and dishes were negative. Washings of the hands of patients who had coughed upon their hands were positive; those of the hand of a second person who had shaken hands with a tuberculous patient, and those of a door knob rubbed by a contaminated hand were negative. Saliva collected from patients just before coughing was positive. Patients with positive sputum kissed Petri dishes: washings of the dishes kissed, immediately and ten minutes after coughing, were positive; those, twenty minutes after cough, negative. The wash water of a tooth brush was positive; as were the fly specks of flies fed on tuberculous sputum.—*American Review of Tuberculosis*, December, 1919, Vol. III, No. 10.

Death Following Novocaine Administration.—Schoemaker reports the case of a man of 42 whose stomach disorders were clearly shown to be due to an epigastric hernia. His health was otherwise perfect. It was decided to operate and first a hypodermic of morphine was given. An hour later he was placed on the table and the usual injection begun of novocaine and adrenalin. At the first needle prick he turned pale, the pulse becoming small and weak but he was given the injection. The assistant who had figured in many local anesthesias encouraged the man a little and continued to infiltrate the skin. The patient now seemed quite normal, but before the completion of the infusion (8 punctures had been made) he rose up and fell from the table. He was then cyanotic with spasmodic respiration, pulse very small and weak. He was at once given a hypodermic of camphorated oil and ether and his heart was massaged but death took place in a few minutes. Autopsy revealed persistent foramen ovale, diameter 1.5 cm. No or only slight status thymicolymphaticus. The only other find aside from the hernia was lobular kidneys. The first shock which occurred at the moment of the needle prick was psychical, as nothing had as yet been injected. The patient had quite rallied when the real collapse came. The quantity of novocaine injected was small and in 6,000 injections the author saw but few examples of collapse and no serious results. A reflex inhibition of the heart and an injection into a venule seem out of the question. —*Nederlandsch Tijdschrift voor Geneeskunde.*

Cancerous Degeneration of Fibroids Following Radiotherapy.—Delbet has seen some particularly malignant cancerous transformation of fibroids in cases which had been submitted to radiotherapy. It is, of course, impossible to show that the condition did not preexist, but the author thinks it adds greatly to the responsibility of treating fibroids by this means. A debate on the subject took place in the Société de Chirurgie. The question is does the treatment aggravate the course of the cancer. It was also agitated whether the results attributable to radiotherapy were sufficiently favorable to justify the risk. No consensus of opinion was reached.—*Gazette des Hopitaux.*

Book Reviews.

VICIOUS CIRCLES IN DISEASE By JAMIESON B. HURRY, M.A., M.D. (Cantab.) Third Edition. Philadelphia: P. Blakiston's Son & Co., 1919.

THE third edition of this work appears six years after the second and is considerably larger than that edition. Some of the enlargement is due to rewriting or revision of the matter found in the previous editions, but much of it is added material presenting vicious circles as they are found in veterinary and plant diseases. It is of course well known that vicious circles appear in a great many of the pathological conditions which present themselves before the physician, but the average practitioner is prone to regard them merely as a logical and expected portion of the disease complex. In this work vicious circles are detected in numerous conditions and are picked out and collected in one volume. The text is reinforced with numerous quotations from authors who have used the term vicious circle and one feels that some one must have told the author there was no such thing and as a result he has written this book to prove its existence. It is moderately interesting, but since the vicious circle is not in itself an entity, can have but slight practical value.

THE NARCOTIC PROBLEM. By ERNEST S. BISHOP, M.D., F.A.C.P., Clinical Professor of Medicine, New York Polyclinic Medical School; Member Narcotic Committee, Conference of Judges and Justices of New York State; Committee on Habit Forming Drugs, Section on Food and Drugs, American Public Health Association, etc. New York: The Macmillan Company, 1920.

IN this book of less than two hundred pages, the author presents two vital elements which have received insufficient consideration,—first, the sufferings and struggles and problems of the narcotic addict, the other, the nature of the physical disease with which he is afflicted,—discussing and correlating various elements and conflicting activities in an effort to help each one actively concerned to appreciate the relation of his own endeavor to the whole narcotic drug problem. With this in view he gives attention to fundamental considerations; the nature of narcotic drug addiction-disease; the mechanism of narcotic drug addiction-disease; methods of treating narcotic drug addiction; the rational handling of narcotic drug addiction-disease; relation of narcotic drug addiction to surgical cases and intercurrent diseases; laws, and their relations to narcotic drugs; comments upon the legitimate use of narcotics in peace and war; and a general survey of the situation and the need of the hour. In an appendix he gives "human documents,"—statements of sufferers from narcotic drug addiction-disease. The hope of the future lies in the change of attitude from "What shall be done *with* or what shall be done *to* the narcotic drug addict to make him stop using drugs?" to "What can be done *for* the narcotic addict to relieve him of the physical necessity of using drugs?" and "What can be done to so educate the public as to the facts of addiction, that this disease will claim as few victims as possible?" While some narcotic addicts are inherently irresponsible, vicious or defective, demanding care and restraint irrespective of their addiction, the mass of addicts are clinical problems of internal medicine, victims of a definite disease, characteristic in its symptomatology, reactions and phenomena, a disease which will before long, in the author's belief, come to be known as clinically and therapeutically controllable and arrestable.

THE PROCEEDINGS OF THE CHARAKA CLUB. VOL. V. New York: Paul Hoeber, 1919.

IT is three years since Volume IV of these proceedings appeared. This one is rather smaller than the former number but not less interesting, and it is gratifying to note that the size of the edition is larger than previously. Several of the articles have to do with military surgery of olden times and there are many excellent illustrations of ancient surgical instruments. There is a brief play by Dr. Bailey, a description of the oldest known Latin version of Aristophanes by Dr. Gerster, and a critical discussion of Chesterton's new play, "Magic," by Dr. Jelliffe, among the contributions. This sort of publication is interesting in many different ways and it is very pleasing to know that the interest in historical medicine is being maintained by such a representative and able set of writers as are found among the members of the Charaka Club.

THE ERRORS OF ACCOMMODATION AND REFRACTION OF THE EYE AND THEIR TREATMENT. A Handbook for Students. By ERNEST CLARKE, M.D., F.R.C.S., Ophthalmic Surgeon to the King George Hospital, Queen Alexandria Hospital for Officers; Consulting Surgeon to the Central London Ophthalmic Hospital; Consulting Ophthalmic Surgeon to the Miller General Hospital. Fourth Edition. New York: William Wood & Company.

THE present edition of this practical handbook, the first edition of which appeared fifteen years ago, presents the same subject matter carefully revised and brought up to date, some chapters being rewritten. The author has held to the idea of omitting all data which are unnecessary for the busy practitioner or the overburdened student.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; Assisted by LEIGHTON F. APPLEMAN, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. December 1, 1919. Philadelphia and New York: Lea and Febiger, 1919.

THE current number of Progressive Medicine contains chapters on Diseases of the digestive tract and allied organs, the liver, pancreas and peritoneum, by E. H. Goodman; Diseases of the kidneys, by H. A. Christian; Surgery of the extremities, shock, anesthesia, infections, fractures and dislocations and tumors, by W. E. LEE; and practical therapeutic referendum, by H. R. M. LANDIS. The whole number is of interest, and the section on Surgery goes far to clarify the discussion on the value of many procedures evolved during the late war. The paragraphs on alcohol have a timely value, particularly the remarks on wood alcohol and the summary of the rights of physicians and druggists in the matter of prescriptions calling for alcohol.

OUTLINES OF ORGANOTHERAPY. By HENRY R. HARROWER, M.D., late Professor of Clinical Diagnosis, Loyola University, Chicago; Fellow of the Royal Society of Medicine; Member of the Association for the Study of the Internal Secretions, etc. 1918: Published by the Author, Glendale, California.

THE literature of Organotherapy is enormous; and the author of these "Outlines" has added this little volume to the mass for the special benefit of "the busy physician who has no time for reading." The book begins with an interesting chapter dealing with the general principles of the subject. The author then goes on to discuss briefly some forty organotherapeutic remedies. He divides these remedies into three classes: (1) The better known organotherpeutic remedies; (2) less well known but useful products; and (3) extracts used infrequently. In the first class there are only ten entries, and the beginner in this method of therapy will find this the most interesting section. The author gives information on the source and form of the remedy under discussion, its physiologic relations and action, principal therapeutic indications, contraindications, synergists, administration, and dosage. The book should prove useful to "the busy physician who has no time for reading."

THE REFRACTION OF THE EYE. A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S., Consulting Surgeon to the Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to the Westminster Hospital. With one hundred illustrations. Sixteenth Edition. Philadelphia: P. Blakiston's Son & Co., 1919.

THIS edition of the familiar manual, the first edition of which appeared in 1884, maintains the original plan, with careful revision and various additions. The old measurements have been purposely omitted in favor of the metric system.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Annual Meeting, Held January 15, 1920.

FIRST VICE-PRESIDENT, DR. JOHN A. HARTWELL, IN THE CHAIR.

Report of the President.—Dr. GEORGE DAVID STEWART submitted this report which showed that the activities of the New York Academy of Medicine during the year 1919 had increased; men in the service had returned; fifty-seven new members had been added, and there was a large waiting list of candidates. A new building badly needed for housing the activities of the Academy, and for which plans had already been drawn, had been held back by the increased cost of material and labor. Consultations with their architects and with their Financial Advisory Committee, and such information as was obtainable from other sources, made it appear extremely probable that the cost of building and labor would not be materially lessened in the next few years. It was proposed therefore to begin the erection of this building as soon as possible on the plot next to the Academy. By the will of the late Dr. Jacobi a legacy of $5,000, to be added to the Philippine Meyer and Ernest Jacobi Library Fund, was bequeathed to the Academy, and in addition his valuable library of medical and medico-historical books, journals, and drawings. Thus Dr. Jacobi's devoted friendship for the Academy did not cease with his life, but went on and on. When the unexpended balance of the Physicians' Families War Relief Fund was recently distributed to its original donors, certain of these persons generously gave their share of the fund, amounting to $21,735 to the Academy to be added to the Academy Extension Fund. Among these contributions was one of $10,350, representing the amount that had been donated by the late Dr. E. B. Cragin to this war relief fund. The treasurer's report, while it showed a comfortable and gratifying balance did not permit any relaxation of their efforts to secure additional funds for the Academy—funds which would be absolutely necessary if the Academy was to maintain its rank as an educational factor in the science of medicine.

Report of the Council.—Dr. WILLIAM A. STOWELL submitted this report, which showed that the Committee on By-laws had completed the task of revision of the by-laws so that a new book might now be printed. The Public Health Committee had this year given special study to the control of venereal diseases and to the dispensary conditions in this city. Their advice was frequently sought on public health matters and plans. Realizing the need of greater housing facilities, the president had appointed a building committee consisting of Drs. John A. Hartwell, Seth I. Milliken, Reginald H. Sayre, Walter B. James, Lewis F. Frissell, Charles H. Peck, Charles L. Dana, Nathaniel R. Norton, and the President of the Academy ex-officio. The scientific sections all reported good work during the year, the greatest popularity being that of Orthopedic Surgery and Ophthalmology, the former having an average attendance of ninety-six and the latter eighty-eight.

Report of the Committee on Library.—Dr. LEWIS F. FRISSELL and Dr. WARREN COLEMAN submitted this report, which showed that the attendance of readers during the year 1919 was 23,500, 6,000 greater than during the preceding year, and within 1,000 of as great a number as in the year 1917. This had again brought before the committee the problem of the overcrowding of the Library and the lack of adequate reading room space. Fewer volumes, 2,468, had been acquired during the past year than in any previous year of the last decade, for several reasons. First, because the number of medical publications had been greatly diminished by the war, and because, in view of the shortage of stack room, the committee had exercised more than usual scrutiny of books published, excluding many volumes bearing on allied subjects but not strictly medical. The number of pamphlets added, however, had been greater. This report included suggestions for increasing the stack room.

These reports, together with the reports of the Board of Trustees and the Treasurer, were adopted.

Dr. RUDOLPH MATAS was elected an honorary member of the Academy.

Bad Results Following Operations for Chronic Appendicitis.—Dr. CHARLES L. GIBSON presented this paper, which was based on a study of 355 cases in the New York Hospital from July 1, 1913, to July 1, 1919, in which the appendix was removed. He said that as his paper was largely statistical he would not read it in full but would permit the tables to tell the story. This study involved two questions; first, why did they find that the removal of a supposedly diseased appendix failed so frequently to relieve symptoms, and, second, what was the reason of these failures and how could they be avoided? The removal of the appendix for clinical appendicitis had been accompanied by good results. There was, however, a class of patients with somewhat indefinite symptoms, the vagatonics, who were frequently subjected to operation needlessly and recklessly. After mentioning the conditions that might be mistaken for appendicitis, Dr. Gibson cited statistics showing that their bad results had fallen from 28 per cent. in 1913 to 11 per cent. during the last six months of 1919 in proportion as they had abandoned the small inguinal incision for a larger incision. It was of interest that appendicitis occurred more frequently in males than in females, about two-thirds of the cases being males. There were fortunately fewer conditions to obscure the diagnosis in men than in women. Another point of interest was that the larger proportion of the cases was among English-speaking people. The chief symptoms in their order of frequency were pain in the right lower quadrant, pain and vomiting, pain in the epigastrium, pain and constipation. In summarizing, Dr. Gibson stated that a large incision allowed of a more complete examination, and this was important inasmuch as one of the reasons for many of the bad results following appendectomy was a failure to look for and recognize other conditions coincident with the appendicitis. The improvement in their statistics was in a large measure attributable to more thorough work in looking for complications, especially in women. In order to avoid disappointing results following appendectomy for chronic appendicitis a comprehensive total history and a thorough physical examination were essential. One should exercise more caution in searching for complications in women than in men. Operations on neurasthenics should be avoided. There was no advantage or success attending the removal of the appendix alone when the symptoms of upper abdominal disease were present. The point especially to be stressed was that one should not cease to look for complicating conditions and in the search for these should make a supplementary incision if necessary.

Dr. CHARLES H. PECK said he agreed with Dr. Gibson in most of the points he had brought out and felt that he had covered the subject so thoroughly that there was little to add. During the five years from 1910 to 1915, one thousand seven hundred and forty-eight appendectomies were performed at the Roosevelt Hospital, nine hundred and sixty-five for acute and seven hundred and eighty-three for chronic appendicitis. The statistics for the five years from 1915 to 1920 had not yet been gone over, but assuming a similar number, it means that about three thousand five hundred appendiectomies had been performed during the past ten years. Approximately about two-fifths of these were classed as chronic appendicitis; of these, two main classes could be considered, first, those that had had definite acute or subacute attacks and came for an operation in the interval. Unsatisfactory late results are rarely seen in this group. The second group were those which had never had definite attacks, but which presented chronic symptoms of various types. It was in this group that most of the disappointing results following operations occurred. The first and most important cause of failure to cure faulty diagnosis, due to either an incomplete and hasty study of the case, or to errors in interpretation of the findings. Second, failure to make a proper exploration at the time of operation. It had been their custom, in practically all cases of operation for chronic appendicitis in the second group, to make a right rectus incision, through which careful exploration was made, including examination of the stomach, duodenum, gall bladder, biliary ducts, and pancreas, the line of the colon, the region of the

right kidney and ureter, and, in women, the pelvic organs. The exploration was rapidly made as a rule, before the appendix was even looked at. Duodenal and gastric ulcer, disease of the biliary tract, right ureteral calculus, omental and peritoneal adhesions (Jackson's membrane, Lane's kink), involving especially the ascending colon and ileocecal region, and disease of the pelvic organs in women, were the lesions most often confused with chronic appendicitis. If these were excluded or confirmed by systematic routine exploration at the time of operation, assuming of course, that every possible effort to do the same had been made by a careful preoperative study of the case, the liability of disappointing post-operative results would be greatly reduced. The third cause of failure might be the formation of postoperative, omental, or peritoneal adhesions. It was the speaker's belief, strengthened by observations made in many secondary laparotomies, that many cases of postoperative peritoneal adhesions were due to the carrying in of iodine on hands during operation. With the protection of the skin and wound edges by towels this was theoretically guarded against, but slips in technique easily occurred and he believed that this is a real danger which should be borne in mind. Finally, in determining indications for removal of the appendix, a correct conception of the pathology of appendicitis should be borne in mind. To understand this, the appendix should be examined *in situ* before its removal. The real lesion was practically always an obstruction of the lumen, incomplete in quiet stages. When it became complete for any reason the increased intra-appendicular tension soon produced circulatory and secondary infectious changes, *i.e.* acute appendicitis supervened. This partial obstruction was due to many causes, among which the most important were a short mesenteriolum, causing angulation at the base; peritoneal bands, old inflammatory adhesions, and in a quite important group of cases, a drag upon the mesenteriolum by an overloaded, mobile cecum. Many of these appendices, as truly pathological as an acutely inflamed one, showed relatively nothing abnormal when stripped from their surroundings and removed. The removal of such an appendix was always justifiable and a benefit to the patient, whatever associated lesions might have been present and overlooked or ignored. To summarize then:—One should guard against failures and disappointments by careful preoperative study and diagnosis. Second, by thorough exploration at time of operation. Third, by careful technique, avoiding undue trauma or chemical irritation of the peritoneum, which might result in postoperative adhesions.

Dr. Robert T. Morris said Dr. Gibson was right in his contention that the chief reason for unsatisfactory results after appendectomy was incomplete diagnosis. It seemed to him we were in need of a better definition of what was meant by chronic appendicitis. Did we mean fibroid degeneration and lymphoid hyperplasia of the kind one found in vagotonic patients? In patients belonging to the vagotonic class treatment with belladonna was sometimes better than operation. Many unnecessary operations were done upon these patients. Did we mean an irritative lesion, not due to infection, as it appeared in a fibroid degeneration or on the other hand an appendix that had become involved to a greater or less degree in scar tissue following an acute infective invasion. Complicating an infective invasion one might have a gastric ulcer and involvement of the gall bladder or pylorus due to the selective affinity of certain tissues for bacteria or toxins as Rosenow had shown. In the latter condition if other complicating abdominal conditions were present, a large incision might be needed for appendix operations, but if diagnosis was good enough and selection of cases good enough a short incision would often suffice. In the way of diagnosis there were two chief signs upon which one might place dependence. When a chronic irritative appendicitis had registered its nerve impulses on certain sympathetic ganglia for a fairly long time the muscular coat of the ascending colon became wearied and as a result it became lax and distended with gas and this gave what he had termed the "cider barrel" sign, that was, percussion on the left side of the abdomen elicited a sound like that of the cider barrel in October, while percussion on the right side gave the sound of the cider barrel in March. The second sign was hypersensitiveness at the site of the second and third sympathetic lumbar ganglia on the right side. This might be elicited by pressing on the abdomen one and one-half inches to the right of the umbilicus and a trifle below. As to the effect of iodine on the peritoneum, his experience with dogs and other animals in which iodine had gotten on the peritoneum was that subsequently adhesions were found regularly. He now made sure that iodine was washed off with alcohol before making the skin incision. In rabbits one nearly always got some adhesions no matter how careful he might be in abdominal work, and even though he used Ringer's solution or isotonic saline. Finally if one needed a long incision, he should make it; if a long incision was not necessary the surgeon should allow the patient to escape from a serious attack of surgery by employing a short incision. If he had developed skill in diagnosis he should allow the patient the advantage of any such acquired skill.

Dr. L. T. LeWald said Dr. Gibson had spoken of the need of studying patients by means of the *x*-ray. He thought the time was not far distant when all would agree that no case of supposedly chronic appendicitis should be operated upon until after a careful *x*-ray study had been made. Roughly speaking, in a series of cases of ptosis, the appendix had been removed in nearly 50 per cent. of them. In other conditions, such as a case that was mentioned in which five or six months after the removal of the appendix, a diagnosis was made of a tuberculous cecum, which might have been detected prior to the operation if a careful *x*-ray study had been made. Among conditions which might lead to a mistaken diagnosis of appendicitis and upon which the *x*-ray would throw light were cecum mobile, ulcer of the stomach, gallstones, renal calculi, subacute and chronic right-sided pleurisy, peculiar cases of partial dilatation of the colon, megacolon or elongated sigmoid. Occasional attacks of partial volvulus might give symptoms simulating appendicitis. In addition to the detection of other conditions which might account for the symptoms of appendicitis, with the *x*-ray one might sometimes absolutely *confirm* the diagnosis of chronic appendicitis. Sometimes definite concretions were discovered in the appendix by means of the *x*-ray, some of the bismuth getting into the appendix and coating the concretions so that they became opaque.

Dr. W. Gill Wylie said he felt compelled to take part in the discussion because he was one of the first surgeons to perform an appendectomy when he was connected with Bellevue Hospital and abdominal surgery was unknown. He expressed the opinion that the majority of these cases of chronic appendix began early in life, and he explained how, as man had evolved from the lower animals, the appendix had degenerated. The appendix had a check valve which allowed a secretion which the appendix produced to pass through. It was this arrangement which had degenerated. Another difficulty was that the products of digestion were held at a point where the small intestine joined the head of the cecum. A great many children who were poorly developed, weak, or not properly fed had trouble when the food, especially cow's milk, reached the cecum. An accumulation of fecal matter resulted, the appendix got out of order and the check valve was stretched. From the symptoms he could be so certain when this condition was present that he had frequently prophesied that an open appendix would be found and he was usually correct. He had found that when a child of this kind over-ate on the following day it would have an attack of pain, vomiting, and nausea with a slight rise in temperature. If one then gave castor oil the symptoms were relieved. By exercising care in the diet such a child would go along for weeks or months without an attack, but if there was an indiscretion in diet, there would be another attack. By giving a Seidlitz powder and producing a good movement and so getting rid of gas, one could feel the distended appendix and could touch the tender spot. Dr. Wylie emphasized the point that he always made it a practice to put the patient in good condition before operating even if it took three weeks or three months to do this, and he called in a specialist if such special help was needed in order to put the patient in good condition for operation. By properly treating these attacks of pain,

nausea, and vomiting as he had described one did not have so many cases of chronic appendicitis. In operating within the abdomen, Dr. Wylie said he never used anything like iodine unless he immediately washed it off with alcohol, because iodine penetrated through the tissues and gave rise to adhesions. Another point was that he never used pressure in any abdominal operation for pressure encouraged hemorrhage. If one did not leave the abdominal walls free the tissues inside the abdomen would be injured with resultant fixations, adhesions, and pain.

Dr. GIBSON, in closing, said that as regarded the *x*-ray they were not entirely ignorant of its preoperative use. A number of *x*-ray examinations had been made in each class of cases and, paradoxical as it might seem, the cases studied longest gave the worst results. While Dr. Peck was speaking of adhesions it occurred to him that this paper might be useless since during the last six months their results had been considerably improved and that it might be due to a forgotten point, namely, that in December, 1918, they began the use of picric acid, a five per cent. solution in alcohol, and they had been using it ever since. One of his staff was now studying the effect of picric acid on the peritoneum. It might be that this would prove to be a distinct improvement; certainly they had had very remarkable results during the past six months.

SECTION ON SURGERY.

Stated Meeting, Held January 2, 1920.

DR. SEWARD ERDMANN IN THE CHAIR.

Exploratory Thoracotomy for Chronic Empyema.—Dr. ALLEN O. WHIPPLE presented three patients, illustrating a type of procedure that had advantages in certain cases of chronic empyema which had previously been operated upon or in which the pus collection was of long standing with marked collapse of the lung. After relating in detail the history of these cases he said he presented them to emphasize the advantages of the rib-spreading operation in patients of this type. He had used this curved incision which Dr. Lilienthal advocated with the addition of an upper cut extending up to the seventh or sixth rib in nine cases and found it of distinct advantage where because of firm adhesions there was difficulty in reaching the apex of the empyema pocket. It enabled one to reach adhesions in both the anterior and posterior portions of lung. Another point to be taken into consideration was whether the patient would stand such a radical procedure at the first operation. If he could stand it it had an advantage in that it eliminated subsequent operations and permitted of drainage without the formation of adhesions.

Dr. HOWARD LILIENTHAL said he was very much pleased to see that Dr. Whipple had taken up the method, which he had been trying to popularize for some time. He thought he had solved, or nearly solved, the problem of chronic empyema when he came back from overseas, but he found that he had to begin all over again and work according to the method that Dr. Moschcowitz of the empyema commission had introduced, that was using the Carrel-Dakin solution and afterward trying to make an aseptic pneumothorax. Tuffier had first used this method and spoke well of it. It consisted in making a small resection for drainage and then using the Carrel-Dakin treatment. He could not in the limited time at his disposal go into all the details, but finally concluded to try the method, and a small series of cases was started in which the Carrel-Dakin treatment was given. Before using the Carrel-Dakin treatment he had had results with which he was perfectly satisfied; now he was having results that were not satisfactory. This was especially true in children, in whom the long period of drainage, which was absolutely necessary when this method was used, caused a deterioration in the general condition of the patient and often did a great deal of harm. In young, robust men following an attack of pneumonia all they had to do was to cure the empyema, and a week or a month longer of convalescence did not matter, so long as they were finally cured. In chronic empyema operated on as they had been doing before they began to use the Carrel-Dakin treatment the average time required for healing was about four weeks, seldom much longer, except in cases in which there was much thick exudate and old contracted lung. Since he had come back he had tried this Carrel method out very thoroughly, and he was on the point of going back to the old method which Dr. Whipple had demonstrated. But in this old method he always used the Carrel-Dakin treatment as an adjuvant after operation, as it kept the wound sterile and there it was of great value. In acute empyema, however, he was content to make a small incision between the ribs and by this procedure 25 or 30 per cent. of these cases would be cured without anything further, but they had to be checked up and examined by the *x*-ray and fluoroscope to see if they were progressing properly and if there was a reasonable expectation that cure would result quickly. If not, the radical operation should be done. In the last issue of the *State Journal of Medicine* he had reported the case of a young child with an almost complete pneumothorax which had healed up after a small resection. A year later the lung had filled the chest. He placed the greatest stress on the *x*-ray examination and did not believe an examination without the *x*-ray was worth much. He related that in 1913 he had met Professor Tuffier and had asked him how he regarded the *x*-ray and he replied that he held it to be of the greatest value and would be guided by the *x*-ray as against the physical examination. Of course physical examination had its place in diagnosis, but in the open chest the physical diagnosis was worth little. He cited an instance of a case seen in consultation after the chest was opened. The heart appeared to be far over in the axilla and it seemed that immediate operation was indicated. He expressed the opinion that the heart was in the normal position, though the pulsation appeared to be in the axilla; when the *x*-ray was taken in this case it showed the heart in the normal position. As to Dr. Whipple's technique, in addition to the use of the *x*-ray, he would suggest a little longer intercostal incision and the use of the rib spreaders which enabled one to see all parts of the chest, so that one did not need to rely upon the sense of touch. While the sense of touch revealed a great deal, the open operation with the use of the rib spreaders had the advantage of enabling one to see what he was doing, and often one found little holes that looked like dimples, but which led into secondary abscesses.

Dr. A. V. MOSCHCOWITZ said he did not wish to speak on the subject of empyema because he knew they would think that there was an absolute disagreement between Dr. Lilienthal and himself. While he was seeing very few cases of empyema at present he thought he was safe in saying that during the past two or three years he had seen 2500 cases of empyema. When he was called into the service there were 1,100 cases scattered through the camps and a year ago there were 1,100 cases. As a matter of fact, Dr. Lilienthal and he did not disagree to any great extent, only in a couple of minor points that looked like mountains, but were in reality only molehills. It was worth calling attention to the fact that Dr. Whipple's cases were all cases of acute empyema. He did not call a case one of true empyema unless there was thick purulent pus present. That day he had refused to operate on a child because there was merely a seropurulent fluid present, and he thought the child would get well without operation. In a number of cases if one made a short intercostal incision just sufficient to introduce one good sized drainage tube and gave them the Carrel-Dakin treatment they would make a rapid recovery. He had seen many use what they called the Carrel-Dakin treatment,but who were in reality using some John Smith modification of the Carrel-Dakin method and that was not the Carrel-Dakin treatment, and did not give the results of the Carrel-Dakin treatment. One might define a chronic empyema as that kind of an empyema which could not be sterilized with the Carrel-Dakin solution. If one could not sterilize a chronic empyema he should find out why, and sometimes he would find that this was because of a necrotic rib which could not be sterilized and which constantly fed the empyema cavity with infectious material. He had removed drainage tubes galore and sometimes had found pieces of gauze left in and other foreign bodies which did not permit of a sterilization of the empyema cavity. Of Dr. Whipple's cases two were due to the pneumococcus and were com-

paratively simple cases; the third case demonstrated just what they had found in the military service, and which were due to to the hemolytic streptococcus, during the hemolytic streptococcus epidemic, namely, that they were very bad cases indeed and lasted a much longer time than the pneumococcus infections. He had understood Dr. Lilienthal to say that as the soldiers with empyema were young, robust men it did not make so much difference if their empyemas were a long time in healing. He thought that by the time the soldiers came to operation after they had had pneumonia, or measles, or after a streptococcus pneumonia, they were very sick and their resistance greatly lowered. The early observations were followed by a high death rate; late observations recovered.

Dr. SEWARD ERDMANN stated that during the empyema epidemic of the fall of 1918 he had studied over 80 cases at an army camp in Michigan, where the Dakin solution was used in a more or less haphazard fashion, and although the results obtained were very fair and the mortality low, nevertheless a number of the cases lapsed into real chronic cases. Somewhat later in the winter he succeeded Dr. Moschcowitz at a Southern camp and was struck by the excellent results in a series of cases treated after Dr. Moschcowitz's plan with very careful adherence to the full Carrel-Dakin technique. In this series pus disappeared from the ward very promptly and most of the cases went on to an early and complete closure. Last spring and summer in a military hospital in Texas he had seen over a hundred cases, all of which were chronic, and represented the residual cases from other camps. Here, too, the full and careful application of Dakin solution succeeded in clearing up many of the very worst cases without resort to an extensive operation. However, it was true that in about 10 per cent. of the chronic cases sterilization of the old cavities was not attained, and in these cases an operation was indicated to break up adhesions which caused pockets and branching sinuses.

War Wounds of the Chest.—Dr. CHARLES GORDON HEYD read this paper, in which he said that all wounds of the chest were potentially infected. Modern surgery, however, was able to obviate, inhibit or prevent infection if the surgeon was able to operate during the golden period of operability—the first eight hours, preferably four, between the receipt of injury representing contamination and the development of infection which ordinarily became apparent about the eighth hour. The ideal operation contemplated (1) débridement of all soft tissue about the orifice of entry or exit, particularly all portions of contused, necrotic, or infiltrated tissue in or about the area of the wound; (2) the regularization of all bone ends; (3) complete esquillectomy or the removal of all bone fragments, particularly the indriven spicules of bone in the lung or pleural cavity; (4) the removal of the foreign body, unless smaller than the nail of the little finger; (5) a débridement of the traject in the lungs and if badly infiltrated or lacerated resection—partial or complete lobectomy; (6) adequate surgical and anatomical repair of the lung by suture; (7) complete toilet of the pleural cavity, removal of blood, foreign bodies, fragments of bone, portions of clothing, etc., many times lying free within the costophrenic sinus or impinging upon the chest wall; (8) repair of the diaphragm and such intraabdominal exploration as would seem indicated; (9) hermetical closure of the wound in the chest wall by any of the accepted methods. A satisfactory classification of war wounds of the thorax could be arranged as follows: 1. Perforating wounds, through and through, due to bullet. 2. Perforating wounds, through and through, due to shell fragment. 3. Penetrating wounds, with retention of large foreign body. 4. Penetrating wounds, with retention of small foreign body. 5. Tangential wounds. 6. Cave-in, stove-in or crushed-in chest. 7. Sucking wound or open thorax. 8. Combined abdominal or multiple wounds. In his own experience there were operatively proved injuries to the chest in 51 cases; gunshot wounds, 40, with 15 deaths; bullet, 4, with 1 death; undetermined, 7, with 2 deaths. The types of injury were perforating, 23; penetrating, 17; tangential, 2; cave-in, 2; thoracoabdominal, 7. The total mortality was 18. The mortality by type of injury was as follows: Tangential wounds, 2, with no deaths; perforating wounds, 23, with 6 deaths; penetrating wounds, 17, with 6 deaths; cave-in, 2, with 1 death; thoracoabdominal wounds, 7, with 5 deaths; admitted in pronounced shock, 19, with 8 deaths; admitted with sucking wound, 15, with 11 deaths; hemothorax, 28, with 12 deaths; hemopneumothorax, 5, with 2 deaths; the ribs were fractured in 18, with 8 deaths; the scapula, 6 times, with 4 deaths. The average duration between injury and arrival at the hospital was 19 hours, the earliest time being 4 hours and the longest time 96 hours. A summary of the surgical indications for operative intervention could be tabulated as follows: (1.) The closure of sucking wounds of the chest wall irrespective as to the retained foreign body or the mechanism of production of the injury. (2) Continued bleeding or unusual hemorrhage. (3) Grossly infected contused or contaminated wounds of the soft tissues. This variety eliminated the cases with a clean cut rifle bullet wound or the penetrating type of wound due to small shell fragment. (4) Wounds with fracture of the ribs, clavicle, scapula or vertebra complicating the original or primary injury. (5) The retention of foreign bodies other than small éclat. By small he meant a shell fragment certainly not larger than the nail of the little finger. (6) The onset of a progressive hemopneumothorax. (7) Stove-in or crushed-in chest with multiple fractures of many ribs whereby the bone ends protruded into the pleural cavity, bringing about a laceration of the lungs. In wounds in the scapular region, perforating high up between the vertebral column and the scapula, it was rather difficult to obtain adequate access to the pleural cavity. Trephining the scapula proved a very unsatisfactory procedure and excision a needless loss of bone substance. It was much better to divide the rhomboid muscles, the serratus magnus and the latissmus dorsi at the lower angle of the scapula and throw the scapula upward and outward. If the nature of the wound would permit resection of the fourth or fifth rib was carried out from the midscapular line upward to the posterior axillary line. Where an injury was low down with compound fracture of the sixth, seventh, or eighth rib in the midaxillary region, then the incision was enlarged by resecting the seventh rib. Through such an incision the pericardium was sutured twice and in another case a large transdiaphragmatic hernia was replaced with ease. When the diaphragm was injured well out in the costophrenic sinus the central portion was occasionally sutured to the parietal pleura. This technique was only employed in combined thoracoabdominal cases and where it was essential to close the pleural cavity and at the same time insert gauze into the renal fossa or into the liver. Rarely a loss of substance of the diaphragm could more easily be repaired by suturing the lacerated edge to the parietal pleura than by closure of the defect.

Dr. WILLY MEYER said we all had followed those who had worked immediately behind the fighting lines with the keenest admiration, and that what they had accomplished would stand forever in the annals of war surgery. Those who had not been abroad, at least had had the benefit of watching the successes and failures of those who were doing the work. He believed that in order to make progress in thoracic surgery we would have to come to the point of laying down the principles that governed our work. The wounds of peace were the same as those of war, except that the victim of traumatic injury could be cared for immediately and, therefore, acute infection was absent in the majority of cases at the time the surgeon could take hold of the patient. Dr. Heyd had described methods somewhat different from those surgeons had been using in civil practice, and naturally so. The surgical war work was done under stress, and was emergency work. Now that we were back in peace we could and had to do the best that science offered for our patients. Personally he believed that adherence to the principles on the basis of which surgeons had worked in peace times was absolutely necessary for the further safe evolution of this chapter of surgery, and those principles required in the first place preparation for the use of differential pressure. Secondly, "airtight thoracic drainage," as a routine measure, ought to be generally accepted. In case of internal hemorrhage one would, of course, open the chest and try to stop the bleeding. Many would then close the wound and watch the patient. He preferred, in every instance of thoracotomy, to close the incision

completely and add airtight drainage. This would guard against the otherwise frequently occurring pleural exudate. Furthermore, the lung would have the chance of immediate distension.

Dr. CLARENCE A. MCWILLIAMS said that the indications for operation depended somewhat upon the type of anesthesia that was available. If one had simply ether it was better to be conservative. In his opinion the perforating through and through bullet wounds should not be operated upon. Sucking wounds, excessive hemorrhage, and sepsis required operation, but there was a middle class of cases in which the question whether to operate or not was a debatable question. If gas-oxygen was available (and he hoped in the next war apparatus for administering gas-oxygen would be supplied to every hospital) one could operate on cases in which one could not expect satisfactory results under ether anesthesia, because with gas-oxygen excellent expansion of the lungs could be obtained with the chest opened, and this diminished shock considerably. During the last year of the war English and French surgeons found sucking wounds of the chest were best treated by the first aid surgeon on the field when met by sewing up the wound by a string and needle without regard to asepsis. This could be attended to when the man reached the aid station or evacuation hospital, where a further procedure was undertaken which perhaps proved lifesaving. At La Foret they had perhaps 80 cases of chest wounds at one time which they had not operated upon, and when Dr. Brewer saw them he expressed surprise that they were doing so well. The treatment was morphine, strapping, and tapping if the hemothorax became distressing. In radical chest surgery the mortality was greater than among those more conservatively treated. He knew that chest surgery was a very much discussed subject, with the opinions varying with the operator *pro* or *con* operation. He had seen some radical chest surgery back of the lines that he considered a reproach to surgery.

Dr. MCCREERY said that the men in different hospitals and clearing stations had very different ways of treating chest wounds. He thought the best mortality records were among the cases treated conservatively.

Dr. HOWARD LILIENTHAL said that he agreed perfectly that perforating machine gun wounds ought not to be operated upon except for complications, but high explosives, causing splintering of the ribs, had to be operated upon or else very serious complications arose. Where the ribs were splintered, spiculæ of bone might turn into the lung and had to be removed or they caused further laceration of the lung tissue with every respiration. In such cases one should make a good-sized incision and put in the rib spreader, for otherwise he could not tell just what the conditions were. In order to do that work and do it right it was necessary to have intrapharyngeal differential pressure. He had taken with him when he went over a simple apparatus for this purpose, consisting of a small foot bellows and an ether bottle with a three-way cock in the stopper. With this one could safely inflate or collapse the lung. The operation of this apparatus was simple. He had taught a nurse to use it under supervision with only one lesson. A method not mentioned by Dr. Heyd was that of closing large pleural defects by inflating the lung until it came to the surface and then sewing it in the opening as a plug. He had just heard the day before from a boy who had had a hole in his chest wall as large as a silver dollar. He had made a complete recovery both as regarded his physical condition and the physics of his lungs. In this case, even though the lung had later pulled away from the opening, a good recovery had followed. He was not the only one who had used differential pressure on the other side. Dr. Yates had also used it, but in a different way, with nitrous oxide gas.

Dr. H. H. M. LYLE said that it was extremely difficult to get accurate figures on the mortality of wounds of the chest; but one thing he was certain of was that it was much higher than we had been led to believe. A very large number of men died of chest wounds on the battlefield in the Meuse-Argonne offensive. Dr. Lyle had examined men who had fallen in front of machine guns and found that a large percentage of them had been shot through the lung. It was impossible, of course, to get a battlefield mortality, but the combined mortality from the dressing station back to the base hospital is between 45 per cent. and 50 per cent. The further one got away from the line the lower the death rate. One of the speakers had spoken of the bullet wounds of the chest. A perforating bullet wound of the chest, if it did not hit a vital structure, or a rib, gave a mortality of about five per cent. or less. In such cases the expectant treatment was justified, and no one now thought of operating upon these cases. But it was incorrect to draw broad conclusions from a certain type of wound and apply them to all wounds. Dr. Lyle had seen the progress of lung surgery since 1915 in base, evacuation, and front line hospitals, and he was firmly convinced that the operative treatment of the suitable cases had materially cut down the mortality and diminished the complications. Regarding sucking wounds of the chest, it was interesting to note that Baron Larrey had advocated and successfully practised the closure of such wounds one hundred years ago. Differential pressure was an aid in doing the work, but by no means a necessity. In fact, one of the best series of cases known to Dr. Lyle was done under ordinary anesthesia. The necessities were a good localization, a good exposure, the removal of the projectile, a good débridement, and a good closure of the chest. Dr. Lyle said he felt, with Dr. Heyd, that, if a piece of high explosive were lodged in his chest, he would take his chance with an operation, for he would realize that he would have a 20 to 25 per cent. better chance in the hands of a good surgeon than if left alone.

Dr. ALBERT S. MORROW said that he had had some experience with chest wounds at Evacuation Hospital No. 2, where they had a number of these cases to operate on. There was no questions as to what should be done with through and through wounds made by a small rifle; they did well if left alone. If there was considerable hemothorax it sometimes embarrassed the heart. If in such cases they waited from twenty-four to forty-eight hours and then aspirated there was little danger of a further collection of blood. As to the penetrating wounds, they operated on all of them irrespective of whether they were sucking or not, provided there was a foreign body in the chest of a size that they were reasonably certain to be able to find and extract, just as they would do in soft parts elsewhere in the body. It was, however, more important to remove a foreign body from the lungs, because it not only carried with it the dirt, shreds of clothing, etc., that it did elsewhere, but also splinters of rib, and as a consequence one sometimes got late complications. They made a wide intercostal incision, used the rib spreaders to get a good exposure, removed the foreign body, and sewed up the lung. They had had between 75 and 80 per cent. recoveries among the cases operated upon.

Dr. HEYD, in closing, said there was no question but that in ordinary cases every one knew when operation was indicated. He said he was at La Foret with Dr. Yates and Dr. Lyle, where the cases were coming in thirty hours after they had been injured. When a patient came in that long after injury and sat about and smoked and appeared fairly comfortable they felt that if he had lived that long he was going to get well. At a distance of four miles behind the front line the situation was entirely different from what it was at ten miles back of the fighting line, and as they continued to go back the conditions were still different. He was convinced that if he were wounded in the chest and had a retained foreign body larger than his little finger nail he would want to be operated on at the earliest opportunity.

A New Technique for Gastrectomy.—Dr. A. L. SORESI gave a lantern slide demonstration of a new technique for a gastrectomy, reconstructing the anatomical and physiological relations between the stomach and intestine, which consisted in a modified Roux operation. By this method the gastroenterostomy was made between the stomach and the jejunum. A particular point in the technique was a through-and-through suture, which was the same on both the anterior and posterior aspects of the gastroenterostomy opening.

Dr. SORESI also presented three new instruments: (1) a forceps for grasping and emptying the gallbladder; (2) a device for pneumatic hemostasis, consisting of

rubber balls and bags of various sizes with which the bloodvessels were compressed; (3) a needle and holder for wire suture.

Dr. GEORGE WOOLSEY said he had never liked to use Payr's clamps on the side of the incision that was going to remain, because owing to the trauma that was inflicted it left a slough that had to be avoided in suturing. As to the through-and-through sutures, he did not see that they were different from those he had been using in gastroenterostomies, on the posterior aspect, though he changed the stitch when he came on to the anterior aspect. As to the use of the jejunum, suturing it in this way into the stomach it was a method he had never used. He had, however, seen a case last summer in which Roux's operation, very similar to the method, was used and the results were bad. He did not see how this procedure could shorten the time over that required by other methods, like the Polya operation. It seemed, however, to give good results so far as the anatomical relations were concerned.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

COLORADO BOARD OF MEDICAL EXAMINERS.

Denver, October 7, 1919.

(*Continued from page 298.*)

TOXICOLOGY.

1. Classify poisons and give action and example of each.
2. Describe carbolic acid poisoning, give antidote and treatment.
3. Give symptoms, antidote, and treatment for strychnine poisoning.
4. Give symptoms arising from toxic doses of digitalis. Give treatment.
5. Describe poisoning by wood alcohol. What are the bad effects resulting from such poisoning in non-fatal cases?
6. Describe opium poisoning. Give symptoms and treatment.
7. Give symptoms of poisoning by illuminating gas. What reaction takes place in the blood?
8. Describe forms of ergot poisoning.
9. Describe case of lye poisoning. Give treatment.
10. Name five vegetable poisons not mentioned in the above questions. Give symptoms and treatment for one.

PATHOLOGY.

1. Describe in detail post-mortem examination of the brain.
2. Define atrophy with varieties.
3. Discuss (*a*) fatty degeneration; (*b*) edema; (*c*) amyloid degeneration.
4. Define (*a*) anemia with varieties; (*b*) hyperemia; (*c*) leucemia, varieties and significance.
5. Define infarction. Where does it occur most frequently?
6. Define (*a*) catarrhal inflammation; (*b*) infective inflammation; (*c*) suppurative inflammation; (*d*) plastic inflammation.
7. Name types of gangrene, giving conditions determining each.
8. Differentiate histologically sarcoma and carcinoma. Name the types of sarcoma and carcinoma in the order of their malignancy.
9. Describe the appearance of the heart in an advanced case of mitral stenosis; its effect on other organs, and tell how it is produced.
10. Name varieties of urinary renal casts. Give characteristics of each, and state of what forms of renal disease each is a part.

SYMPTOMATOLOGY.

1. Differentiate embolism and thrombosis.
2. Discuss influenza, giving etiology, course, and complications.
3. (*a*) What is the most usual valvular lesion? (*b*) Give cause and physical signs of same.
4. Give a diagnosis of pneumonia, differentiating it from other pulmonary conditions.
5. (*a*) What is the sphygmomanometer? (*b*) What significance have its findings? Illustrate.
6. Differentiate the exanthemata.
7. Define Kernig's sign and give its significance.
8. What symptoms would lead you to suspect syphilis? How would you proceed to verify your suspicions?
9. Give diagnosis, course, cause, and complications of gastric ulcer.
10. Give diagnosis, etiology, and complications of pyelitis.

ANSWERS.

TOXICOLOGY.

1. *Classification of Poisons.*—There are many classifications given, but not one of them is entirely satisfactory. The following is Taylor's: Poisons are divided into (1) Irritants, and (2) Neurotics.

Irritants are subdivided:

Mineral.
Acid poisons—Sulphuric acid.
Alkaline poisons—Caustic soda.
Non-metallic—Phosphorus, Iodine.
Metallic—Arsenic, Antimony.

Vegetable.
Savine, Elaterium.

Animal.
Cantharides.

Neurotics are subdivided:

Cerebral—Opium, Alcohol.
Spinal—Strychnine.
Cerebrospinal—Aconite, Belladonna.
Cerebro-cardiac—Digitalis.

2. *Symptoms of carbolic acid poisoning:* Buccal mucous membrane is whitened and hardened; vomiting; burning pain in mouth, esophagus, and stomach; pulse and body temperature are lowered; the pupils are contracted; collapse, and finally death. The urine may become dark.

The *treatment* consists in administering white of egg, sodium sulphate, or saccharated lime, followed by lavage. Alcohol is said to be antidotal. At one time alcohol was much used; just now the older remedies (such as sodium sulphate) are more relied on. Soluble sulphates form with carbolic acid the insoluble sulphocarbolates, which can be removed by lavage.

3. The *symptoms of poisoning by strychnine* are "a sense of suffocation, thirst, tetanic spasms(usually opisthotonos, sometimes emprosthotonos, occasionally vomiting, contraction of the pupils during the spasms, and death, either by asphyxia during a paroxysm, or by exhaustion during a remission. The symptoms appear in from a few minutes to an hour after taking the poison, usually in less than twenty minutes; and death in from five minutes to six hours, usually within two hours."

Treatment.—"The convulsions are to be arrested or mitigated by bringing the patient under the influence of chloral or chloroform as rapidly as possible; the stomach is to be washed out, and the patient is to be kept as quiet as possible." (Witthaus' *Essentials of Chemistry.*)

Solution of potassium permanganate is now believed to be the chemical antidote.

4. *Symptoms of poisoning by digitalis:* "Nausea, and occasionally vomiting. Sometimes colic and diarrhea. After two or three hours, marked diminution in the frequency of the pulse, which may fall to 40 or even 25. Dyspnea, attended by a sense of oppression in the chest and coldness of the extremities. Headache, vertigo, and tendency to sleep. Usually attacks of syncope occur, provoked sometimes by the slightest movement of the patient. Death is generally by syncope, sometimes after several hours of coma succeeded by convulsions. *Treatment:* The patient must be kept strictly in the recumbent position. The stomach should be washed out with infusion of tea by the stomach tube. Stimulants should be given."—(Witthaus' *Essentials of Chemistry.*)

5. *Symptoms of poisoning by wood alcohol.*—"These begin with gastrointestinal disturbance, abdominal pain, general weakness, nausea, vomiting, vertigo, headache. The symptoms of ordinary alcoholic intoxi-

cation supervene, with delirium, restlessness, unconsciousness, collapse and coma. The pupils are usually dilated and irresponsive; nystagmus may be present. Dyspnea and cyanosis are marked. The temperature is subnormal."—(Sollman's *Pharmacology*). *The usual bad effect in non-fatal cases* is blindness following retinitis and retrobulbar neuritis.

6. The *symptoms of poisoning by opium* are as follows: "At first there is usually a period of excitation, marked by restlessness, great physical activity, loquacity, and hallucinations. The patient then becomes weary, dull, and drowsy; he yields to the desire for sleep, from which at first he may be roused. The lips are livid, the face pale, the pupils contracted, and the surface bathed in perspiration. The condition of somnolence rapidly passes into narcosis. The patient cannot be roused, and lies motionless and senseless, with completely relaxed muscles. The pulse, at first full and strong, becomes feeble, slow, irregular, and easily compressible; the respiration slow, shallow, stertorous, and accompanied by mucous râles. The patient rapidly becomes comatose, and, in fatal cases, dies in from forty-five minutes to fifty-six hours, usually in from twelve to eighteen hours. In cases of recovery after the stage of narcosis, the pulse and respiration gradually return to the normal, and the condition of coma passes into one of deep sleep, lasting twenty-four to thirty-six hours."—(Witthaus' *Essentials of Chemistry and Toxicology.*)

Treatment of opium poisoning consists in washing out the stomach, preferably with a dilute solution of potassium permanganate; ambulatory treatment to keep the patient awake; artificial respiration is indicated, and strong coffee should be administered by the mouth or rectum; the bladder should be emptied by the catheter.

7. In *poisoning by illuminating gas*, the symptoms are those of poisoning by carbon monoxide: Dizziness, headache, mental confusion, weakness, nausea, vomiting, convulsions, unconsciousness, livid face and dilated pupils.

In the blood, the carbon monoxide unites with the hemoglobin making a stable compound; this prevents the hemoglobin from carrying oxygen to the tissues. The blood is of a cherry red color, and on spectroscopic examination it shows a characteristic absorption band.

8. *Acute ergotism:* "In a large dose ergot acts as a gastrointestinal irritant, causing nausea and vomiting, gastralgia, colic, thirst, and purging. It slows the heart, raises the arterial tension greatly, dilates the pupils and produces pallor, vertigo and frontal headache. It stimulates the contraction of unstriped muscular fiber, especially affecting the sphincters and causing contraction of the sphincter of the bladder, making micturition difficult if not impossible. It produces cerebral and spinal anemia, a great fall of the body temperature, coldness of the surface, tetanic spasms, and violent convulsions." *Chronic ergotism* "occurs in two forms, the convulsive and the gangrenous—either usually excluding the other. The convulsions are tetanoid spasms of the flexor muscles, the uterus, the intestinal fibers, and the muscles of respiration, ending in coma and death by asphyxia. The gangrenous form begins with coldness and numbness of the limbs; formication of the skin all over the body, loss of sensibility and abolishment of the special senses, bullæ of blood and ichor, followed by dry or moist gangrene of the lower extremities, buttocks, and other parts, epileptiform convulsions, coma, and death. Autopsies show changes in the posterior columns of the cord, resulting probably from spinal anemia."—(Potter's *Materia Medica*, etc.)

9. *Effects of concentrated lye poisoning:* "A nauseous acrid taste, rapid destruction of the mucous membranes and even the deeper tissues of the mouth and throat, burning pain in the throat and stomach extending very soon to the abdomen, which becomes exceedingly tender, aphonia, vomiting of bloody mucus, frothy and with a soapy taste, pulse small and thready, surface cold and covered with a clammy perspiration, great prostration, sometimes ending with convulsions, especially with children. When potassium hydroxide has been taken it sometimes shows its specific action on the heart, causing slow, weak pulse, the patient sinking into unconsciousness. Constipation is sometimes troublesome, but generally a bloody diarrhea supervenes. The urine is scanty and alkaline, or entirely suppressed. The blood is dark and gelatinous. If the patient survives a few days, sloughing of the fauces and esophagus may occur, followed by stricture and death from exhaustion or starvation, or the stomach may have been most severely affected and death result from destruction of its functions."—(Riley's *Toxicology.*)

10. *Five vegetable poisons:* Aconite, belladonna, cocaine, stramonium, colchicum.

"*The symptoms of poisoning by aconite* usually manifest themselves within a few minutes; sometimes are delayed for an hour. There is numbness and tingling, first of the mouth and fauces, later becoming general. There is a sense of dryness and of constriction in the throat. Persistent vomiting usually occurs, but is absent in some cases. There is diminished sensibility, with numbness, great muscular feebleness, giddiness, loss of speech, irregularity and failure of the heart's action. Death may result from shock if a large dose of the alkaloid be taken, but more usually it is by syncope.

"The *treatment* should be directed to the removal of the unabsorbed poison by the stomach tube, and washing out of the stomach with infusion of tea holding powdered charcoal in suspension. Stimulants should be freely administered."—(Witthaus' *Essentials of Chemistry.*)

PATHOLOGY.

1. *Post mortem examination of the brain:* "*To examine the brain* place it on its vertex with cerebellum toward one. The pia and the cranial nerves should be examined. Then carefully note the arteries for changes in size, malformations, presence of atheroma, aneurysms, or of tubercles. Separate the Sylvian fissure and examine the vessels there as tubercles, emboli, aneurysms, and hemorrhage may be discovered although absent elsewhere. To *section the brain* the following method is generally employed: The brain is placed on its base and the hemispheres separated till the corpus callosum is exposed. The first incision is made into the lateral ventricle about 3 mm. from the median line of the corpus callosum and extending into the anterior and posterior cornua. Posteriorly the convolutions over the cornua are cut through. A series of incisions are made through the hemisphere just external to the basal ganglia with their edges coinciding but going at an angle of about 45 degrees. This gives a number of wedge-shaped portions, held together by the pia, which should not have been removed. The brain is turned half around and the process repeated on the other side. Care must be taken not to injure the ganglia when opening the ventricle. The *corpus callosum* is gently lifted and divided by passing a knife through the foramen of Monro and cutting from below upward. The cut portions are reflected, exposing the velum interpositum and the choroid plexus. The *third ventricle* is disclosed by drawing back the velum interpositum. The *vermiform process* is cut through, opening the fourth ventricle; the aqueduct is cut and all the ventricles are exposed. The *corpora quadrigemina* are found by dividing the right posterior pillar of the fornix and reflecting it to the left. The *basal ganglia* are exposed by making a series of transverse cuts, the brain being supported from below by the left hand. The *pons* and *medulla* are cut transversely into thin sections. The *cerebellum* is divided along the median line into two halves, each of which is subdivided by a series of incisions at right angles to the primary cut."—(McConnell's *Manual of Pathology.*)

2. *Atrophy* is a decrease in the amount of tissue, owing to a diminution of the histological elements of which it is composed; if this diminution is in the *size* of these elements it is called *simple atrophy;* if the diminution is in the *number* of these constituent elements it is called *numerical atrophy.*

3. In *fatty degeneration* there is an accumulation of fat in the cells of a tissue or organ; it is assumed by many that the protoplasm of the cell is converted into fat; in this way it is differentiated from fatty infiltration, in which the fat is brought to the cell from outside, and the cell is only inconvenienced mechanically. In fatty degeneration the function of the cell is apt to be greatly impaired.

Edema is an accumulation of a watery fluid within

the tissues, and between the cells. Numerous factors have been assigned as the cause of edema, viz.: Increased pressure in the blood vessels, increased permeability of the walls of the blood vessels, osmosis, selective action of the endothelium, and tendency of colloid bodies to take up water.

Amyloid degeneration is a degeneration of the connective tissues into a waxy, lardaceous material which gives the amyloid reaction. It occurs in cases of long continued suppuration, bone diseases, etc., and the organs most commonly affected are the spleen, liver, and kidneys.

4. *Anemia* is a condition characterized by a diminution in the number of red-blood cells, or of hemoglobin, or of both.

Varieties: (1) Local.

(2) General { Primary { Chlorosis. / Pernicious anemia. / Secondary

In *secondary anemia*, the blood would show: (1) A diminution in the number of red corpuscles; (2) a diminution in the amount of hemoglobin, perhaps greater than that of the red corpuscles; (3) poikilocytosis, and variations in the size of the red corpuscles; (4) the presence of a few nucleated red corpuscles; (5) a moderate leucocytosis.

In *pernicious anemia* the blood would show: (1) A diminution in the number of red corpuscles; (2) a relative increase in the amount of hemoglobin; (3) poikilocytosis; (4) the presence of nucleated red cells; (5) variation in the size of the red cells; (6) the leucocytes *may be* diminished.

In *chlorosis*, the blood shows: (1) A great diminution in the amount of hemoglobin; (2) a slight diminution in the number of red corpuscles; (3) poikilocytosis; (4) occasionally a few nucleated red corpuscles; (5) a very slight leucocytosis.

Hyperemia is a general increase in the total amount of blood in the body. It may be (1) active, or arterial; and (2) passive or venous.

Leukemia is a condition in which there is a great and persistent increase in the number of white blood corpuscles. There are two varieties of the disease: (1) *Splenomedullary* in which the chief changes are found in the spleen and bone marrow; and (2) *lymphatic*, in which the chief changes occur in the lymphatic glands. In *splenomedullary leukemia*, there is an enormous leucocytosis, and myelocytes are present. In *lymphatic leukemia*, the lymphocytes form the main part of the leucocytosis, and there are no myelocytes.

5. *Infarction* is a process of degeneration and inflammation occurring in a tissue or organ as the result of an embolism in an end-artery. It occurs most frequently in the spleen, kidneys, brain, and lungs.

6. A *catarrhal inflammation* is one affecting a mucous membrane and in which the increased blood supply causes an increased flow of mucus.

An *infective inflammation* is one which is caused by microorganisms.

A *suppurative inflammation* is one charatcerized by a mucopurulent discharge.

A *plastic inflammation* is one in which there is an exudation which glues together adjacent surfaces.

7. TYPES OF GANGRENE: *Dry gangrene*, in which the arterial blood supply is cut off or decreased. *Moist gangrene*, in which there is also interference with the venous return from the part. *Microbic gangrene*, in which the gangrene is caused by virulent microbic invasion. *Senile gangrene*, which is due to feeble heart action and endarteritis obliterans, or atheroma of the peripheral vessels. *Gaseous gangrene*, which is due to virulent infection which is either of a mixed type or is due to the bacillus of malignant edema or bacillus ærogenes capsulatus. *Raynaud's gangrene* is a vasomotor neurosis.

8.

SARCOMA.	CARCINOMA.
Origin; entirely mesoblastic. (Connective-tissue type).	Epiblastic and hypoblastic (Epithelial-tissue type).
Stroma; intercellular. Rarely forms alveoli.	Vascular connective tissue, which surrounds and forms the walls of the alveoli; these communicate with one another, and contain masses of epithelial cells.
Cells; granulation tissue or embryonic connective-tissue cells; shape and size vary.	Epithelial cells contained within alveoli; shape and size vary.
Intercellular substance; may be present.	Absent, or merely fluid.
Vessels; embryonic in character. They are in direct contact with, or may be formed by, the special cells, slightly modified, of which the tumor is composed.	Well developed; entirely contained within the connective tissue stroma, and supported by the walls of the alveoli. Seldom in contact with the cells.

—(From Coplin's *Pathology.*)

MALIGNANCY. Of the *sarcomata*, the soft round-celled and large spindle-celled varieties are more malignant than the small spindle-celled tumors; myeloid sarcoma is the least malignant. Of the *carcinomata*, encephaloid is more malignant than scirrhus; epithelioma is the least malignant.

9. "In *mitral stenosis* there is an increase in the intra-auricular pressure toward the end of auricular diastole, due to the blood from the lungs flowing into an insufficiently emptied auricle; the consequent dilatation and stretching excite the auricle to very vigorous contractions, which become augmented in consequence of the obstruction to the discharge of blood. The result is an extraordinary enlargement (hypertrophy and dilatation) of the left auricle, which may attain dimensions three or four times the normal. Increased intrapulmonary pressure is followed by hypertrophy and dilatation of the right ventricle, which as in mitral insufficiency is the efficient factor in maintaining compensation. In some cases, for a time at least, the increased power of the left auricle serves to supply a normal amount of blood to the left ventricle, which in consequence presents no noteworthy deviations from the normal. In many cases, however, on account of associated mitral insufficiency, the left ventricle is somewhat enlarged; in most cases the amount of blood supplied to the left ventricle is less than normal, in consequence of which it is often said to become reduced in size (this is more apparent than real)."—(Kelly's *Practice of Medicine.*)

"When compensation fails the various organs of the body suffer congestion. The lungs are first affected in disease of the left heart (mitral and aortic disease). The capillaries of the pulmonary alveoli become over full and encroach upon the lumen of the alveoli, or by elongation stretch the alveolar walls and render them inelastic. In either case proper respiration is prevented —a condition which is further aided by the retarded pulmonary circulation. As a result of these conditions, dyspnea (cardiac asthma), cough, and expectoration develop. In extreme cases edematous exudation takes place, and in long-continued cases cyanotic induration of the lung occurs. In such instances there may be continuous cough and respiratory insufficiency. When the right heart fails, the liver, spleen, gastro-intestinal mucosa, the kidneys, and the peripheral circulation suffer congestion. The liver may become greatly engorged, and in certain cases actually pulsates with each ventricular systole. The swollen liver-cells and the engorged vessels cause obstruction of the biliary capillaries, and consequently produce jaundice. To some extent this may be due to associated congestion of the biliary channels. Congestion of the gastro-intestinal mucosa may occasion various forms of gastric or intestinal derangement."—(Stengel's *Pathology.*)

10. "*Renal casts*" are cylinders of albuminoid substances formed in the uriniferous tubules. They are often composed in part of epithelial cells, blood cells, or the products of degenerated cells. They appear as: (1) *Hyaline casts.* These are clear, translucent cyl-

inders, often so pale as to be scarcely visible. They occur in the urine in all forms of nephritis, in congestion of the kidneys, in jaundice, and even in health. They are frequently the only casts present in chronic interstitial nephritis. (2) *Waxy casts.* These resemble hyaline casts, but they appear more solid and rigid and are more or less yellow. They occur especially in chronic parenchymatous nephritis. (3) *Epithelial casts.* These are cylinders of epithelial cells or hyaline casts covered with epithelial cells. They occur especially in acute parenchymatous nephritis. (4) *Granular casts.* These are cylinders covered with the débris of broken-down epithelial cells. They may occur in any form of nephritis. (5) *Fatty casts.* These are casts studded with oil-drops derived from degenerated epithelium. They occur chiefly in chronic parenchymatous nephritis. (6) *Blood casts.* These are cylindric masses of red blood cells, or, more commonly, hyaline casts studded with red blood cells. They occur in acute and chronic hemorrhagic nephritis. (7) *Pus and bacterial casts.* Casts composed respectively of masses of pus cells and of bacteria are occasionally met with in suppurative nephritis. (8) *Cylindroids.* These formations may resemble hyaline casts, but they are usually much longer and often taper off at one end to a thread. Moreover, they frequently show constrictions at different points. Their presence is not a proof of nephritis. They often occur in conditions of renal irritation."—(Stevens' *Practice of Medicine.*)

10. SYMPTOMATOLOGY.

CEREBRAL EMBOLISM.	CEREBRAL THROMBOSIS.
Causes.—Most commonly associated with valvular lesions of the heart, aneurysms, or a suppurating thrombus.	*Causes.*—1. Arteriosclerosis, atheroma, and syphilitic disease of the arteries. Bright's disease and alcoholism therefore predispose. 2. Pressure upon the veins or arteries (tumor or abscess).
Age.—Chiefly in young adults.	*Age.*—In the old from vascular degeneration; in the young from syphilis.
Onset.—Sudden—no prodromal symptoms.	*Onset.* — Gradual — with prodromal symptoms.
Convulsions.—Rare.	*Convulsions.* — Convulsive attacks are not uncommon, as the cortex is frequently affected.
Paralysis. — A sudden hemiplegia of the right side *with aphasia.* The left middle cerebral artery is most frequently plugged.	*Paralysis.* — Paralysis is more gradual. Aphasia is not so common, as either the right or left side may suffer.
Consciousness.—Not *usually entirely* abolished.	*Consciousness.*—Often not lost. Coma may come on gradually, after the hemiplegia.

—(From Wheeler and Jack's *Practice of Medicine.*)

2. *Influenza.* The late epidemic has modified previous ideas on the subject. At any rate, the cases seen in the late epidemic did not conform to those seen in previous epidemics, or to the general textbook descriptions. *Etiology:* The following microorganisms have been credited with causing the disease: Pneumococcus, Streptococcus hæmolyticus, Streptococcus viridans, Staphylococci, Bacillus mucosus capsulatus, Bacillus influenzæ. *Course:* Many cases were of sudden onset; some were ushered in by a slight sore throat, or general malaise; the body temperature showed a rapid rise, going to 100 to 104° Fahr., or more; headache, severe pains in joints and muscles and back; great weakness, chilly sensations, alternating with hot spells; cyanosis, or flushing of face, and partial stupor were noted in most cases. Later, symptoms of bronchitis, bronchopneumonia, or lobar pneumonia developed. Following the disease, the patient complained of intense weakness, fatigue, and profuse sweating. The chief *complications* were pneumonia, bronchopneumonia, bronchitis, and various nervous disturbances.

3. The most usual valvular lesion is mitral regurgitation. Most cases of chronic endocarditis are the result of an acute endocarditis following rheumatism, infectious, or other diseases.

PHYSICAL SIGNS OF MITRAL REGURGITATION. "*Inspection* shows displacement of the apex beat downward and to the left. In children and youths, bulging of the precordium and increased cardiac impulse are present. In emaciated individuals, an auricular impulse may be observed to the left of the pulmonic area in the second interspace. *Palpation* serves to confirm inspection. The displaced cardiac impulse is forcible and diffused in the early stage; as compensation fails, the impulse becomes feeble or absent. *Percussion* shows an increase in the area of cardiac dullness transversely and vertically. *Auscultation* reveals a systolic or blowing murmur, heard best in the mitral area and transmitted to the apex, left axilla, and under the angle of the scapula. It may occur with or take the place of the first sound of the heart, the second sound being markedly accentuated, particularly in the pulmonic area."—(Hughes' *Practice of Medicine.*)

4. *Pneumonia* (*lobar*) is diagnosed by the physical signs as follows: "*Inspection* reveals during the first stage deficient movement of the affected side, due to pain. The apex beat is normal in situation, and the interspaces do not bulge. In the second stage the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal respiration). *Palpation* during the first stage shows the vocal fremitus to be more distinct than normal, especially over the diseased portions. In the second stage, the vocal fremitus is markedly exaggerated, except in those rare instances of occlusion of the bronchi by secretion. The cardiac impulse is felt in the normal position. *Percussion:* In the first stage, the percussion note is slightly impaired at times, having a hollow or tympanitic quality. In the second stage there is dullness over the affected parts, with an increased sense of resistance. Over unaffected adjoining areas the resonance is increased (Skoda's resonance). *Auscultation:* In the first stage there is heard over the affected part a feeble vesicular murmur, associated with the true vesicular or crepitant (crackling) râle, heard at the end of inspiration only. In the second stage there is harsh, high-pitched, bronchial respiration, at times resembling a to-and-fro metallic sound, except in those rare instances in which the bronchi are more or less filled with secretion. Bronchophony, or distinctly transmitted voice, is present, and at times pectoriloquy, or distinct transmission of articulated sounds, may be heard. In the third stage, the breathing changes from bronchial to bronchovesicular and the crepitant râle (crepitatio redux) returns. As resolution proceeds the breath sounds are associated with large and small moist and bubbling râles.—(Hughes' *Practice of Medicine.*)

PLEURISY WITH EFFUSION.	LOBAR PNEUMONIA.
Onset marked by chilliness persisting for a few days.	Onset acute, with rigor, lasting one hour or longer.
Cough is irritating; no expectoration, or, if present, catarrhal in character.	Cough more marked, and accompanied by rusty or bloody, tenacious expectoration.
Sputum negative; tubercle bacilli rare.	Dense aggregation of pneumococci present.
Moderate fever of continuous type; declines by lysis.	Fever, 102° to 104° F.; falls by crisis.
Prostration moderate.	Prostration extreme.
Unilateral distension of the thorax.	Absent.
Countenance pale and anxious.	Mahogany-colored flush of cheeks.
Limited expansion at base of chest on the affected side.	Degree of expansion slightly, if at all, inhibited.
Tactile fremitus diminished or absent.	Increased over area of consolidation.

PLEURISY WITH EFFUSION.	LOBAR PNEUMONIA.
Interspaces bulging at base of chest.	Absent.
Percussion shows flatness, with great resistance to the plexiometer finger.	Dullness with less resistance, and sometimes a tympanitic note.
Diminished or absent breath-sounds over effusion the rule. Respiration murmur diffuse, distant, and generally unaccompanied by râles. Bronchial breathing may be present over the entire affected side of the chest.	Harsh bronchial breathing and presence of râles in first and third stages, unless a bronchus is plugged.
Friction sound heard in early and late stages.	No friction murmur; râles present.

Edema of the lungs may be confounded with the first stage of pneumonia, but the subsequent history, its presence on both sides, and the waterish expectoration and absence of chill and pain, and the physical signs of pneumonia soon determine the diagnosis.

Typhoid fever, when accompanied by hypostatic congestion of the lungs, may be mistaken for pneumonia; the history, mode of onset temperature record, Widal reaction, etc., will aid in making the correct diagnosis. Hypostatic congestion occurs late in typhoid, while pulmonary congestion is the earliest manifestation in pneumonia.

Acute phthisis may resemble the affection closely, and is only differentiated with certainty by finding the tubercle bacillus in the sputum.

5. The *Sphygmomanometer* is an instrument for the determination of blood-pressure. *Pathological High Blood-Pressure.*—"High pressure *per se* is not a disease but a phenomenon, or symptom, which may accompany a great variety of diseased conditions, including diabetes, gout, syphilis, chronic lead poisoning, cardiovascular renal disease, many anomalies of nutrition, etc. *Acute Asphyxia and Acute Anemia* of the brain (medullary centers) will powerfully stimulate the vasomotors, causing contraction of the splanchnic area and a rise in blood-pressure. *Lead colic* affecting the abdominal vessels is usually associated with high blood-pressure, as is also the early stage of peritonitis. *Pain*, even when slight, as in pinching the skin, usually elevates pressure. Continuous high pressure is seen in certain forms of nephritis. Thus in primary acute Bright's disease and in nephritis secondary to scarlet fever, there is practically always a marked rise in arterial pressure. A rise amounting to more than 50 millimeters Hg. has been observed within 48 hours of the onset of an acute nephritis. Elevated pressure is also found in beginning arteriosclerosis of the first part of the aorta and of the splanchnic vessels."

Pathological Low Pressure.—"A pathological depression in blood-pressure may be caused by the depressing influence of circulating toxins, action either upon the heart, blood-vessels or controlling nervous mechanism, or to sudden withdrawal of a large volume of blood from the circulation as in hemorrhage, after *venesection, copious diaphoresis, diarrhea*, or in *shock*. In general it may be said that lowered blood-pressure is of little significance except after hemorrhage or during surgical shock. Here the great and sudden reduction in pressure may be sufficient to immediately endanger life. It is noted that a moderate and progressive falling pressure occurs in most progressive and prolonged fevers, as in typhoid fever. When due to such a cause the depression is rapidly overcome and disappears as convalescence is established. Widespread dilatation of the vessels and consequent lowering of blood-pressure has been noted in the last stages of *arteriosclerosis*. (Krehl.)"—(Faught's *Laboratory Diagnosis.*)

7. *Kernig's sign.*—Flex the thighs upon the abdomen and the legs upon the thighs; if the patient has meningitis he is unable to extend the legs, owing to contraction of the hamstring muscles. It is a most important sign in the diagnosis of cerebrospinal meningitis, being present in about 90 per cent. of cases; but it may also be found in other conditions such as sciatica, hip joint disease, and knee joint disease.

6. Differential Diagnosis of the Exanthemata.

Name.	Period of Incubation.	Stage of Invasion.	Time of Appearance of Eruption.	Character of Eruption.	Duration of Eruption.	Location.
Cerebrospinal meningitis.	Unknown	Sudden	2d to 4th day.	Herpes labialis, purpuric spots, dusky erythema.	.....	Herpes on lips; purpuric spots over entire body.
Erysipelas	Few hours to 3 or 4 days.	1 to 3 days.	Within 24 hours.	Efflorescence; bright-red; polished; with well-defined, raised margin.	4 to 8 days.	Face.
Measles	10 to 12 days.	4 days.	4th day.	Papules; small, dark-red, with crescentic borders. Complete in 24 hours.	4 to 5 days.	Face; then downward over body.
Rotheln	8 to 17 days.	24 to 48 hours.	Within 48 hours.	Macules; rose-red; rounded; discrete.	3 days.	Face and scalp; then downward over body.
Scarlatina	1 to 21 days.	1 to 2 days.	Within 24 hours.	Diffuse; scarlet; punctate.	7 to 10 days.	Neck, chest, face; then over body.
Typhoid fever.	5 to 35 days.	6 to 8 days.	7th day.	In crops. Rose-colored lenticular spots.	Each crop 3 to 5 days; lasts 10 to 20 days or throughout the whole course of the fever.	Abdomen, chest, and back.
Typhus fever.	4 to 12 days.	5 days.	Usually 5th day; may be on 3d or not until 7th day.	Measly spots; petechiæ; streaks; color, mulberry-red.	Few days, or may last throughout the course of the disease.	Sides of chest and abdomen; arms; back.
Varicella.	4 to 14 days.	1 to 2 days.	Within 12 to 24 hours.	In crops. Vesicles.	5 to 8 days.	Back, chest, arms.
Variola.	8 to 14 days.	3 days.	4th day.	Umbilicated pustules.	21 to 25 days.	Face, and over body.

(From *Pocket Cyclopedia of Medicine and Surgery.*)

8. In the *first stage of syphilis*, the chancre is the important lesion.

The second stage of syphilis is characterized by: Sore throat, mucous patches; the skin lesions or syphilides, which are characterized: By not itching; by being of a coppery or raw ham color; by being painless; by polymorphism, macules, papules, pustules, etc., being present at the same time; by being generally symmetrical. In this stage may also appear: Iritis, periostitis, and alopecia.

The *third stage* is marked by: Anemia, gumma formation, periosteal nodes, headaches, endarteritis and various other diseases.

Additional tests are: The presence of the *treponema pallidum* in a smear taken from the chancre; a positive Wassermann reaction is valuable (provided the test is made by a competent laboratory worker); the therapeutic test is also of value.

9. Gastric ulcer. *Etiology:* Injury, bacteria, hyperacidity of gastric juice, changes in the blood or blood-vessels of the stomach; it generally occurs in young people (20 to 30) and is apt to be associated with chlorosis. *Symptomatology:* Pain, localized in stomach, coming on soon after a meal, and of a sharp or cutting nature, and often relieved by vomiting; hematemesis; tenderness over the stomach; the condition is generally improved by starvation or by a milk diet; analysis of gastric contents shows an excess of free hydrochloric acid; there may be "occult" bleeding, which can be recognized by the benzidin test. Prognosis is guardedly favorable; hemorrhage and perforation are apt to be fatal complications; relapses are common; the mortality is about 10 per cent.

The condition is to be diagnosed from gastralgia, gastric cancer, hyperchlorhydria, and duodenal ulcer. *Gastralgia* resembles gastric ulcer as regards hyperacidity and the paroxysmal pains. It differs in the absence of dyspeptic symptoms between the attacks, hematemesis, and local tenderness and enlargement.

Gastric cancer may be distinguished from gastric ulcer in that it occurs at a later period in life, has a more rapid course, the cachexia and emaciation are more prominent, the pain is more constant, the growth is palpable, the vomit has a "coffee-grounds" appearance, and there is absence of hydrochloric acid and presence of lactic acid.

Hyperchlorhydria is attended only by an increase in the hydrochloric acid and pain which is relieved by albuminous food. The other symptoms common to gastric ulcer are absent. The *differentiation between gastric and duodenal ulcer* is often impossible. The latter may be suspected: (1) If the pain occurs in two to four hours after eating, and is located in the right hypochondrium; (2) if there is a hemorrhage from the bowel rather than an hematemesis; (3) jaundice is more frequent in duodenal ulcer.—(Hughes' *Practice of Medicine.*)

10. PYELITIS is inflammation of the pelvis, of the kidney, and is due to—(1) calculi; (2) tuberculous disease; (3) extension of sepsis from the bladder and urethra; (4) sometimes movable kidney; (5) the ingestion of cantharides or turpentine; (6) a pyemic embolus. The lining membrane is red and swollen, and exudes muco-pus or pus. A certain amount of hydronephrosis occurs from the blockage produced by the swelling. When pyogenic organisms are present, the kidney substance may be invaded (pyelonephritis). Perinephritic suppuration may follow from extension.

The *symptoms* are pain and tenderness over the kidney, frequency of micturition, and pus in *acid* urine, unless there is cystitis as well, when the urine is alkaline. The pyuria is intermittent when the ureter is occasionally blocked.—(From *Aids to Surgery.*)

The main *complications* are: Pyelonephritis, pyonephrosis, hydronephrosis, anuria, and perinephritic abscess.

(*To be concluded.*)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	S. W. Welch, Montgomery	Montgomery	July 13
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix	
Arkansas	T. J. Stout, Brinkley	Little Rock	May 11
California	C. B. Pinkham, Sacramento		
Colorado	David A. Strickler, Empire Building, Denver	Denver	April 6
Connecticut*	R. L. Rowley, Hartford	Hartford	Mar. 9
Delaware		Wilmington	June 15
Dist. of Columbia	E. P. Copeland, Washington	Washington	
Florida*	W. M. Rowlett, Tampa	Jacksonville	June 14
Georgia	C. T. Nolan, Marietta	Atlanta, Augusta	June 9
Idaho*	Robt. O. Jones, Boise	Boise	April 6
Illinois	F. C. Dodds, Springfield	Chicago	Mar 1
Indiana	W. T. Gott, Crawfordsville	Indianapolis	
Iowa	G. H. Sumner, Des Moines	Iowa City	Mar. 29
Kansas	H. A. Dykes, Lebanon	Topeka	
Kentucky	J. N. McCormack, Bowling Green	Louisville	July
Louisiana	E. W. Mahler, New Orleans	New Orleans	June 10
Maine	F. W. Searle, Portland	Portland	Mar. 9
Maryland	J. McP. Scott, Hagerstown	Baltimore	June 8
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	Mar. 9
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor	June 8
Minnesota	T. McDavitt, St. Paul	Minneapolis	April 6
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	G. H. Jones, Jefferson City	Kansas City	
Montana*	S. A. Cooney, Helena	Helena	April 6
Nebraska	H. H. Antles, Lincoln	Lincoln	June
Nevada	S. L. Lee, Carson City	Carson City	May 3
New Hampshire	C. Duncan, Concord	Concord	Mar. 11
New Jersey	A. MacAlister, Trenton	Trenton	June 15
New Mexico	R. K. McClanahan, East Las Vegas	Santa Fe	
New York	G. M. Wiley, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo	May 18
North Carolina	H. A. Royster, Raleigh	Raleigh	June 14
North Dakota	G. M. Williamson, Grand Forks	Grand Forks	July 6
Ohio	H. M. Platter, Columbus	Columbus	June
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City	April 13
Oregon	B. E. Miller, Portland	Portland	July 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia, Pittsburgh	July
Rhode Island	B. U. Richards, Providence	Providence	April 2
South Carolina	A. E. Boozer, Columbia	Columbia	June 8
South Dakota	P. B. Jenkins, Waubay	Deadwood	July 13
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville	June
Texas	M. F. Bettencourt, Mart	Austin	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
Vermont	W. Scott Nay, Underhill	Burlington	
Virginia	J. W. Preston, Roanoke	Richmond	June 22
Washington*	C. N. Suttner, Spokane	Spokane	July 6
West Virginia	S. L. Jepson, Charleston	Charleston	July 13
Wisconsin	J. M. Dodd, Ashland	Milwaukee	June 29
Wyoming	J. D. Shingle, Cheyenne	Cheyenne	June
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia		

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Therapeutic Hints.

Eliminative Treatment of Influenza.—George L. Servoss of Reno, Nevada, directed all his efforts toward the prompt removal of the toxemia. He endeavored to increase skin, kidney, and bowel action, and to induce a higher vapory elimination from the air passages. He and his associates pushed stimulants of elimination to the utmost limit, and saw their patients recover promptly, none of them showing any complication whatsoever.

The treatment, which he considers the logical method of dealing with influenza, is as follows: After ordering a small dose of calomel, 1/6 grain every half hour or so, until a grain is taken, begin with

℞ Potassium iodide .....grs. 10
Liquor potass. cit. U.S.P.....oz. 4

M. Sig.: For the first 24 to 48 hours, one tablespoonful in a glass of water every hour. Thereafter, one teaspoonful in half a glass of water, every two hours on the odd hour.

After the bowels have been moved by the calomel, or the morning of the second day, the following is added to the treatment:

℞ Corrosive sublimate .....gr. 1
Syrup wild cherry.....oz. 4

M. Sig.: One teaspoonful should be given in half a glass of water every two hours on the even hour.

By pushing the first mentioned mixture to the utmost during the first 24 to 48 hours, that being based upon the sort of toxemia to be dealt with, the elimination becomes very thoroughly established. The calomel has stimulated the glandular action and this is further carried on by the second mixture. As a rule these are the only remedies which the writer employs in the average case of influenza, for he has found that, within 24 to 48 hours, there has been a marked change for the better, and at the end of four days the majority of his patients have expressed a desire to be up and about their business. If there is a high degree of toxemia it is sometimes well to raise the opsonic index through the use of some mixed infection vaccine.—*Indianapolis Medical Journal.*

Persistent Hiccough.—Relaxation of the spasm of the diaphragm and prompt relief of persistent hiccough has been found by Venegas to follow compression of the diaphragm. This is brought about by having the patient assume the supine position, flexing the legs and then the thighs to the extreme on the abdomen, thus pushing up the contents of the abdomen. This position must be maintained for ten minutes, or until relaxation of the diaphragm has taken place, and may be repeated upon return of the hiccough.—*Journal of the American Medical Association.*

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Original Articles.

THE INSTINCTS, THE EMOTIONS, AND THE ENDOCRINES IN STERILITY.

BY SAMUEL W. BANDLER, A.B., M.D.,

NEW YORK.

JUST as the newly-born inherits facial resemblance and innumerable physical and other characteristics and traits, so too is it born with instincts which, though common to all, are certainly inherited in varying degrees of intensity and combination along Mendelian lines. "Nature," the endocrine glands, the type of life, sanitary conditions, food, intercurrent diseases, etc., influence and may determine the type of physical and mental growth. Hunger, internal processes, and environment furnish the first stimuli which act on the instincts and result in emotions. Training, instruction, education, changes of a physiological and pathological nature enter into play and the result is the developing boy or girl who continues through life still acted on and affected by the same, or by altered types of internal and external influence. What is in a person is shown by his behavior. The behavior of animals, of the newly-born and of the young has informed us about instincts, and their expression in humans leads to emotions and subsequently plays an important rôle in disposition and character. We inherit our instincts, our emotions, and our endocrines.

People are well and healthy, or ill and sick. They are normal or neuropathic. They are normal or psychopathic. People may be cheerful or morose "by nature," as we call it; energetic or lazy; yielding or stubborn; full of ambition or indifferent; sweet or sour; they may have been one and have become the other. Some people are courageous, others are cowardly; some have been one or the other, and events and accidents may modify these qualities temporarily or permanently. A well person may become ill, an apparently normal person may become neuropathic or psychopathic. An individual may have been practically well always or more or less ill always. But endocrine action is the dominating factor.

Practically every adult who dies would show at autopsy an evidence somewhere of a previous tuberculous lesion. The vast majority never develop real recognized tuberculosis in any form; others develop it in a recognized form in glands, bones, joints, kidneys, lungs, etc.

If we understand the body and its ills, we seek to correct them medically or surgically.

Do we understand and study the mental and psychic make-up and mental reactions sufficiently to realize the numerous gradations between the normal mind and psyche and the gross abnormalities of either? Language shows that we should. We say "peculiar," "temperamental," "odd character," "nervous type," "hysterical," "rolling-stone," "weak character," "neurasthenic," "eccentric," without realizing sufficiently that, while we are referring to characteristics and traits, we are concerned with psychic conditions differing from the average or the normal. In fact, adjectives prove in language the purpose or intention of defining differences of any sort. Endocrine action is the dominating factor also.

The average mind recognizes the distinction between extremes; but unless trained or inherently analytical, it grasps less readily the intervening gradations. The medical mind is taught the symptoms of disease along the same lines, yet observation proves that there are gradations or variations in the intensity of practically all the body ills. The medical man knew a typical Basedow's disease when he saw it, but it has taken fifteen or more years to absorb the knowledge that there are variations in intensity down to what are now recognized as the milder forms of hyperthyroidism. The physician was taught to diagnose a well-defined case of myxedema; he now recognizes even a mild or occasional hypothyroidism. Everyone knows that from the extreme pulmonary tuberculosis, incurable and fatal, there are gradations down to the mild, incipient form which may often be recognized only by the most expert, and that too only with the aid of the most modern technical apparatus.

Everyone knows that epidemics of influenza may be not only of varying degrees of severity, but that they produce symptoms varying from the severest forms of pneumonia to simple slight indisposition. And so throughout the whole realm of medicine, our knowledge is brought to us by the study of the extreme types, because from them we receive the imprints which focus our attention on the various major and also minor details, and it is only by the recall of many seeming details that we can diagnose the incipient stages of many of the physical, mental, and psychic ills.

Therefore, to secure a knowledge concerning the endocrines and their importance, and to be able to recognize their gradations, pointing to their over- and under-activity, we must study some of the endocrine diseases in their extreme form, retaining a clear picture obtained not only through the eye but through the recognition of all the smaller manifestations. It is not sufficient to consider Basedow's disease, for instance, as simply exophthalmos, goiter, tachycardia, and tremor; one must know the innumerable changes in almost

every function of the body associated with this disease, the study of which has taught us that most valuable pathology which the dissecting table or the pathological laboratory is unable to supply. On the other hand, the pathologist, both in his gross pathology and in his microscopic work, has furnished us and will still further furnish us with a knowledge as to which of the glands, what parts of the glands, and what character of changes are the responsible seats or factors for those diseases and abnormalities and symptoms with which we have to deal.

Those most worthy and insufficiently recognized investigators who have experimented on animals have contributed a huge and most valuable quota to our knowledge of the physiological action of the endocrines and have helped us to recognize the general and the specific effects which the endocrines produce on various organs, structures, and functions of the body. The alienists and the psychiatrists have given us a knowledge of the manifestations and symptoms of mental disease and are continually finding and unraveling the mysterious and wonderful functions of brain areas, centers, and structure in their relation to mental and psychic processes.

The neurologists let us forget the Freudians by delving into the hidden and often forgotten accidents and into the resulting effects and impressions of life and experience, expose the tremendous influence, not only of the conscious but of the subconscious.

Psychologists, by their study of the primitive and inherent instincts and resulting emotions, have exposed to us the knowledge that different beings react to different stimuli according to laws often as fixed and as specific as the reaction of chemistry and the laws of physics. *But here we do not grant readily enough the association of endocrine activity with the emotions and the instincts, the most important point of all.*

The resemblance of a new-born infant to either of its parents or grandparents is due to the fact that a like endocrine action, has taken place along the phase of body-development. If a child resembles either of its parents or its grandparents in instincts, emotions, mind, and psyche, it is because a like endocrine action has taken place in the two. Twins born in the same sac have developed from the same fecundated ovum which, after its first cell division, allowed each of these two halves to develop as an independent ovum. Hence such twins are alike in sex, in appearance, in characteristics, in nature, etc. Twins which have developed from two different ova are in two separate sacs and may be, and usually are, as unlike as any two children of the same parents born at different times. When people totally unrelated resemble each other, it shows that they are the products of like endocrine action and relation. If they resemble each other in disposition, traits, and character it shows that they possess corresponding and similar endocrine activity. When people are peculiar and abnormal any who have the same deviations from the normal suggest that like or similar endocrine activity has taken place in either. When individuals have a psychosis of any definite distinct type and their symptoms are alike it suggests the same disturbance of endocrine action and interplay in two totally unrelated individuals endowed with like instincts and emotions. When individuals having the same type of psychosis react in the same way in their attitude and show more or less the same psychic elements of reaction one is justified in regarding their endocrine interplay as approximately the same. Therefore resemblances in body, form, or in features or in ability or in character or in mind or psyche are important to the physician in attracting his attention to the fact that many people who resemble each other or look alike may be and often are alike in other respects.

It is only by a bringing together of the most essential and varied points brought to our knowledge by the scientists and investigators in the fields above mentioned that a physician can obtain a sufficiently comprehensive and amalgamated knowledge of the human being as a whole.

Then comes the question of what to do and how to do it in the best possible manner. So far as the endocrines and therapy by endocrines is concerned, exact knowledge as to indications for administration and as to the value of the different gland extracts can be obtained only by their use by the human being, however much experimentation on animals may have taught us. Therefore to equip oneself adequately for endocrine therapy, these gland extracts must be tried, as they are being tried and will be tried in a continually increasing field of endeavor; each specialist of necessity studying gland physiology, pathology, and therapy in its more particular relation to his field of work. Let me say here that for years 90 per cent. of all my medication has consisted of endocrine extracts.

To initiate endocrine therapy properly in gynecology, one must attempt the study of the relation of the endocrines to the physiological functions of woman in the varying periods of her life; and must continually study the possible relation of deviations of glandular activity to many of the pathological, physical, mental, and psychic manifestations with which he has to deal. And this holds true for children as well as adults. And right here, so far as our children are concerned, is the most important field for therapy. Therefore many of the associations between glandular abnormality and pathological states are at first only suggestive as to cause and effect. But if these seeming coincidences occur sufficiently often in one's practice, the suggestive becomes the probable; and the more frequently does it repeat itself, the more nearly does it approach a fact.

Therapy aids us in the same way. If, for instance, any one gland extract or a combination of gland extracts without any other treatment cures a case of sterility, it may be a coincidence; in fact the patient might have been pregnant at the time of examination. If two or three or four other apparently normal but sterile patients, under the administration of any of the indicated gland extracts or a combination of extracts, without the aid of any other treatment, become pregnant within two to twelve weeks, it is suggestive. If a dozen sterile patients conceive under the same form of therapy, it is probable that the prescribed endocrines have caused changes of a trophic or allied nature which have resulted either in ovulation, fecundation, or

nidation where one or the other has not occurred before. If thirty cases are successfully treated in the same manner, granted that there are failures, the reason for which can be satisfactorily given in most instances but not in all, we must conclude that the physician is justified in proclaiming the fact that endocrine therapy is valuable in the treatment of sterility. And here, in order to be explicit and clear and to leave no room for possible misunderstanding, it must be understood, as all reasonable medical men would naturally understand, that the curable cases are those where normal spermatozoa are present in the partner, where there is no double pysosalpinx or salpingitis or closed tubal ends; where there are no bilateral dermoids or ovarian tumors and where the uterus is of a size sufficiently approaching the normal to lead any reasoning examiner to understand that it might conceivably serve as the nest for an embedded and growing ovum.

These are of course the grosser and easily recognized obstacles to sterility but they have their finer and not so easily demonstrated or recognized minor degrees of abnormality, such as completely cystic ovaries, or chronic inflammatory, and often gonorrheal, mucoid discharge from the cervix. Practically all cases, except such as are above mentioned, come into the realm of curable sterility.

A patient who had been married four months and whose previous menstruation varied in period between one and six months, consulted a gynecologist who performed a cervical plastic operation. A few months later she consulted another gynecologist who curetted her. When she came to me her amenorrhea had lasted nine months. Examination showed complete atresia of the cervix which I corrected at operation and a cervical stem was introduced after a thorough irrigation of the uterus. It is not easy to understand why either of the previous procedures (cervical plastic or curettage) was attempted for the correction of sterility in a patient with such a menstrual history.

Each year I see several patients in whom a curettage has been followed by either a relative or a complete amenorrhea. There is beyond doubt an intimate relation between the ovary and the endometrium. The endometrium grows thicker, the cells enlarge, the capillaries dilate for from seven to ten days before each expected menstruation, this decidua menstrualis forming an appropriate nesting structure for a fecundated ovum. As the endometrium undergoes these changes through the stimulation produced by the secretion or secretions of the ovaries aided by other glands which exert a trophic influence on the ovaries and uterus, a reaction is exerted by the secretion of the endometrium upon the ovaries and this reciprocal influence is of importance.

If the uterine lining be curetted away too thoroughly, especially in what might be called a sensitive case, the reaction on the ovaries can be appreciated, and the untoward results just called to mind speak for themselves.

The normal endometrium is not a mucous membrane to be removed without reason. The curette has its place, and well does it serve us in properly selected instances. When the endometrium is overgrown or polypoid, if uterine polypus or cervical polypus be present, if in a miscarriage all the tissues of the ovum are not cast out, if we suspect a malignant change in the endometrium, a curative or diagnostic curettage is indicated.

Certain cases of menorrhagia without appreciable change in the endometrium, certain other cases to which the name fibrosis uteri may be given, certain cases of fibroid of the uterus, respond splendidly to a curettage, especially if followed by the administration of ergot or ergotole or mammary extract, or by hpodermics of ernutin or aseptic ergot.

Is there any other danger than a resulting amenorrhea which can be mentioned or blamed on a curettage? The element which always makes me fearful is the possibility of an unrecognized inflammation.

Speaking now of women who have never borne children or who have not miscarried, a chronic discharge of greenish-yellowish, tenacious mucus from the cervix, constitutes a warning. It is an evidence not of a hypersecretion but of an inflammation against which the cervix is battling by the production of mucus. An infection may extend up through the cervix and uterus into the tubes, ovaries, and peritoneum; and the cervix may react by no mucoid discharge. On the other hand, in many cases there is an attempt on the part of nature to fight the invading bacteria and thus limit the upward spread of the infection. Why some patients respond by this mucoid means of defense and others do not, is a matter evidently dependent on many considerations belonging more or less to the question of immunity. Such cases are never dilated nor curetted by me, and for two reasons: (1) It is almost impossible to cure this cervical discharge unless the entire cervical mucous membrane is removed, for so long as the deeply ending glands are preserved the mucosa will be restored and the infection still remaining in these crypts and in the connective tissue outside of them will continue to produce the discharge. (2) But a second and more important reason is our inability to determine, in all cases, how high the infection has spread; and any curetting of the endometrium is of course contraindicated whenever an infection, latent or active, is present in the tubes and in the endometrium.

Leaving aside, however, these cases with this pronounced cervical discharge, there are only too many where an infection has spread upward, leaving in the cervix few, if any evidences. It is only when we collect on a cotton tampon placed around the cervix the secretion of the cervix and uterus for a period of twenty-four hours, and subsequently examine this discharge under the microscope, that we can with any certainty express an opinion on this all-important question. One has only to see a case of early gonorrheal infection respond favorably to conservative treatment—consisting at first mainly of douches—to note how within a few months or perhaps even a few weeks, all signs of the original vulvar, vaginal, or cervical involvement have disappeared; and it would be a bold man who could express an authoritative opinion on the areas further up without the just mentioned method of examination. It is by collecting the secretion discharged upon this cotton

tampon from the cervix and uterus over a period of twenty-four hours, and examining it under a microscope, that we remark how often a smear of pure pus cells is obtained; and if, after a period of months or years the cervical uterine discharge is negative, we still may have to deal with a latent inflammatory condition in the tubes.

It is only by comparing one's diagnoses with the findings during laparotomy that one visualizes the frequency with which salpingitis and cobweb adhesions escape the tactile sense. Therefore a dilatation and curettage may be productive of great harm if an unrecognized inflammation or a condition not correctly viewed as an inflammation, is present.

The all-important point of spermatozoa frequently receives no consideration. Often enough have I observed patients who came to me because of sterility and who had been curetted—some of them twice and even three times—when my subsequent examination of the partner showed the spermatozoa to be absent or to be present few in number, non-motile or only slightly active.

The element of hypoplasia or atrophy of the uterus and ovaries is of the greatest importance, and the greater the degree of relative amenorrhea, the less favorable as a rule is the prognosis. I am almost inclined to the belief that a menstruation every six or ten weeks, associated with a normal loss of blood, is of no worse prognostic significance than a regular menstruation of only a day or so; but it is as unsafe to state that such patients do not ovulate as it is to state that all women who menstruate normally do ovulate; for here again our experience during operations shows that many patients, in spite of regular menstruation, do not ovulate. The structure of the outer covering of the ovary may be so altered that Graafian follicles do not burst. Circulatory changes, frequently prompted by displacements, may have a like effect. The liquor folliculi bursts through the thin covering of the follicle and carries with it the ovum. But this bursting cannot be dependent simply on pressure; there must be in the liquor folliculi an enzyme or ferment which assists in this process. If because of any of these conditions the follicles do not rupture, the ovaries become filled with follicle cysts and these, together with corpus luteum rests, because of their presence, add to the difficulty of subsequent ovulation.

The cases of sterility favorable for treatment of any sort are those in which no evidence of inflammation can be found, those in which the hypoplasia is of no marked degree, and those only where spermatozoa in the male are found to be normal.

What is the treatment for these cases?

Heretofore, and even now, with many the favored plan is a dilatation with or without a curettage, or some form of cervical discission or plastic. This denotes that those who practise these methods exclusively believe the mechanical obstacle of the cervix and its canal to be the one and important factor. I do not hold to this opinion nor have I held this view for many, many years. A cervix which will admit a sound, which is not filled with overgrown endometrium, is rarely a bar to the upward movement of the microscopic spermatozoa. Besides, as I have frequently stated, the interstitial area of the tube is infinitely smaller in caliber than the cervix, and yet the ovum is passed through it into the uterus and the spermatozoa pass out through it into the tube.

My explanation as to the causation of sterility in the so-called favorable cases, fixes the blame either on the ovaries and the failure of ovulation, or on the tube and its cilia which are to move the ovum into the uterus, or on the uterine lining which is the ground in which the ovum is to nest, or on the inability of the fecundated ovum to inhibit menstruation.

If a patient pregnant eight weeks or more menstruates and casts out the ovum with its chorionic villi, we call it miscarriage, but if the fecundated microscopic ovum, without villi, is cast out when a patient is only a few days over her menstruation, we are in no position to be certain that this has been the case, yet in all probability it occurs often enough.

The most interesting phase of pregnancy is the amenorrhea. Why does menstruation fail to take place when a tiny fecundated ovum settles in the uterus, or occasionally in the tube?

Menstruation is the loss of blood poured out from the capillaries and vessels of the endometrium when no pregnancy has taken place. The endometrium, like a wet sponge, is relieved of its engorgement and returns in a few days to its normal thickness. No lining has been lost, only a few epithelial cells. Under the stimulation exerted primarily by the ovaries and possibly accentuated by a remaining ruptured follicle, the endometrium prepares itself again in the form of a decidua menstrualis for a fecundated ovum. When such a fecundated ovum enters the uterus and nests itself beneath the surface it does show a growth of cells on its outer covering; these cells do penetrate into the surrounding tissue and capillaries, but menstruation does not take place. It is too much to say that a cerain reflex stimulation has inhibited menstruation; the only available explanation is that the cells of the outer covering, entering as they do the maternal circulation—those cells which form the future chorion and placenta—by their action as a hormone, hold off the menstrual flow.

Menstruation is dependent on the normal action of the ovaries and their secretion. If the ovaries are removed, no gland extract that we can give will restore it; therefore the ovaries supply hormones and are aided by other hormones which we cannot yet supply to the body in efficient character or sufficient or proper quality. The ovaries are not essential to life. When removed, in spite of the flushes and other annoyances, duplicated in many instances at the normal climacterium, the patient's physical health is not seriously affected. These flushes are due not only to absence of ovarian secretion but to a hyperactivity of the posterior pituitary. The ovaries are of the greatest importance, however, because they normally furnish each month, in supposedly ripe form, at least one of the twenty-five or thirty thousand ova which they contain; but of all the structures of the body which have a secretory function the ovary is the weakest in that its

activity, as well as its development, is dependent on a proper trophic support by other glands; and this trophic support is quite as essential for the tubes and uterus as for the ovaries.

Pathology has taught us how profoundly the growth of the body may be held in check or stimulated or altered by the overactivity or underactivity of the pituitary gland, the thymus, the thyroid, the adrenals, etc., and it teaches the gynecologist how profoundly the genital tract is involved by disease of these same glands. An underactivity of the pituitary most profoundly affects the development of the ovaries and the uterus; but if posterior pituitary inactivity takes place after their development, it may bring about their atrophy. Affections of the thyroid gland play an important part. Aside from these changes, the genital tract may be injured by the infectious diseases of childhood or by subsequent constitutional diseases (leaving displacements and inflammations aside).

Now menstruation, initiated as it is by the ovaries and preceded as it is in normal cases by the exit of an ovum, is not a local process only. It is a constitutional involvement not experienced disagreeably by many women but associated in very many instances with what are known as premenstrual phenomena; and these premenstrual phenomena are due not only to the changes produced in the body by the cumulative action of the ovarian secretion, but to the associated altered activities of the thyroid, the adrenals, and the pituitary gland, especially the posterior lobe. The general symptoms of this recurring premenstrual period always show which of the endocrines is or are stimulated or inhibited and that the unstable member or members of the chain are disclosed. So we may say that the trophic support of the genitalia—of the uterus in particular—is dependent, not only on the ovary itself, but on the thyroid adrenals and pituitary likewise. Here we must not forget the action of the adrenal glands. If we are to initiate a glandular or endocrine therapy for sterility, we have only to point back to the rôle which pathology, if nothing else, has taught us; for tumors of the pineal gland, of the pituitary, of the adrenals, etc., have frequently enough been found to have a marked influence on growth and sex development. Acromegaly, myxedema, the dystrophias, the rarer cases of Addison's disease, etc., have their decided rôle in affecting the functions of the ovary and of the uterus, and the same holds true of the like diseases of lesser degree.

A comprehensive study of the endocrines in general is an ever increasingly huge task. One may take up this study for the sake of individual pleasure and find in it a worthy reward; but most of us have entered into the study of this all absorbing question because it seemed to furnish us not only with an explanation for many phases which seemed puzzling, but because it offered a prospect of supplying the means by which we might benefit our patients. A man may be a very good physician and yet have forgotten ninety per cent. of all the anatomy studied so laboriously and with so much drudgery in our medical schools; a man may read the entire literature of the endocrines and forget ninety per cent. and still retain the essential points and factors which particularly interest him, especially from the practical side. But he can gain a proper understanding of the problem only by observing therapeutic results.

When I was a student of medicine, Professor Allen Starr showed a case of myxedema, typical in appearance, one never to be forgotten. The patient was a school teacher who had left England because her memory had failed her; her mental faculties had changed so that her vocation could not be pursued. I remember with what glee and confidence he told us that the patient could be cured, now that we were no longer feeding with the gland itself but were giving a glycerin extract; and not long thereafter thyroid extract was used therapeutically and I have used it ever since.

I remember a clinic of Professor Delafield's, when he showed a big, broad-shouldered, powerfully built stoker complaining of palpitation of the heart. After a thorough examination, he said in words that I have never forgotten: "This is a case of exophthalmic goiter without exophthalmos and without goiter." The meaning of that diagnosis has influenced me ever since, and early in my gynecological practice I studied my cases and published a large series under the title, "Associated Nervous Conditions in Gynecology," the main purpose being to show that hyperthyroidism was a most frequent cause of these nervous conditions, and that it existed without the so-called pathognomonic signs of Basedow's disease.

Nearly twenty years ago Knauer made those interesting transplantations of ovaries in animals which proved that the ovaries exerted their trophic action on the genitalia by virtue of a secretion and not by a reflex promoted by ripening of the follicles. Since that time I have been using ovarian secretion (corpus luteum much less frequently than the whole gland), and later the secretion of the interstitial substance, both by mouth and by hypodermic; and with every year the results in an ever widening series of appropriate cases are more than gratifying.

Several years ago came the introduction of pituitrin into obstetrics, calling attention to the relation between a gland seated in the brain and an organ so distant and so special in its activities and functions as the uterus. Cushing's work deserves the highest praise, aside from his surgical accomplishments, because his reports of cases contain references to the effects of the pituitary diseases on menstruation; and the frequent references to associated thyroid anomalies and adrenal anomalies have done so much to focus our attention on what are now called pluriglandular or polyglandular involvements; that is, the fact that a severe change in one important gland influences or is associated with changes in associated glands. But an added feature is the photographs of patients in their earlier periods before a pituitary disease began to be manifested; and the photographs of the same patients at the time of operation. Could anything be more instructive than the study of the changes in facial contour, growth of the facial bones, changes in the jaw, in the teeth, in the hands, etc.? Associated therewith are the changes in metabolism and in the mental attitude, the psychic sphere.

As a result of such study one is able to note by observation of the face alone, the existence of a well-defined endocrine over- or under-activity or alteration. One may see and thus recognize the slighter changes produced by the influence of like secretory activity. No one finds any difficulty in recognizing a well-defined case of Basedow's disease or acromegaly or myxedema at sight. Between these extreme resemblances and types and the so-called minor or latent forms there are gradations of varying degree which may still be recognized by the eye. This recognition directs our attention to over- or under-activity of a gland or glands through the suggestive resemblance. Add to this the knowledge we have gained concerning the influence of the endocrines on texture of the skin, distribution of hair, dryness or moisture of the skin, character and development of the teeth, pigmentation, feeling of physical and mental languor, asthenia, the meaning of blood pressure, sugar tolerance, rate of the pulse, etc., and it is easy to recognize how hugely our diagnostic acumen has been furthered.

In diagnosis it is no longer a question of bimanual examination, of listening to the lungs, to the heart, testing the blood-pressure, examining the urine, examining the blood, etc. It is a matter of observation and also of tests to determine what the endocrines have been doing to a patient before she comes to us; and then it is for us to determine what the endocrines are doing at the time the patient consults us; and if the patient suffers from too little of a secretion necessary to her well-being, what is easier than to administer it? And if she be suffering because of an excess of any one or more secretions, what better outlook has medicine than to search for and find, if possible, the counteracting remedies?

Now, when patients come to the gynecologist, not all are to be helped by surgical means or by surgical means only. A goodly proportion of them come because of disturbances associated with menstruation. Here we have the various degrees of amenorrhea, dysmenorrhea, monorrhagia, and metrorrhagia. Not all the menorrhagias and metrorrhagias are due to polyps or fibroids of the uterus. A very large number of fibroids have no menorrhagia or metrorrhagia as a symptom. If we can hold out hope of a cure for these patients with medication, why should be dilate or do a plastic on the cervix, or curette? How is a patient, suffering from repeated miscarriage, to be benefited by the removal of the uterine lining when examination shows it to be smooth and normal?

Then we have the annoyances which precede each menstruation, of which patients complain so frequently; we have the annoyances associated with the climacterium and the menopause. Not always are climacterium and menopause coincident. Many patients believe that long periods of nervous upset, headaches, etc., must be due to some anomaly in the genital tract. This notion seems to be general among the laity, and it is only too true that gynecology of the past few decades has assisted in fostering it. Hence the mania for doing a trachelorrhaphy to correct all sorts of symptoms supposedly reflex and supposedly due to this, in my opinion, unimportant cervical condition. Slight deviations of the uterus have been corrected in thousands of cases for the same purpose.

It was because of my disbelief in this etiology and my disinclination to advise surgical procedures against my belief that my attention was directed still more definitely to aberrations of the endocrine system as scientific and logical explanations for those varying neuroses and psychoses erroneously called "hysteria" and "neurasthenia." The extent to which hyperthyroidism and hypothyroidism, for instance, are now made as diagnoses for many of the annoying symptoms formerly called, and indiscriminately so, "hysteria" and "neurasthenia," is only one of the many proofs of the correctness of this belief.

Now, coming back to the question of sterility itself; I doubt whether in the last ten years I have dilated, curetted, or done a cervical plastic (except for intractable dysmenorrhea) in five per cent. of the cases of sterility which I have viewed as curable. By curable I refer to cases where the husbands have normal spermatozoa, where tuboovarian, inflammatory, and tumor conditions were absent; and where the menstruation was normal, or if deficient, was not associated with a marked polyglandular anomaly of a type as severe as a well-developed dystrophia adiposogenitalis. Among these cases, the vast majority fell into the class of relative uterine hypoplasia. The whole plan of treatment was dominated by (1) the notion of trophic stimulation of the genital tract in those cases where the theory of substitution implied a lack of autostimulation by the patient's own endocrines; (2) the theory of inhibition in a smaller proportion of cases where menstruation was excessive; (3) the theory of stimulation and inhibition where uterine contractions with or without excessive menstruation might be presumed to expel an ovum a few days after fecundation and attempted nidation, especially if nidation occurred shortly before the menstrual period.

I found that in a certain proportion of cases the patients, during one, two, or three periods of the year, went a week or ten days over menstruation, but at other times menstruated to the day; and in this type of cases the results of endocrine treatment have been so uniformly good that I was forced to the conclusion that the menstrual wave often throws out the ovum before the nesting is completed or fixed. There is during pregnancy a recurrence of the menstrual wave at regular periods. It is painless, not recognized in the vast majority of instances, and is associated with minor degrees of molimina in others.

Some pregnant patients have periodical headaches; others have an occasional spotting of blood at intervals corresponding to the menstrual period; others bleed more noticeably. Now, others go through the experience of expelling an ovum of varying degrees of development, resulting in what we call abortion or miscarriage. We give to this latter phenomenon when repeated the title of habitual miscarriage. In other words, there is during pregnancy a constant struggle on the part of the endocrines concerned in menstruation, to produce it, and a struggle on the part of the ovum and the secretion produced by its outer covering, to

inhibit menstruation. This struggle between the two opposing forces comes to a crisis on the two hundred and eightieth day in what we call a labor. But here again not infrequently, inhibition allows the patient to go some days to weeks over her expected date; other patients are delivered a few days or weeks before the two hundred and eightieth day. Of course, in many cases this is due to the fact that ovas may be fecundated immediately after a menstruation, while other ova are fecundated shortly before the first skipped menstruation. The treatment of these latter conditions—the type of individual who goes a week or ten days over her period, occasionally, when she otherwise menstruates normally, and including all the various types with a tendency to menstruate during pregnancy—consists of trophic stimulation first and then of inhibition of the menstrual stimulus. We have used for this purpose rest in bed, the administration of opiates and sedatives; but instead of waiting and depending upon treating cases of habitual abortion only when the symptoms of expulsion of the ovum develop, or instead of relying, as we have been wont to do, on the theory that these cases must on examination evidence a positive Wassermann (which is far from the truth), we administer endocrines which act trophically on the uterus or which inhibit the menstrual stimulus, and our results improve in certainty.

It is, of course, the most desirable part of our therapy to administer the endocrines, either for the purposes of trophic stimulation or for the purposes of inhibition, on the basis of a study of the individual's endocrine make-up, seeking to find in each and every case, if possible, the special factor or factors which are at the bottom of either condition. But even if this is difficult or impossible, we do know that the ovary and its secretions, both of the interstitial and of the glandular apparatus, have a decided trophic relation to the well-being of the genitalia. We know that the thyroid gland bears a close nutritive value to the genital functions, and that the adrenal cortex likewise bears an important part of this trophic burden. As to the hypophysis, we know from the study of the physiology of the gland that its relation to the genital tract is close and that affections of the hypophysis may influence menstruation and the development of the uterus for either better or worse.

The anterior lobe, concerned as it is with the general process of body growth, includes within the field of its activities the development and function of the genitalia. The posterior lobe, as can be understood from its action in labor, is concerned with the rhythmic uterine contractions of the same; hence my conclusion that overactivity of the posterior lobe at menstruation is responsible in most cases for uterine dysmenorrhea—and therapy proves this to be true.

The thymus gland has the effect in some cases of inhibiting ovarian activity. Based on physiological study extract of the placenta should have a quieting and inhibiting effect on overactivity of the posterior pituitary. Proceeding from this basis, I have used it in a very large series of cases and have found it to be of the greatest value in those cases of dysmenorrhea and repeated miscarriage and in a large number of pelvic conditions and general states due to posterior pituitary hyperactivity. Inasmuch as the use of placental extract in threatened or repeated miscarriages has always been associated with the use of other endocrines and occasionally with the use of sedatives, the reliance that may be placed on this extract alone is not yet settled in my mind.

Since working on this theory and following this practice, I find results which, in comparison with the results obtained by other methods are not only encouraging but decidedly effective, I have not the faintest interest in proving that dilatation and curettage are never followed in previously sterile patients by subsequent pregnancy, for the record and experience of able men in gynecology proves that it is true. I simply feel that curettage and dilatation and cervical plastics have not attacked the basic factors which, in the majority of cases, in my belief and in my experience, are of greater importance. What possible error is a physician committing if he treats a case of curable sterility by endocrines before he attempts any surgical procedure? Then, if this treatment is not successful, he is the more justified in assuming that some surgical procedure is necessary. The fact that he may decide on a cervical operation, while I would be more inclined to advise the removal of cysts from the ovaries, would then furnish a basis on which we could eventually accurately measure the rôle which the cervix plays as an obstacle to impregnation. And when it comes to the question of curettage, with the subsequent restoration of a new endometrium, I hold that unless the endometrium is overgrown or polypoid, endocrine therapy restores it to a type and character favoring nidation just as well if not better and with less danger. We must understand the difference between fecundation and that continuance of nesting and growth of the ovum which we call pregnancy; and I am firmly convinced that, whatever endocrine therapy does to the ovary or tubes, in a large proportion, if not the largest, it acts trophically in aiding the ovum to nest or in retaining it after it sinks into the endometrium. In other words, union of the ovum and spermatozoon occur in an untold number of cases, but nidation or permanent nidation fails.

If this be true, it is sad to think of the innumerable unborn, still remaining in the Blue-Bird Land of Maeterlinck, whose potential mothers might have permitted them ingress into this mundane sphere.

The maternal instinct can be one of the most powerful of all instincts but is of varying degree. The same holds true of the sex instinct. But while both are associated with endocrine stimuli, both trophic and otherwise, there is a vast difference here in the intensity of the somatic effects and in the intensity of those psychic phenomena connected with either of these instincts and their associated emotions. An individual may have a strong maternal instinct and little sex urge or receptivity; and many women reconcile themselves to the sexual side of married life because thereby comes the subsequent reward of maternity. Others have the physical and psychic sex phenomena of normal or exaggerated character with little of the

maternal instinct. Children give pleasure, joy, or sorrow according to the accidents and fates of life which are theirs; and these depend much on the moulding and development of their instincts, emotions, disposition, and character. Parents take the chances associated with heredity, environment, training, education, etc., and the developing child is the product. Sterility, according to the instincts, emotions, disposition, and character of the patient may be accepted with indifference, with regret, or with a continued yearning or longing; and because of it psychic effect may spoil or destroy the desiring-to-be-mother's life.

We may on pelvic examination likewise discover conditions distinctly due to the endocrines. But the outward physical manifestations of over- or underactivity may be relatively absent, particularly if the changes in the gland relationship have been recent. We know that gland abnormality may be evidenced in one individual by predominantly physical signs, in another predominantly evidenced by altered visceral function or metabolism. In another the effect is predominantly on the mental reactions and psyche. In extreme cases there are various grades of combinations of all three.

It is most important to judge the endocrine processes of an individual at any age from childhood up, and to determine their influence on, and association with, instincts, emotions, mental and psychic reactions. All deviations from the standard in body characteristics are due to over- or underactivity of the various endocrines or to the numerous and innumerable possible variations in their interrelation. Normality and abnormality of any of the factors concerned with a child or adult are due to heredity and to inherited instincts and emotions plus the play of the endocrines.

While this point will be discussed more extensively in a subsequent article, sufficient of an outline will be given here to indicate the meaning of the above statement. Normally a definite balance should exist between the interstitial and glandular structures of the ovary; between the anterior and posterior pituitary, between the adrenal cortex and the medulla. The balance, as well as the activities of the respective structures represented in this balance differs in the two sexes, with the testis as the male gonad.

The anterior pituitary is vitally concerned with body growth and mental development. It is associated with strength, large or broad hands, the development of the jaws (we speak of a firm lower jaw), with maturity of mind, etc., and its function is more in evidence in men than in women.

Speaking in relative terms and in view of its relation to the posterior pituitary it is a male gland just as relatively speaking the thyroid is a female sex gland.

The posterior pituitiary related to the uterus and genitalia (pituitrin, for instance) plays relatively a greater rôle in its balance with the anterior lobe, in women than in men. Its action is associated with the tender emotions and with the sex instinct in women; and so far as the tender emotions are concerned plays, of course, a much more important normal rôle in women than in men. Relatively speaking, it may be called a female gland.

The adrenal structures are related to the instincts of flight and pugnacity and to the corresponding emotions of fear and anger. The adrenal cortex is concerned with the production of hair and exerts normally a greater influence in many phases in the male than in the female. Good adrenal action (cortex and medulla) is essential to courage. Poor adrenal action, especially a lack of balance between the cortex and medulla wherein the cortex plays the minor rôle, is responsible for the emotions of fear, for cowardice, for anxiety. The adrenal cortex is more of a male than a female portion of the gland. The medulla, since it is more predominant in women, is therefore partly responsible for their being more "emotional," as we call it.

The ovary is closely related to the posterior pituitary and to the adrenal medulla. This combination is responsible for the characteristics of coyness and self-display. She is not the aggressor in the sense of the hunter and fighter, she is the one who is sought. Since the anterior pituitary is less active, that maturity of mind and what we call wisdom, greatly dependent on anterior pituitary action, are less marked, and men have produced the greatest philosophers.

The male gonads are responsible for the sex urge, stimulate the adrenal cortex and the anterior pituitary more than do the ovaries in women. There are, therefore, numerous indications for the administration of the corresponding extracts in those states due to lack of sufficient adrenal cortex or anterior pituitary activity. Hence man is the fighter and the hunter, his sex instinct is much stronger, he is the aggressor and seeks the woman.

There is in woman no such mechanism producing the consciousness of sex urge as man has in the testis, vas deferens, and seminal vesicles. The combination of testis and adrenal cortex makes man more brutal, more criminal and more coarse. It is the normal action of the anterior pituitary which is concerned with that cerebral trophic stimulation and with that maturity of mind and with that judgment which in most men act as restraining factors to the coarser instincts. A normal associated action of the posterior pituitary has a like moderating action, and if it be excessive in men, even though it does not overbalance the action of the anterior pituitary, such men are more or less emotional, have tender feelings, are fond of children, etc.

The thyroid is the great activator. According to its action it stimulates, understimulates or overstimulates any of the functions, instincts, or emotions of the human being. It is much less stable and much more frequently overactive in women than in men. It is the great fixer of impressions for all things in the sphere of memory especially for all things not associated with those instincts and emotions which are specifically associated with the activity of other endocrines.

When events, occurrences, etc., which act on the instincts and arouse emotions do prompt a response, there is an endocrine activity which varies in degree and in the gland involved according to the instinct and emotion affected, and this particular endocrine, or endocrines, act as fixers in association with the thyroid.

A distinct neuroendocrine path is created by every stimulus through any of the senses. Any event, process, or stimulus which has brought into

activity any endocrine secretion specifically associated with the emotion aroused, may be recalled, or the recall is made more easy by a subsequent activity of that endocrine. This constitutes what might be called reverse peristalsis, and plays the all-important part in dreams, and in determining the character of the dreams.

If a little child three years old, before retiring is roused into a tempest of anger by anyone and a few hours later that little child in its dream shows the emotion of anger and cries out the name of the person responsible for the emotion, how are we to explain this phenomenon? What more logical and correct explanation can we give than that the adrenal outpouring associated with the emotion of anger has continued its activity during sleep and has reawakened the subconscious sphere and in part the upper sphere, to a reproduction of the original picture? Considerations like these should make us regard the bedtime hour of children as the hour of their greatest happiness. If certain fairy tales and stories that unwittingly rouse fear were banished entirely from the lives of children the adult would have fewer phobias, fears, and anxieties.

The correction of sterility does not as is the province of medicine, simply benefit a mental state, correct an ill, or save life; it helps to create life.

I have never told a patient that the fault is her husband's, however often this may be the case. Sterility is so frequently productive of depression and psychic disturbances, the causes of domestic infelicity are numerous enough, why add this new brand to a smouldering or even brighter flame? I tell the patient to take the medication for several weeks only, that it may produce a favorable effect only after months or years; or that causes which we cannot discern and correct may right themselves even after a long interval of time. The disadvantage of this advice is that it makes the patient think the method is useless (which is a burden physicians have to bear continually in their practice). Another disadvantage is that it often throws the patient into hands favorable to dilatation, to curettage, discission, or cervical plastic, regardless of or in ignorance of the absence of spermatozoa. Perhaps this is not always so unfortunate a result, for the patient then feels that she has exhausted every known means for the treatment of her sterility. Time, plus resignation and philosophy, may then remove the too absorbing mental concentration.

In "The Medical Clinics of North America," ii, 4, I tabulated a series of fifty cases of sterility showing the number due to tuboovarian conditions, the number due to absent or inactive spermatozoa, the cases which did not become pregnant, though spermatozoa were normal, and the cases which became pregnant—five after operation on the tubes or ovaries and twelve after endocrine therapy.

The purpose of this tabulation was an attempt to show the relative importance of tuboovarian conditions, absent or faulty spermatozoa, and marked alterations in menstruation in their relation to sterility, and by reporting the proportion of cases cured by endocrines, to arrive at various conclusions concerning the entire question of sterility.

In a subsequent paper will be published a report of cases in which endocrine therapy was the only treatment given, a second series of fifty cases dealing only with the type which evidences no tangible pathology; the paper will likewise record not only the successes but the failures, with the suggestive reasons for the latter.

In conclusion, I should like to warn against the tendency to prescribe definitely combined formulæ in tablet or other form, when such combinations are recommended as the correct therapy for certain and many of the conditions now known to be due to endocrine abnormality. The physician then loses touch with the theory and explanation of the innumerable pluriglandular states and the study and analysis of all the factors entering into diagnosis are neglected. In the past this has been a serious hindrance to accurate diagnosis and to the proper interpretation of the therapeutic value of the drugs entering into many of the combinations. The physician ought not to further the habit among the laity of taking drugs of any sort except on medical advice, for if he does anything to foster this habit he will be more and more looked upon as a man needed only for advice and help in those states and conditions which the public feel they cannot correctly diagnose and treat alone.

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THE PANDEMIC OF INFLUENZA AS IT AFFECTED CANTON, CHINA.

By WILLIAM W. CADBURY, M.D.

CANTON, CHINA.

The literature on the recent epidemic of influenza as it appeared in Europe and America has now reached a volume of considerable proportions. Little or nothing has appeared, however, on the disease in China and other parts of Asia. The present paper is an attempt to describe the epidemic in Canton. For other parts of China we have been unable to secure much reliable information.

The city of Canton extends about five miles along the banks of the Pearl River, on its north and south sides. The institutions named below are situated on or near its banks. On the south bank of the river we find the Canton Christian College at the extreme east and the Pui Ying School and the True Light Seminary at the extreme west. The Hospital for the Insane and the Blind Schools are near together on the middle south bank. On the north side of the river the Kung Yee Hospital is located at the extreme east, the Congregational School for Girls at the extreme west, and the Canton Hospital and Post Office are near together about midway between these two.

The first appearance of the disease was in the middle of June, 1918, when it appeared first at the Pui Ying School, then among the employees of the Post Office and the staff of the Canton Hospital, the Canton Christian College, and the Kung Yee Hospital. The other schools entirely escaped. Eleven days were occupied for the disease to spread from one part of the city to the others.

The second return of the disease was in October, when it was first noted in patients at the Hospital for the Insane, then at the Schools for the Blind,

close by, the Canton Hospital, the Canton Christian College, the Pui Ying Schools, the Post Office employees, and finally at the True Light Seminary. About three weeks were required from the outbreak at the Hospital for the Insane to the appearance at the True Light Seminary, but the other institutions were all attacked within six days of each other.

It will be noted that the spread of the disease in Canton was relatively rather slow as compared with its spread throughout the camps and large cities of America over far vaster areas. This may be explained by the slighter virulence of the epidemic and the slower methods of travel in and about Canton. It is remarkable to note that the period of the epidemic in Canton coincided almost exactly with its appearance in the United States and many other parts of the world.

A definite appearance, for the third time, of the disease in epidemic form occurred in the months of December and January. At this time only the Canton Christian College and the Pui Ying School were affected. Almost no cases having occurred in the other institutions. It will be noted that the Congregational School for Girls in the western part of the city escaped the disease entirely.

From the latter part of January, 1919, to the present writing—August, 1919—there has been no marked return of the disease, although there have been a number of sporadic cases, especially during the past June and July.

When we come to consider the disease itself it seems impossible to give a complete review of the extensive literature that has appeared. We should like to record especially our indebtedness to the articles of Soper: "The Pandemic in the Army Camps,"[1] and of MacNeal: "The Influenza Epidemic of 1918 in the American Expeditionary Forces in France and England."[2]

Etiology.—Nationality: The disease in Canton rarely attacked Europeans or Americans, and when it did so, only in mild form. One American family, consisting of a man, wife and four little children, were all slightly affected early in January. A few days later their Chinese cook, boy, and washerwoman came down with a very much more serious form of the disease. No deaths among foreigners have come to my knowledge in Canton. Reports from Shanghai during February and March indicate that a number of Europeans were seriously affected by the disease there, with several deaths.

Sex:

Table I.—Sex Incidence.

		June.	Oct.-Nov.	Dec.-Jan.	Total.
Canton Hospital	No. of male cases	28	15	....	43
	No. of female cases	13	12	....	25
Canton Christian College	No. of male cases	25	67	38	130
	No. of female cases	....	2	29	31

At the Christian College the great majority of the students are boys. There has seemed to be a tendency for males to succumb to the disease more readily than females. Dr. Niles, of the Schools for Blind Boys and Girls reports that all of the 13 boys were taken sick and were much sicker than the girls, of whom only 87 out of a total of 116 were affected.

Age: The age of those who died in America was generally from twenty to forty; in Europe the greatest incidence is said to have been between five and forty-five years. Over forty-five it was much less common. In the epidemic of 1890, on the other hand, the incidence over forty-five was much greater relatively. The ages of those affected in Canton may be seen by reference to the table.

Table II.—Age Incidence in Canton.

	Date.	Years 1-5	Years 6-10	Years 11-20	Years 21-30	Years 31-40	Years 41-50	Years 51-60	Total Cases.
Canton Hospital	June	..	..	5	5	3	..	1	14
	Oct.-Nov.	2	6	7	4	3	3	..	25
Canton Christian College.	June	..	..	4	7	2	1	..	14
	Oct.-Nov.	..	7	44	14	..	..	..	65
	Dec.-Jan.	10	5	40	6	4	1	..	66
Totals	.....	12	18	100	36	12	5	1	184

The above table shows a very marked preponderance of cases among children of 11 to 20. In the epidemic of October and November the great majority of cases were in children between 10 and 15, there being 40 of these ages out of a total sick of 65. The older boys were relatively slightly affected.

Occupation: Every class and every occupation was affected by the disease. At the Christian College naturally the great majority of cases were in male students. The classes are graded much as in the United States, beginning with boys of 8 to 10 in the primary second grade. In the June epidemic school closed and the students returned to their homes on June 20, so that only five students were taken sick, with seven teachers and thirteen workmen. The students were enrolled about as follows:

Primary school, 150; middle or high school, 261; college, 120; total school children, 531, of whom less than 30 were girls. Teachers and families, 180; household servants, 62; coolies and other workmen enough to make a total population of almost 1,000 persons. The primary school children are housed in four brick cottages in one part of the campus and the other students in four brick dormitories in another part of the campus. The girls are located in a building at some distance from the other two groups of buildings. Faculty and workmen are pretty well scattered over the campus. Table III shows how heavily certain sections of the community were affected.

Table III.—Distribution of Cases at the Canton Christian College.

	Primary School.	Middle School.	College.	Faculty and Families.	Servants and Workmen About:
Total number of persons enrolled	150	261	120	180	289
October epidemic	40	12	11	4	2
December epidemic	16	26	.....	17	8

Thus in the October epidemic the disease affected chiefly the little boys in the primary school and during the winter the middle school was more involved. In October none of the older girls were taken sick, but in December 15 out of 29 in the girls' dormitory were affected. The relatively small number of workmen, members of the faculty, and college students who were taken sick is quite striking.

Microorganisms: No reference need be made to the extensive literature on the bacteriological findings during the recent epidemic of influenza. Suffice it to say that the consensus of opinion seems to be that the Pfeiffer bacillus, together with the pneumococci and streptococci are secondary invaders. No bacteriological data are available for Canton. The late Dr. Harold MacFarlane, bacteriologist for Hongkong, informed me that he had isolated the influenza bacillus from a number of cases dying of pneumonia in Hongkong during June. Dr. Arthur M. Stanley, Health officer for Shanghai, writes as follows under date of Feb. 11, 1919: "Pfeiffer's influenza bacillus was usually absent; *Micrococcus catarrhalis* usually found."

Symptomatology.—Soper[1] in his valuable article describes the appearance of the disease as an explosion. He says: "The maximum effect of the epidemic has been felt within ten days after the onset. The duration has been less than three weeks. Within about a week after the outbreak of the influenza there occurs an ominous prevalence of pneumonia. The pneumonia does not exist as a separate epidemic, but always as a follower of influenza. How the two diseases are related is not positively known. It is clear that the influenza paves the way for the pneumonia if it does not actually produce it. The time of greatest incidence is usually about a week after the greatest incidence of influenza."

The disease appeared in two forms in Canton, one in June and the other in the fall and winter. These two forms correspond in general with two distinct types reported from Europe and other parts of the world.

The following observations were made in Canton during the June epidemic. The disease was ushered in with or without a chill, usually without. The temperature rapidly rose to 39° to 40° C. (102.2° to 104° F.), with no marked prodromal symptoms. The maximum temperature recorded at the Canton Hospital was 40.2° C. (104.5° F.). Headache, pains in the back and limbs were severe in all cases. Vomiting and anorexia were often present. Bronchial symptoms were generally entirely absent or very slight. The sicker cases had fever from 5 to 7 days. In 14 cases at the Canton Hospital 9 had fever from 5 to 7 days. Two had fever from 3 to 4 days, and 3 from 8 to 12 days. The cases as seen at the Christian College were milder, the elevation of temperature lasting but 2 to 3 days. There was nothing very characteristic about the temperature curve. Except for the absence of an eruption the disease greatly resembled dengue fever.

The autumn and winter epidemic showed quite a different symptomatology, with bronchial symptoms verging on pneumonia, or actually developing into a true bronchopneumonia. The symptoms corresponded quite closely with those reported from abroad, where the disease appeared in a mild form. It has been suggested that the marked absence of bronchial symptoms in the June epidemic and their general appearance in the fall and winter might be explained by the different meteorological conditions. In order to test this theory we record below the comparative figures for the months of June and July, when the first epidemic occurred, and for September, October, November, December, and January, when the second and third epidemics appeared with their attendant bronchial complications. For the meteorological data herewith presented I desire to express my obligation to A. Hotson, Esq., Harbor Master for the Chinese Maritime Customs in Canton.

Table IV.—Average Daily Temperatures in Canton.

	June.	July.	Sept.	Oct.	Nov.	Dec.	Jan.
Maximum.....	86.5	89.9	88.2	86.3	74.3	68.7	60.6
Minimum.....	75.3	78.1	76.2	68.7	61.6	57.5	52.6
Mean.....	80.3	82.8	81.3	76.9	66.5	61.9	57.4

Table V.—Average Daily Relative Humidity.

	June.	July.	Sept.	Oct.	Nov.	Dec.	Jan.
6 A.M.....	94.0	92.9	88.2	77.9	89.5	88.5	86.0
3 P.M.....	78.1	73.2	66.5	44.7	66.9	70.7	69.6

Table VI.—Average Daily Rainfall in Inches.

June.	July.	September.	October.	November.	December.	January.
0.55	0.33	0.21	.....	0.16	0.02	0 016

By comparing the data exhibited in Tables IV, V, and VI, several facts are evident.

1. The maximum, minimum, and mean temperatures in October, when the second epidemic with marked bronchial symptoms first made its appearance, were but slightly lower than were these temperatures during June.

2. The relative humidity for June and July was very much higher than that recorded for September, October, November, December, and January.

3. The daily rainfall averaged highest in June and July, while no rain fell in October and but little fell in September, November, December, and January.

It is evident, therefore, that if the meteorological conditions had anything to do with modifying the symptoms of the disease at its different appearances, the bronchial complications should have been most apparent during the spring and not during the dry and only slightly cooler fall and winter months. It would seem safe to say therefore that meteorological phenomena can be excluded as bearing upon the nature and course of the disease.

At the Canton Christian College, during the October-November epidemic every person affected by the disease was seen by the author. More than 91 persons out of a total population of about 1,000, or about 9 per cent., were affected. In 69 of these a careful history and temperature record was made. The patients were seen on the first day of the fever and kept in bed until thoroughly convalescent. The first case was taken sick October 15 and the last one on November 5, an interval of 21 days. As in June, there were practically no prodromes. A chill occurred in 14, or 20 per cent. (in 6 of these the chill was very slight); there was no chill in 55, or 80 per cent., of the cases. Cough and other signs of bronchial catarrh were present in 65, or 95 per cent., and absent in 5 per cent. The maximum temperature was as follows: 40.7° C. in 1 case; 40.5° in 1 case; 40.4° in 3 cases; 40° C. and over in alto-

gether 21 of the 69 cases. At the Blind Schools one boy was reported to have had a temperature of 41.7° C. (107° F.) within 24 hours of the onset, followed by death.

Headache and general pains were not very pronounced, and delirium was rarely noted. The cough was persistent, lasting often for a week or more after the temperature had returned to normal. There was no case of pneumonia at the college. The patients were sick from 1 to 12 days with fever. Of 66 cases of whom a record of the fever was kept throughout its course we note that 16, or 24 per cent., had fever from 1 to 3 days; 27, or 41 per cent., had fever 4 to 5 days; 18, or 27 per cent., had fever 6 to 8 days, and 5, or 8 per cent., had fever 9 to 12 days.

At the Canton Hospital the first case admitted was likewise taken sick October 15, and with one exception all were taken sick before November 11. One case with pneumonia had a temperature of 41.2° C. Cough was severe in all but three of the 27 cases; 11, or 41 per cent., developed pneumonia. Of the non-pneumonia cases at the Canton Hospital 2 had fever from 4 to 5 days, 7 from 6 to 7 days, and 6 from 10 to 13 days. One child who had convulsions died after thirty days. The patients with pneumonia who recovered had fever from 10 to 24 days. Those who died were sick from 7 to 14 days. In one case a peripheral neuritis developed. My colleague, Dr. J. W. Wright, reported several cases admitted to the surgical service of the Canton Hospital at the time the epidemic was at its height, with retention of urine. These regained their normal function after catheterization once or twice. Gastric symptoms were marked in two, delirium and convulsions were also noted in a few. Dr. Niles of the Blind Schools has called attention to the fact that hemorrhages were a striking feature among the sick at these institutions. In five the blood came from the nose or bronchi, in one from the vagina, and in two from the lungs.

Following the subsidence of the October epidemic there were occasional sporadic cases noted at the college. Some of these were diagnosed benign tertian malaria, others doubtless were influenza. On Christmas Day, however, the family of a member of the Chinese staff were taken sick, and from December 25 to January 9, 16 days, there were 64 cases of illness. The symptoms were identical with those of the October attack. The highest temperature reached was 40.6° C. (105.1° F.). Out of 52 cases the temperature rose to 40° C. (104° F.) or over in 15. As to the duration of the fever at the Christian College during this December-January epidemic, in 18, or 36 per cent., it lasted from 1 to 3 days; in 19, or 38 per cent., it lasted from 4 to 5 days; in 11, or 22 per cent., it lasted 6 to 8 days, and in 2, or 4 per cent., it lasted from 11 to 16 days. Thus as in the October epidemic the disease usually lasted from 4 to 5 days. There was one case of pneumonia, a servant, who had been in poor health for several weeks. She died with typical signs of septic bronchopneumonia after having been moved to the Canton Hospital.

Pneumonia.—Dr. McKenny of Hongkong, in a personal note, states that "for practical purposes there was no pneumonia in the early epidemic and about 20 per cent. showed pneumonic symptoms in the second outbreak. In the Tung Wa Hospital there were probably 25 to 30 per cent. of pneumonias."

In Canton the writer knew of no cases of pneumonia during the June epidemic. In October-November there was no case at the college, but at the Canton Hospital there were eleven cases and in January one case. Pneumonia was especially prevalent among the children at the Blind Schools. The patients generally had shown symptoms of influenza earlier and the pneumonia occurred as a relapse, sometimes after the patient had been up and about for a day or two. This complication was often ushered in by a chill and a rise in temperature. One striking characteristic was expectoration of pure blood suggesting the hemoptysis of pulmonary tuberculosis. The temperature fell by lysis rather than by crisis. The physical signs were those of diffuse bronchopneumonia.

Leucocytes.—According to reports from abroad there is a leucopenia, with a slight leucocytosis toward the end of the fever. Lennox[3] in Peking records counts of 2,000 to 18,000, averaging 6,000. Prior to the tenth day counts averaged normal or below. On the twelfth and thirteenth days a slight leucocytosis was observed.

In June the leucocytes were counted by us in two cases. In one they numbered 6,000 and in the other 5,400, a differential count showed 80 per cent. of polymorphonuclears, 14 per cent. of small mononuclears, 4 per cent. of large, and 2 per cent. of transitionals. In October two counts were made in cases without signs of pneumonia and these were 7,600 and 1,280. In the pneumonia patients six cases averaged 7,300, the maximum count being 11,800 and the minimum 4,200.

Betchov,[4] in Switzerland, speaks of a characteristic fever curve with two high peaks at a two or three-day interval, and the exacerbation of symptoms which parallel these double peaks. He explains this by assuming a multiple virus, twofold at least. The first is filtrable and ultramicroscopic, and traverses countries with remarkable rapidity. The second peak is the work of ordinary germs, especially the pneumococcus. Tucker[5], in Boston, says that in seventy-two hours many cases have a normal temperature, but there is a recrudescence of fever twenty-four hours later At the Canton Christian College many of the students had had attacks of tertian malaria previously and these exacerbations of fever were at first considered to be malarial. However, no quinine was given in some of these cases and no further rises in temperature were noted. The two peaks of high temperature varied from twenty-four hours to four days apart.

Recurrences.—Foley[6] speaks of two cases who were attacked in October and were again affected in December, one of them dying of bronchopneumonia. In general, however, one attack seems to convey immunity to subsequent ones. It is because of this apparent immunization conferred by the June epidemic that we have felt justified in calling it true influenza.

Thus at the Canton Hospital seventeen of the Chinese male internes and nursing staff were affected in June and three escaped, two of these three were attacked in October, but none of the seventeen. In June ten of the female staff were sick

and two escaped. None were affected in October or December.

Similar conditions prevailed at the Kung Yee Hospital. At the Christian College Mr. S. of the Chinese staff was sick in June. His wife and three children fell ill in December, but he himself escaped. One student who had a typical attack from October 29 to November 4, had a slight attack of fever November 29 to 30, which might have been a recurrence. We have seen no instances in Canton, however, of one person having two typical attacks of influenza between June, 1918, and April, 1919.

Family Infection.—A striking feature was the way in which one family would be completely prostrated by the disease, while other families living next door or very near by would entirely escape. Thus in October there were the following instances at the college: Mr. and Mrs. C., infant child, and three servants; Mr. and Mrs. H. and five children; Mr. and Mrs. T. and infant, and Mr. and Mrs. W. and family. All of these were members of the Chinese staff and they with their entire families were affected. In December Mr. and Mrs. H., three children and three servants, were all sick at the same time. Also Mrs. B. and two children. These were members of the foreign staff. Mrs. H. of the Chinese staff and her seven children were all prostrated at one time, while other families in the place were only slightly if at all affected.

Deaths.—In September, October, and November it is estimated that there were more than 400,000 deaths from the disease in America. Among the troops from September 20 to November 1 there were reported 725 deaths from influenza and 18,704 from pneumonia[1]. In the cities of America the death rate per thousand ranged from 1.8 in Milwaukee to 7.4 in Philadelphia for a period of ten weeks.[7] At the Christian College only one death occurred between June and January, or a rate of one per thousand for the entire time of the three epidemics.

Elsewhere in Canton the disease also seems to have been much less malignant than in the United States, although there were rumors of entire families being wiped out and of 500 deaths in one block of a city street. At the Canton Hospital there were no deaths in June and only four in twenty-seven cases in October.

Rumors indicate that the disease was much more fatal in certain outlying districts, but the reports from Hongkong and Shang-hai agree with our own observations that the death rate was extremely low in China. That tropical countries did suffer severely from the disease is shown by reports from the Philippines and from India, where more than six million are said to have perished. As Christian[8] declares, it is a misnomer to speak of some deaths as due to influenza and others due to pneumonia, since death in this disease is practically always the result of pneumonia.

Treatment.—A careful review of recent literature indicated that vaccination against influenza if of very doubtful if any value. The only really effective therapeutic measure in the more serious cases of pneumonia seems to be the intravenous injection of the blood serum of convalescent influenza patients. This seems to have had really curative value. It is our belief that putting the patient to bed at once, with careful nursing until he is thoroughly convalescent, is the surest means of warding off pneumonia and death. Although quinine was given in a number of cases, we would not venture to ascribe any specific value to its use.

Summary.—1. Three definite epidemics of influenza appeared in Canton during the spring, fall, and winter of 1918.

2. The epidemics in Canton coincided in time with the appearances of the disease in Europe and America.

3. In Canton foreigners were but slightly affected.

4. The male sex seemed to suffer most severely.

5. At the Christian College the majority of the cases occurred in boys between 11 and 20 years of age; the older students, faculty, and servants were affected in relatively much smaller numbers.

6. The disease appeared in Canton in two distinct forms, one in the spring and the other in the fall and winter. The spring epidemics was mild, fever lasting but to four days. The second and third epidemics were more severe, cases of pneumonia developed and the fever usually lasted from four to five days.

7. Leucopenia was generally present.

8. The fever surve often presented two high peaks from twenty-four hours to four days apart.

9. One attack of the disease appeared to confer immunity against subsequent attacks.

10. The disease tended to affect all the members of a single household.

11. The mortality in Canton was relatively very low.

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Canton Christian College.

DREAMS OF THE FEEBLE-MINDED.

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By the feeble-minded are meant those persons who from birth or an early age suffer a permanent, partial, or complete arrest of cerebral development, by reason of which they are unable to compete with any marked success with their normal fellows, or manage themselves or their affairs with ordinary prudence. Depending upon the amount of their intelligence, as gauged by various methods of mental measurement, the feeble-minded are, chiefly for purposes of classification, divided into three main groups or classes, namely, idiots, imbeciles, and morons. Idiots have a mentality which is roughly comparable to that of a normal child between the sixth

month and the second chronological year inclusive. Imbeciles have an intelligence comparable to that of a normal child between the third and the seventh chronological year inclusive. Morons' intelligence averages that of a normal child between the eighth and the twelfth chronological year inclusive. Each of these classes is further divided into three groups.

In other words, the feeble-minded are persons doomed to perpetual childhood of mind, no matter what the size of their bodies or their chronological ages. The higher grades are often unmarked by any crass physical defects, and frequently possess a superficial brilliance apt to deceive all but a trained observer. Not a few of them become criminals, vagrants, ne'er-do-wells, and social derelicts of one sort or another; moreover, their true mental status is often unrecognized, for which reason, among others, the feeble-minded offer one of our most pressing social problems. However, we should not be led astray by the published reports relative to feeble-mindedness and social evils of all varieties. Judging by the statistics prepared by some enthusiastic, possibly over-zealous workers, one would think that the feeble-minded were, as a class, not only potential but actual enemies of normals. A person can be deficient, so far as intelligence tests are concerned, and yet be well endowed with character traits of a desirable kind; on the other hand, a person may pass the tests very creditably and yet be noticeably deficient in moral sense. In spite of the common opinion, many of the feeble-minded are good characters, and go wrong only exceptionally; they may not startle the world by their brilliance, but they are indispensable for the brilliance of others, since it is they who perform the work which, to normals, is menial. One who is familiar with Dickens will find many feeble-minded characters depicted very sympathetically; as in the persons of Barnaby Rudge, Mr. Dick, Miss Podsnap, Maggie of Little Dorrit fame, David Copperfield's sweetheart.* The real problem connected with mental deficiency is the discovery of those who have a moral deficiency in addition to a general intellectual deficiency; these are practically prone to be social offenders, and require segregation as a rule. The others can, with a little supervision and sympathetic guidance, prove capable of living honorably and usefully in the outside world.

In the early part of 1919, the writer, while connected with the Maine School for Feeble-Minded, spent several months in studying the dream life of the inmates. Since it is difficult to arrive at any exact idea as to what idiots and low grade imbeciles dream about, the study was centered on the higher grade defectives. However, judging by the facial expressions and other actions of the lower grade defectives during sleep, an observer would conclude that dreams of satisfying the pleasurable instincts and of escaping danger were the usual ones of this group.

Inasmuch as the feeble-minded as a class relish attention, the possibility of fabricated dreams being recorded was rendered slight by collecting the dreams in an indirect manner. Many of the children—all inmates are called children, irrespective of their chronological ages—were in the habit of relating their dreams on awaking to fellow inmates or to their matrons. The latter were instructed to "listen in"; also to encourage the children, without exciting curiosity, to relate their dreams. The night watches were asked to note sleep disorders, and to pay particular attention to talking in sleep; when the latter occurred, the name of the talker, the hour, and what was said were recorded as accurately as possible. Since dreams accompanied by actual movement are not remembered as a rule, valuable insight into the dream life was obtained in this manner. The writer also made it a point to question the children.

The present study is based on the dreams of at least 100 defectives, the ages of the latter ranging from six to forty. In this place the writer expresses his thanks to the various employees of the Maine School, without whose cooperation the study would have been incomplete.

As is well known, Freud and his disciples believe that behind every dream a hidden wish element can be found, which may not be apparent in the dream as remembered (the manifest content), but which can be discovered by analyzing the dream for the thoughts on which the dream is built (the latent content). In my studies no serious efforts were made to analyze the dreams. For one good reason, the feeble-minded, because of their mentality, are not good subjects for dream analysis.

Of the dreams collected, those in which a wish was plainly fulfilled were very frequent. Such dreams were of being at home, of working in a good family, of having pretty clothes, good things to eat, etc. The fact that the dreamers were in institutions doubtless had an influence on the dreams; thus, dreams of being at home were the most common of the wish dreams. The wishes were, for the most part, very simple. This is quite true of their reveries also. Few of the feeble-minded have lofty ambitions. The majority desire to be out in the world doing some simple work. The boys think that working on a farm, driving horses, bell hopping, etc., are very desirable occupations; the girls almost invariably prefer housework. Few express a desire to have homes of their own, to travel, to study, to become skilled workers, to be famous. To be free, to enjoy life in simple ways, with no thought of the morrow or fear of the future, are their natural aspirations. Since these thoughts prevail by day, they tend to figure in the night thoughts, since it is on day-dreams that many night-dreams are built. The simpleness of the thought processes, the tendency to think directly, the paucity of mental associations, the poor imagination, will explain the childish nature of the dream thoughts, and will account for the ease with which the dreams are generally interpreted.

The following are some examples of simple wish dreams. The dreamers are aged thirty and more chronologically:

I dreamed I got a lot of boxes and they were filled with beautiful dresses, all lace and ribbons, and I was going to parties and having a fine time.

I dreamed I was at my brother's and out in the

*Cited by Ireland in Mental Affections of Children, 1900.

barn getting eggs, and found a lot of them, and went in and ate a lot of them, and woke.

I dreamed I went away from here and I was near a big body of water, and someone came and asked me if I wanted to get into his boat and go fishing. And I went, and we kept dropping our lines in, and just as fast as we baited the hooks we pulled up nice big fishes. And when we went home it was evening, and oh! what a nice time I did have. I love to fish. I was frying the fish when Mrs. —— called the ward.

The following is a wish dream of a more complex type. The dreamer is an epileptic, aged 16 chronologically, 10 mentally:

I dreamed that E. C. and R. D. got into a fight in the sewing room, and E. C. struck R. D. in the back. I came up and reported it to you (the matron).

This dream is the fulfillment of a wish for revenge. On the day preceding the dream the dreamer was asked by E. C. to return certain articles she had filched from the sewing room. She resented this at the time; and R. D., another inmate, laughed at her. By fighting the inmates render themselves liable to correction, which consists in sending the offenders to bed for a short time. Thus, the wish is to have the girls who offended her sent to bed, punished.

The following are a series of dreams typical of the dreamer. She is aged 35 chronologically, 12 mentally, and is the mother of several illegitimates.

I dreamed I was away from here by permission to wait on a lady who was ready for confinement. I just got there and the baby was born. And the doctor was showing me how to fix the cord. And he said: "Well, if you can't fix it I will come in the morning and fix it for you." And I was working and working to fix it. And when the doctor came he said it was all right. I washed and dressed it and laid it beside the mother. He then said: "I think you'd make a good nurse, and I have a dandy hospital, and you can come and try and I'll pay you good wages and your washing done." He said: "I am single and have never found anyone to have me, and I think you would make a good wife. We'll go over to the hospital." And we got there. It was a grand building and furnished beautifully. I said: "I feel kind of shaky coming here to work." And he said: "Why, I'll be right here." And I thought in a little while that he and I were married and I had a handsome dress and we went on a long journey.

I dreamed I was hired in a beautiful home and a new baby was born. And I was cuddling and holding it up. And she came out of the ether and said: "Oh, let me take that baby!" But I kept holding it, for she was not herself enough to trust it to her. It was our own doctor at —— who was with her and he seemed surprised to see me there. The house was furnished beautifully.

I was at a farmhouse and it was evening; and we went after the sheep and came to another farmhouse. And away down in the valley were a lot of ducks swimming. And then I went back and had a fine supper, and I went to sleep. And when I woke up I was in a nice room all my own and I said: "Now I'm out, and I won't ever go back to that feeble-minded school again." It might be mentioned that when the dreamer really awakened she cried hard, and threw things around, because her good fortune was all a dream.

Dreams dealing with the events of the previous day were numerous. As is well known, most dreams, if not all, are instigated by some incident, usually insignificant, of the previous twenty-four or forty-eight hours, though in the dream as remembered the instigator may not be apparent. Most of the dreams accompanied by talking in sleep dealt with the day's activities. The girls held quarrels with other girls, talked to various employees with whom they were associated during the day, indicated that they imagined they were at work in the dining room, laundry, etc. The boys quarrelled also, talked to their horses or oxen, etc. During the baseball season some wards were very noisy because of baseball dreams. Quarrels, especially near bedtime, often caused dreams accompanied by warm language, especially in excitable inmates.

As a rule the dreams were of a happy nature. For instance, one gray-haired imbecile dreams frequently that two former inmates who died of influenza are flying around in the sky; they have wings, but no clothes; they look like angels. Occasionally, the younger inmates dream of being chased by tramps, by a dog, bear, of being in a burning house. Generally it is not difficult to trace the dreams to previous experiences. As a class the feeble-minded are not imaginative, and thus vivid dreams are uncommon. In the case of an epileptic moron, aged 27 chronologically, a dream of caterpillars, which were crawling all over her, occurred the night before an attack of status. Between seizures, while unconscious, she talked of caterpillars, and at such times betrayed great fear. This interesting case the writer intends to publish at a later date. The following are a few examples of terrifying dreams.

I dreamed that H. J. had a convulsion and fell in a large tub of soft soap. When they got her out she was bleeding all over, and the girls were laying her across the top of the chairs asleep.

I dreamt that I went away from here to another place and I thought they asked me how I liked the place where I was. I told them I didn't like it at all. And they asked me if I wanted to go out for a walk. I said "Yes," and went out. I thought I went through the woods. While in the woods I ran into this bear. I thought he was ugly. He jumped up and leaped at me. I ran three or four steps, and he grabbed hold of my dress. I screamed. I thought I got away from him, and picked up a stone and threw it at him. I thought he went away. The night watch came in and asked me what was the matter.

I dreamed that I was here and got word that mamma was sick. And I got home and I said: "Oh, dear! Mamma is dead and I can never speak to her." I could see her just as plain as I ever did see her. And the lights woke me right up, but I was crying when I woke up. It seemed a long time to me; I thought I was home a long time, and I cried most all the time. And I know my mamma is dead or something is wrong. (Like many other "prophetic dreams," this one failed to prove telepathic.)

Dreams more or less common to normal adults, as dreams of flying, falling, insufficient clothing, etc., were rare; likewise were dreams of ghosts, fairies, monsters. Most of the dreams were purely visual, and colors were not distinctive. The paralytics, most of whom were crippled from birth, did not make use of the paralyzed limbs in their dreams. I asked a number of epileptics if their convulsions figured in their dreams; the majority answered in the negative. The dreams of the blind feeble-minded should prove interesting, at least as showing extreme simplicity. Unfortunately the mentality of the blind inmates was so feeble that a study of their dreams was impossible. According to Jastrow, the dreams of the normal blind are never visual when the blindness occurs prior to the fifth year.

In general the girls had a more varied dream life than the boys; the girls tended to remember their dreams better, also. These points are quite true of normals. Considering that the feeble-minded have poor memories it might be asked if they remember their dreams well. As far as my experience goes, I find that they recall dreams as well as do normals. As with normals, one will find many who say they never dream; this is, of course, a self-deception, for we have good reason to believe that dreaming goes on all the time we are asleep.

Disorders of sleep, as nightmare, somnambulism, night terrors, were infrequent. Various reasons are ascribed for such disturbances. Some attribute them to physical instigators almost entirely, while others trace them to vivid experiences of an unpleasant nature, mental conflicts, etc. Since dreams are founded on experiences, in which are included thoughts, one must naturally have had before, if in a fantasy only, the experiences which are dreamed. Possibly the comparative freedom of the feeble-minded from worries of one sort or another, their diminished impressionability, feeble imaginations, and the infrequency, as compared with the normal, of repressions and conflicts, may help explain the rarity of anxiety dreams.

Talking in sleep was present in about 8 per cent. While somniloquy occurred generally after the first few hours of sleep, it also occurred directly after going to sleep. In most instances the words said were intelligible; sometimes mumbling went on. As a general thing, but a few words were said at a time, which might be followed in a few moments by more words. One girl would keep on talking for a half-hour or more. The talking dealt almost entirely with daily incidents; rarely of events of long ago. A quarrel during the day, or near bed-time, seemed very potent in exciting sleep-talking, especially in those of an excitable temperament.

Enuresis occurred in about 10 per cent. What is not generally known is that enuresis is in many cases the result of a dream. Enuresis resulting from a dream may occur in two ways: (1) The accumulation of urine in the bladder may give rise to a dream of voiding, and from habit or because waking inhibitions are absent, the desire is fulfilled. (2) In a dream the child may see running water, a urinal, etc., which suggests voiding, which suggestion is carried out. Enuresis is common in the feeble-minded for many reasons. The condition being usually present from an early age, the bladder rarely is able to hold more than a few ounces at a time, and thus does not develop as a result of distention due to restraining the desire to urinate. In mentally normal children enuresis tends to disappear around puberty, due, in part at least, to the better development of the bladder which physiologically occurs at this time and to the better development of the motor-inhibitory centers of brain and cord. The feeble-minded are poorly inhibited; in addition, they suffer from various muscular and nervous weaknesses, and debilitating habits. Even those who are tidy seem unable to restrain the desire to urinate for long, attested by the fact that many awaken at night to make water, and by the celerity with which they seek the urinal. Habit will explain some cases, as it will among children of normal mentality. By training, feeble-minded enuretics may be improved, but when the condition has persisted for any length of time cure is difficult, often impossible. Few will cooperate in treatment, and others suffer from irremovable etiologic factors. By psychotherapy the writer has succeeded in benefiting some feeble-minded enuretics, but only for a time. Usually mentally normal enuretics are neurotic and in poor general health; the condition does not seem to impair the general health of the feeble-minded to any great extent.

From the above sketch it will be seen that the dreams of the feeble-minded are more or less simple in nature. That such should be the case is natural, considering their mental status. The stuff that dreams are made of is the vast amount of material which the mind has been accumulating from infancy; this material includes everything we have experienced, consciously or unconsciously, even our thoughts, all of which is conserved. The feeble-minded have few experiences; they live in narrow worlds; their thoughts are simple. Unlike normal children their imagination is poor, a fact so generally recognized that tests for the imagination are included in practically all so-called mental tests for defectives. Many are unable to read, to comprehend the significance of what is told them in story or other form; they learn by doing, by seeing, not by hearing. For these and other reasons their night-dreams are less varied and less vivid than the dreams of the normal children to whom they are compared.

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INTESTINAL TOXEMIA—ITS MEDICAL AND SURGICAL TREATMENT.*

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Intestinal toxemia, or autointoxication, as it is frequently designated, is a common ailment, but owing to its varied symptoms and causative factors, nothing approximating a uniform method of treatment has been followed. It is to be noted that the stomach early in the process is a relatively unimportant causative factor although frequently the sufferer attributes much of his trouble to stomach disease, as a result of the reflex gastric irritation which occurs. In the treatment of the disorder we emphasize the simple colonic and rectal indications for treatment and the few operative measures which have met with success.

The chronicity of intestinal toxemia is due to a persistence of a mechanical or inflammatory lesion in the terminal ileum, colon, or rectum, the consequence of which is a local catarrhal process and interference with complete evacuation of intestinal contents. The latter are more liquefied than normal and their consistency as they pass the ileocecal valve is not adapted to efficient propulsion through the bowel. The intestine contracting upon this semi-

*Read before the Fairfield County Medical Association, Bridgeport, Conn.

fluid mass squeezes some forward and a good part of it backward, leaving residues, where none should exist, throughout the colon and rectum. Mucus appears in the stools in increasing amounts when infection is added to a catarrhal colitis. The lower

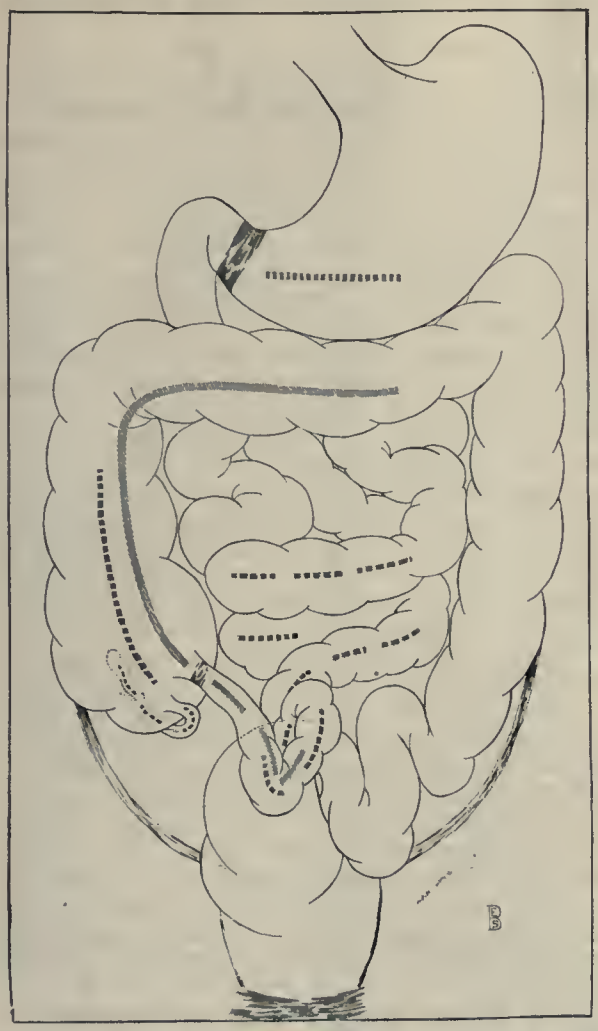

Fig. 1.—Showing the pyloric ileocecal and rectal sphincters; the appendix is retrocecal. The continuous line shows the progress of the bismuth meal in the normal bowel at the end of six hours; the broken line shows the same in the abnormal bowel (ileac stasis).

colon and rectum may long remain immune and in such cases constipation is present.

The *x*-ray is the method of choice for investigating the function of the ileum, colon, and rectum, while the proctoscopic and digital examination of the rectum and anus are of equal importance. The *x*-ray findings include a dilated or ptosed cecum, insufficiency of the ileocecal valve, exaggerated iliac stasis, kinks and constrictions, irregular filling of the appendix or delay over forty-eight hours in the emptying of it, delayed emptying of the cecum, the hepatic, and splenic flexures, or of the sigmoid, a prolapsed transverse colon, or prolapsed and elongated sigmoid. Normally the bismuth meal begins to collect in the cecum in two hours and is largely out of the small intestines in four to six while the head of the column is at or past the middle of the transverse colon. In ileal and cecal stasis considerable amounts remain in the ileum after six, twenty-four, or even seventy-two hours.

The proctoscope will show a residue in sigmoid and rectum, excessive moisture of the rectal mucosa, pasty, light colored, sour smelling bowel contents which cling to the rectal wall, whereas in health the rectum after evacuation is practically free of fecal particles. Digital examination frequently shows the presence of hemorrhoids, fissures, a tight anal canal, and abnormal sensitiveness of the latter.

The blood pressure is ordinarily reduced, an evidence of adrenal disturbance and involvement of the sympathetic nervous system. The urine gives an increased acidity, occasional trace of albumin, and, with involvement of the ileocecal region and insufficiency of the cecal valve, a marked increase of indican.

We distinguish clinically two types of the disorder—a digestive and a nervous.

In the digestive type the predominant symptoms are general or localized abdominal tenderness and pains. The sigmoidal and cecal regions are sensitive and appendicitis or colitis may be simulated. Tenderness may be very marked over the mesen-

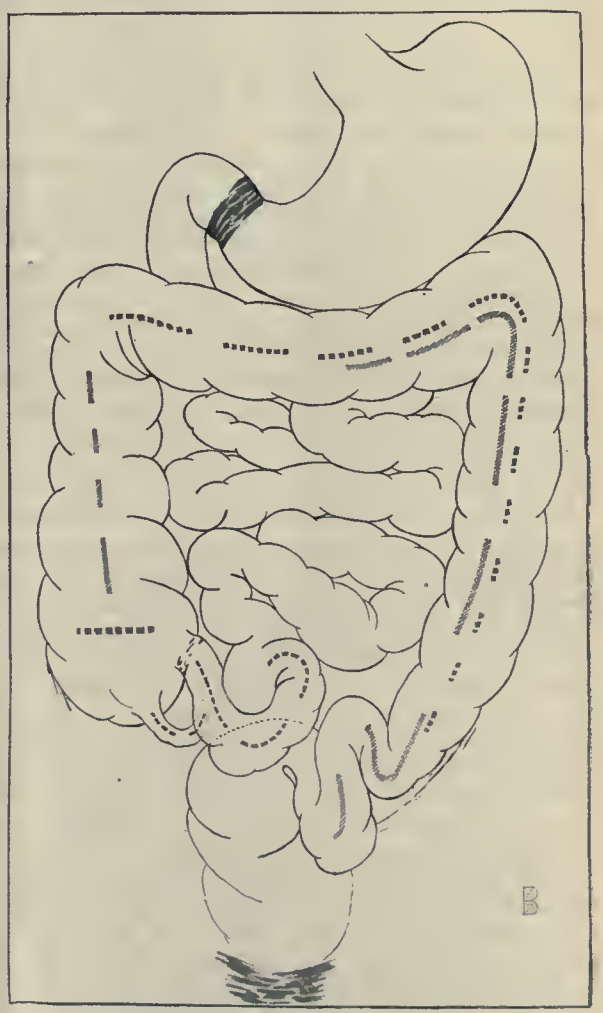

Fig. 2.—Showing the appendix in contact with the terminal ileum—a frequent condition leading to reflex gastric hyperacidity. The continuous line shows the progress of the bismuth meal after 24 hours in the normal intestine; the broken line shows the same in the abnormal bowel (cecal and ileac stasis).

teric, ovarian, and splanchnic sympathetic plexuses. Irregularity of the bowel evacuations rather than constipation is the rule. However, the *x*-ray examination shows delay in the passage of the bowel contents, as a result of which two or more move-

ments may occur at different times of the day, an indication that at any one time evacuation has been incomplete. We find in such instances large amounts of fecal residue remaining in the ileocecal region and ascending colon, the splenic flexure, sigmoid, or rectum. The *x*-ray may show that the bismuth column has advanced and is partially evacuated within the thirty-six to forty-two hour normal limit, but complete physiological emptying of the bowel from the middle of the transverse colon or splenic flexure is absent. The cecum fails to empty in fifteen to twenty-four hours, and the sigmoid is incompletely evacuated in the morning and becomes elongated and prolapsed. Reflex irritation of the stomach follows. The characteristic symptoms are sick headache, biliousness, gastric distress, heartburn, pylorospasm, eructations of gas, abdominal distention, foul or sour stools, diarrhea or soft evacuations alternating with periods of constipation, and later the symptoms associated with inflammatory lesions of the alimentary tract, gastric ulcer, appendicitis, gallstones, ulcerative colitis. Nutrition suffers, the previous ravenous appetite of many cases of intestinal toxemia is replaced by anorexia; weight may be lost and lassitude occurs. The complexion is sallow, the eyes heavy, joint and muscular pains are present, and disturbances of menstruation and kidney function are common. With the loss of fat and the stretching of ligamentous supports, the uterus, intraabdominal viscera, and kidneys are displaced and nerve reflexes, seen in the nervous type of the affection, result.

With the nervous type of intestinal toxemia abdominal tenderness is frequent, especially over the sympathetic plexuses. The symptoms are fatigue, circulatory disturbances and flushes, irritability and mental depression, neuralgia, indefinite general pains, and backache, and digestive symptoms are always present to some extent. In the examination of these patients the *x*-ray shows a much less marked stasis in the ileocecal region and there is no leakage through the cecal valve, while indicanuria is diminished or absent. The sigmoid, and frequently the colon, is generally elongated and prolapsed. Constipation is the rule. The condition is primarily mechanical rather than catarrhal. Abdominal palpation shows spastic bowel contractions, the sigmoid can be rolled under the fingers and the cecum likewise is firm and contracted in contradistinction to the flabby, dilated organ with splashing contents frequently observed in the digestive type.

In the treatment of intestinal toxemia, outdoor exercises and occupations, and the elimination of worry aid in the reestablishment of normal functions. Proper food reduces intestinal putrefaction and aids in bowel regulation. Food, in the absence of stomach complications, should be liberal in amount and often both nutriment and fluids are forced. Alcoholic beverages are of value in many cases of intestinal toxemia. Water drinking with the meals, stomach atony and ptosis being absent, is advantageous, as is also sweet milk with cream and boiled milk. Buttermilk and the fermented milks are often advocated for periods of two or three weeks at a time. Meat is desirable, but at intervals the diet should be free of both meat and fish.

The direct treatment of the condition consists in:

1. The acceleration of the passage of the bowel contents and the complete evacuation of bowel segments and rectum.
2. The treatment of the catarrhal process.
3. The operative elimination of (a) inflammatory areas in the intestinal tract and (b) obstructive lesions.

All purgatives temporarily relieve, but later increase the symptoms since they injure the intestinal mucosa, increase secretion and the absorption of toxins. Salts are very harmful and always increase the catarrhal process. A vegetable cathartic pill given with the evening meal, gradually reduced in amount, and continued over a period of weeks to obtain one or two formed evacuations in the morning is frequently indicated, but soft bowel movements or irregular evacuations during the day are indications that the bowel is functioning improperly. Enemata irritate the colon. Colonic washings, widely advertised, are pernicious, as are also suppositories and other rectal irritants.

Simple enteritis and colitis are best treated by means of bland substances such as bismuth, barium sulphate, and chalk, injected into the bowel, using olive oil, cotton-seed oil, or castor oil as the vehicles. The medication is injected, through a proctoscope, into the sigmoid flexure, thus avoiding rectal distention, and is spread throughout the colon and cecum by retroperistalsis.

Ipecac, bismuth subcarbonate, subgallate, or salicylate, sodium salicylate, salol, and the tannate preparations are useful medicaments to control bowel consistency and putrefaction, and castor oil or paregoric are indicated at times. Preparations of the Bulgarian bacillus and buttermilk, used for short periods at a time, tend to change the character of the bowel bacterial content. The same is true of yeast. Mixed vaccines of the colon and typhoid types are useful, given in less than immunizing dosage. Organic glandular substances, such as thyroid, thymus, and ovarian extracts, are useless.

The abdomen is kept warm and from time to time an intense skin congestion, which is associated with a beneficial reflex circulatory reaction of the intraabdominal organs, is obtained through means of a thermic or actinic ray lamp. If the *x*-ray shows a ptosed or atonic stomach, or in cases of severe intestinal toxemia with low blood pressure, a proper fitting abdominal belt is ordered.

Few operations are indicated in the treatment of intestinal toxemia. Marked inflammatory or obstructive lesions are, however, definite indications for surgical intervention. The appendix, frequently involved in intestinal catarrh and the common source of reflex gastric hyperacidity and functional disturbance, is always removed provided an abdominal operation is performed, and we consider that it is diseased if a bismuth residue is shown by the *x*-ray in the ileocecal region at the end of seventy-two hours or even forty-eight hours, provided the remainder of the colon is empty. Adhesions, intestinal bands and kinks are sources of reflex irritation and spastic constipation and should be eliminated. Denuded peritoneal surfaces should be swabbed with sterile mineral oil as advocated by the writers in the treatment of certain forms of constipation. Ptosis of the sigmoid flexure is oc-

casionally an indication for sigmoidopexy, but operations upon the stomach, liver, or kidneys to remedy displacement are seldom indicated. Gastroenterostomy is never indicated unless there is an inflammatory or cicatricial obstruction of the stomach outlet, and the worst cases of intestinal toxemia seen in consultation are cases that have undergone such operation, the short circuiting of the intestines or the partial excision of the colon.

Rectal and anal inflammatory or obstructive lesions are indications for operation. Complete bowel evacuations are the secret of health and experience shows that if all back pressure upon the lower bowel is eliminated, through the surgical correction of lesions in the terminal bowel segment, restoration of intestinal functions frequently follows the medicinal treatment of intestinal toxemia.

Hemorrhoids act as both mechanical and irritative lesions. In their removal it is important to draw down any relaxed mucosa, and excise it with the hemorrhoidal mass. The author's operation of "Snare and Bullet" or the "Clamp and Suture" should usually be done under local anesthesia. We do not advocate the clamp and cautery and Whitehead operations. Anal ulceration, fissure, fistula, inflammation of the anal valves and papillæ, and spasmodic or cicatricial constrictions of the anal canal are indications for early operation under local anesthesia. With hypertrophy of the anal sphincters the superficial fibers of the muscles are divided. We have used division in preference to divulsion in over 400 cases of rectal disease.

A study of gastrointestinal functions shows that the stomach will not empty properly provided the food taken hours previously is still largely in the ileocecal segments of gut, and likewise the latter will not freely propel their contents onward when the terminal colon and rectum retain residuals such as are present in chronic constipation and catarrhal conditions of the colon. The accompanying charts show the average *x*-ray findings in health and disease, and direct attention to the three specially developed sphincters or muscular rings which exist in the alimentary tract, namely, the pyloric sphincter, the ileocecal valve and sphincter, and the anal sphincters. These structures, dividing the gastrointestinal tract into gastric, enteric, and colonic segments, protect the processes of digestion. They are controlled by a highly developed sympathetic nervous system and their normal action is easily interfered with by mechanical and inflammatory lesions of the digestive tract, one result of which leads to the symptom complex of intestinal toxemia.

17 East Thirty-eighth Street.

CHRONIC ANILIN POISONING.

By W. GILMAN THOMPSON, M.D.,

NEW YORK.

THE toxic effects of anilins are well known to chemists and those engaged in their manufacture. From time to time, also, they are experienced by those who handle dyed materials or make use of hair dyes containing anilin. The latter group of persons naturally are more subject to chronic than acute poisoning, because the dosage they receive, although small, is continued over a considerable length of time.

The symptoms of this chronic type of poisoning are fairly uniform, although they may develop individually and very gradually. They are interesting because anilin is one of the group of poisons which is quite easily absorbable through the skin, giving rise not only to local but severe constitutional symptoms, which, unless recognized early, may prove fatal, as in the severe acute cases which mainly are derived through inhalation of anilin vapor. It should be noted, also, that wood alcohol often is used as a solvent for anilin.

Among those who may be subject to chronic poisoning through cutaneous absorption are persons employed in dyeing or handling recently dyed furs, wall paper, artificial flowers, calico, and many other fabrics.

The symptoms of chronic anilin poisoning fall under five groups as follows: (1) Cutaneous, mainly intense diffuse dermatitis, becoming exfoliative and very painful, with intolerable burning and itching; (2) gastrointestinal, with nausea, persistent attacks of severe vomiting, independent of the ingestion of food, and diarrhea; (3) nervous and muscular, with vertigo, insomnia, weakness of the legs and a staggering gait; (4) vascular, with a rapid feeble pulse, low blood pressure, cold extremities and cyanosis; (5) ocular, with dimness of vision and diplopœa.

A suit was tried in 1914 in the Supreme Court of Michigan against a dealer who had sold a fur-lined coat with a dyed or blended collar which poisoned the face, neck and hands of the purchaser with anilin. In 1915 the case was reported of a young man, who, while training for an athletic contest, wore gymnasium slippers which were originally white, but he dyed them with a black anilin and acquired severe poisoning (Hartogh).

Numerous similar instances might be cited, but the following personal case is worth reporting in some detail, as the cause of the trouble escaped detection by a number of observers.

The patient, Mrs. "X," of middle age, was a vigorous woman, both mentally and physically. Her symptoms of poisoning lasted for more than two years without explanation. At the outset, while in England, she acquired a dermatitis of the margin of the scalp, parts of the face, neck, and shoulders. The burning and irritation, particularly at night, was so great that she would walk the floor continuously scratching the irritated skin. She consulted a noted practitioner who told her she was "gouty," must give up meat, reduce her diet, take more exercise, etc. The rash, however, kept returning with periodic exacerbation. She then went to a second well-known consultant, who told her she was not gouty but "run down from overwork," due to her social and philanthropic activities, which were really very great. She was told that she needed "building up" and to return to a meat diet, take tonics (not hair tonics!), etc., but the rash continued and extended, amounting to exfoliative dermatitis. This disfigurement in a woman, justly proud of her appearance, was an added source of discomfort. She became greatly worried and suffered from insomnia and anorexia. She then returned to America to seek cure at a noted Spa. Here, she began a course of treatment, but became worse and left for another well-known Spa, where she was given a course of 29 baths, which nearly finished her! The rash extended, from time to time, appearing on various other parts of the body, but always worse on the face, neck, and shoulders. Sometimes after the baths, there would be a universal dermatitis. About this time she had frequent fainting attacks, and her husband several times had to pick her up from the floor, where she had fallen. A physi-

cian, called in, told her she had a "weak heart" and gave her hypodermatic stimulation. She noticed blurring of vision in reading and consulted an oculist. After leaving the Spa she had several severe attacks of vomiting, which were not explainable as they bore no relation to the nature of her food, or other conditions. One of these attacks lasted a full week. She came to the conclusion that she was becoming permanently invalided, that her days of usefulness and activity were over, and became correspondingly depressed.

The history thus far recited covers a period of about two years. Upon her return to New York I was called to see her, and having known her well in previous years, noticed a remarkable Titian red color of her hair which I did not associate with her previous appearance. I happened to recall a photograph which Dr. John A. Fordyce had given me, of an exfoliative dermatitis on the hands of a barber, produced by continually rubbing in hair dye. I accused her of the use of dye, and after the customary battle, where such an obnoxious subject is broached, her maid produced a bottle, or rather two bottles, one containing a mordant to be used with the dye. It was a French preparation, and I was informed by the patient that it was the only one which she had found to produce the desired "Titianesque" effect. As she was skeptical about the nature of the poison, I said I knew it must contain anilin, for she had all of the typical symptoms of chronic anilin poisoning, namely, vertigo, gastritis, diplopia, asthenia, and an exfoliative dermatitis. I said, however, that we should have the preparation analyzed, as I could not tell which anilin it contained. It was therefore sent to an expert chemist who promptly telephoned to the patient that she was endangering her life by its use, and to stop it immediately; that several German chemists had died of anilin poisoning from the hazard of manufacturing this form of anilin, and that its further production in Germany had been interdicted. Now, I had previously told the patient, when she asked what she would do, merely to let her head alone and put nothing upon the hair, not even water, because water greatly intensifiies the irritation of the poison, in part through spreading it over the surface. She became so alarmed, however, by the report of the chemist that she got into a tub and proceeded to wash her hair to get rid of the poison. The effect of this was to make her look as if she had scarlatina. By this time she was so thoroughly alarmed that she agreed to abide by instructions, and within a week there was marked improvement, and within three or four weeks the local symptoms had all practically disappeared, and her general health was greatly improved. About this time, however, she had one further mishap which was amusing. I had warned her, that having irritated her skin for more than two years, she must expect to find that very slight causes of irritation might produce a moderate return of the rash, and this was illustrated by the following episode: upon being called to see the patient one day I found a slight recurrence of the rash behind the ears and at the sides of the neck. I asked what she had been doing the evening before, and she pointed to a table by which she had been sitting, smoking cigarettes, while in evening dress. On the table was a so-called "smoke consumer" which contained a perforated platinum cap, over an alcohol flame. On igniting the alcohol the platinum becomes red-hot and continues partially to consume alcohol vapor, after the flame is blown out, thereby producing formaldehyde, which to some extent, seems to deodorize tobacco smoke. Persons with sensitive integument are easily irritated by this vapor. I explained the trouble to her and she threw away the "smoke consumer," saying, "What I really need is a resident chemist to live here and save my life!"

The patient has remained entirely well for a long time since this final episode and has learned to be as proud of her grey hair as of the Titian red! The preparation she used is called "Goute à Goute" (drop by drop), because, in mixing it for application, additional drops are used to obtain the dark shades, up to almost jet black. The type of anilin was paraphenophendiamin 2 per cent. with hydrogen peroxide 75 per cent. and alcohol 23 per cent.

Some time later a well-known oculist told me that my recital of this interesting case had enabled him to make a correct diagnosis in the case of a woman who had great irritation around the eyelids and of the conjunctivæ. For some time she had been using a similar anilin hair dye and various forms of treatment had failed to relieve the irritation about the eyes, until she discontinued the dye, when it immediately disappeared. Quite recently I have learned of another case in a woman who had a more violent general exfoliative dermatitis from the same cause.

The experience of Mrs. "X" indicates that the menace of anilin hair dyes has not yet sufficiently been emphasized to be appreciated generally by the medical profession. The fact that personal susceptibility varies as much as in the case of poisoning, for example, by *Rhus toxicodendron,* only makes it the more difficult always to recognize such cases as those herein reported. The bottle used by Mrs. "X" contained a warning on the label to discontinue the use of the preparation if it irritated the skin, but this had been overlooked entirely by her. It also bore the legend: "Guaranteed by the Pure Food and Drugs Act." I wrote to the authorities in Washington to ascertain the interpretation of "guaranteed" in relation to purity of drugs and was informed that it merely was a guarantee that the preparation contained what it was advertised to, not that it was especially injurious, and that much confusion had arisen over this fact. Recently the New York City Department of Health has prohibited the sale of toxic hair dyes, but nevertheless it is well to be suspicious of artificial Titian red and all the darker shades up to jet black.

61 West Forty-ninth Street.

Medicolegal Notes.

Physician's Charges.—In an action by a physician for professional services and for room, board and nurse hire, in which the defendant brought a cross-action against the plaintiff for malpractice, the plaintiff was held entitled to recover the reasonable value of the use of the room, and board and nurse hire, regardless of whether he exercised ordinary care and skill in the defendant's treatment. In the cross-action an instruction was held erroneous which permitted the jury to apply its own standard of care, or that of each individual juror, to the treatment accorded the defendant by the plaintiff, and which completely ignored the test fixed by law based upon the methods and practice of the school of medicine to which the plaintiff belonged.—Dameron v. Ansbro (Cal.) 178 Pac. 874.

Expert Evidence—Fracture Cases.—In a cross-action for malpractice, the exclusion of a question asked a physician on cross-examination, intended to show that there was no bony union in the fracture which a doctor had rebroken was held error; the question being calculated to test the competency of the witness and discredit his statement on direct examination that he had found such osseous callous. Whether a physician called as an expert witness be permitted to illustrate his testimony by means of a human skeleton is held a matter left to the sound discretion of the court, but where its use could not have aided the jury, denial of permission was not abuse of discretion. It is held that only an expert could properly determine and testify as to the nature of the treatment and required amount of force that might be exercised to break adhesions in fractured bones, but a requested instruction, implying that only an expert could testify as to the amount of force that was actually used was properly refused. —Dameron v. Ansbro, (Cal.) 178 Pac. 874.

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THE RELATION OF GLYCOGEN TO DIABETES AND ACIDOSIS.

As a result of some of his observations, Ervin has constructed an ingenious and interesting theory (*Jour. Lab. & Clin. Med.*, 1919, v, 146) as to the manner in which the inability of the diabetic organism to synthesize glycogen reacts upon the body. His experiments seem to show that the presence of glycogen in a fat-protein emulsion tends to stabilize it and to protect it against the breaking action of acids, salts, etc. Further, in a glycogen-fat emulsion neither the glycogen nor the fat will react to the dyes usually used to stain them. This fact has in the past led to the belief that fat and glycogen exist in the tissues in inverse ratio to each other. In the liver in phosphorus poisoning, for instance, it has been observed that there is a decrease in the glycogen content as accumulation of fat develops. Chemical estimation of the fat in fatty livers has show that the actual content of fat may be less than normal. Ervin explains this apparent paradox by the theory that in the normal cell the fat exists in the form of a stable emulsion with glycogen and therefore does not stain. In phosphorus poisoning the glycogen is gradually hydrolyzed out and in the absence of its protecting influence the emulsion is broken and the fat is readily stained and so *appears* to have accumulated in the cells.

In diabetes there is apparently an inability on the part of the body to synthesize glycogen, and glucose accumulates in the blood. The body stores of glycogen disappear and as a result not only is the fat taken in the food emulsified with difficulty, but the emulsions already present are rendered less stable. In this way the margin of safety is obliterated and any slight accident may upset the balance and an overwhelming load of fat be delivered to the cells. This excess of fat is not burned completely and a condition of acidosis results. Ervin claims that it is only by some such theory that Lusk's finding of an increased metabolism in diabetes and phosphorus poisoning can be explained.

On the basis of this theory he recommends that in those poisonings which result in acidosis and fatty degeneration, such as mercury, phosphorus, and chloroform, the patient should first be alkalinized and then fed an abundance of carbohydrates so that he may be able to build up a stable protein-glycogen-fat emulsion that will stand up against the action of the poison. In diabetes, of course, this is not possible for the body is unable to build up glycogen, no matter how great may be the supply of glucose. It is a very interesting theory and in some phases is susceptible of experimental proof. It is hoped that the author will continue his work along this line.

HEMIC CYSTS OF THE SPLEEN.

AMONG the hemorrhages arising after traumatism of the spleen, those causing great loss of blood and producing death from peritoneal inundation belong to imperative surgery. But there are other sanguineous collections, less extensive than the foregoing, which develop into hematomata and on being walled off give rise to hemic pseudocysts of the spleen. In a great many cases, probably the large majority, the spleen giving rise to hemorrhage is the seat of pathological changes resulting from malarial infection, and contrary to what is observed in splenic rupture in which the trauma was extremely violent, in the process under consideration the force acting on the left hypochondrium is occasionally very trifling. The seat of these sanguineous collections may be intrasplenic in the midst of the parenchyma, or else perisplenic. The walls of the cyst are formed of adult fibrous tissue, and no endothelial element can be detected—an important characteristic which differentiates hemic pseudocysts of the spleen from serous cysts of the gland, the contents of which may be bloody.

The evolution of an intrasplenic blood cyst differs from that of a perisplenic hematocele. The former presents in its evolution two stages: in the phase of hematoma there is pain in the left hypochondrium with a poorly defined tumefaction of this region. In the second stage, that of encystment, the tumefaction is replaced by a cystic tumor with thick, smooth walls, painless and fluctuating. A perisplenic hematocele is characterized by its rapid development, enormous extension, and an aspect resembling a malignant neoplasm.

The diagnosis of the process under consideration is somewhat delicate; it is based upon the location and characters of the cystic tumor occurring some little time after a relatively slight injury. To make a differential diagnosis between a blood cyst and certain types of malignant neoplasms having a cystohematic evolution is a matter of some difficulty. The hemorrhagic ascites, rapid development and extension, and generalization of the growth, with a recurrence following surgical interference, are in favor of sarcoma. But it should not be forgotten that a perisplenic hematocele has been known to assume the same clinical picture.

The treatment of hemic cysts of the spleen is surgical, but should be conservative. According to circumstances, simple incision and drainage may be all that is required, but when the subcapsular cyst

is not very adherent it can be completely or partially excised. When the spleen has undergone marked pathological changes, splenectomy should be done.

IS PEDIATRICS A SPECIALTY?

THERE is an idea abroad among moral men (to quote Josh Billings) that when pediatrics calls itself a specialty, pediatrics is putting on airs. Why, it is asked, are the care and feeding of children subjects too mysterious for the well-trained internist to master? Why must a doctor keep his hands off older people in order to treat children properly? Why must he refuse to treat children in order to do justice to their elders? These questions assume significance when an internist with a bent for children's diseases comes to decide whether or not he shall practise one to the exclusion of the other.

Now we all know internists whose ability in the field of children's diseases is unquestioned. In the treatment of our own children we should probably give them preference over many who call themselves pediatrists. But for the difficult, intractable cases, it is the men who have had years of intensive training in children's diseases (which cannot be made a side issue to a training in general medicine) whom we are glad to call in consultation. It is they who are selected to teach pediatrics in the schools. Taking an analogy from the surgeons, there can be no objection to a man well trained in general surgery doing a tonsillectomy. But other things, such as intelligence and industry, being equal, the man who is kept busy doing only tonsillectomies will do the better operation. We should probably like to have him remove our own tonsils. All this seems too obvious to warrant reiteration. But the entire profession seems to have its fingers in the pediatrical pie. Even those who profess and call themselves surgeons are often to be found feeding and treating their patients' offspring.

The question seems to clarify itself as follows: Nobody who professes to be a specialist in anything else should meddle with the medical diseases of children. If he does, he is doing his specialty (not to mention his patients) an injustice. The only proper exception to this is the internist—commonly known as the medical practitioner. Pediatrics is a branch of internal medicine. There is nothing to prevent a good internist from doing creditable work in children's diseases. But certainly the man who poses as an expert in pediatrics should let adults alone. In any case, let no internist lay the flattering unction to his soul that he is qualified to cope with any and every pediatrical contingency which may arise, or that the pediatrists are superfluous. Pediatrics is a specialty and will remain so.

ENDEMIC SLEEPING SICKNESS.

THE affection known as encephalitis lethargica, which has heretofore appeared in epidemic incidence with influenza now seems to have become a domestic evil and it will occur to the reader that here may be the makings of future epidemics. Lhermitte, in an original article in the *Journal de médecine et de chirurgie pratiques* (October 10, 1919, xc, 19) notes amid endemic incidence all over the world a lack of identity in the clinical picture with the exception of the feature of hypersomnia. It will be recalled that before this affection asserted its autonomy, we had numerous other morbid states known variously as narcolepsy, lethargy, hypersomnia, complicating various severe illnesses, etc., and this should put us on our guard against reporting something old as a new form of illness. In true encephalitis lethargica there are four cardinal symptoms: ocular paralyses, hypersomnia, fever, and the general state. The ocular paralyses may be absent at the outbreak of the disease, but once present they are characteristic. So, too, is the type of hypersomnia. It is a narcolepsy, but the subject does not arouse quickly, as in the condition which commonly goes by that name and in which the seizures may be only momentary. However, the permanent sleep may be preceded by brief narcoleptic crises. During the night the patient is not distinguishable from an ordinary subject who is sound asleep. The state of the extremities during the sleep suggests hypertonus of the muscles and recalls catatonia and catalepsy. With this rigidity is also seen in some cases tremor which gives a picture like paralysis agitans. Other deep-seated organic nervous affections are more or less simulated. The temperature goes to 104° F. and the subject naturally becomes asthenic. In this affection a Wassermann test and examination of the spinal fluid should always be made. Of great interest are the mild, abortive forms, for these undoubtedly exist and are overlooked. The author, who has had considerable experience with lethargic encephalitis, does not describe any of the latter type, and it must be difficult to make the diagnosis in the absence of specific finds.

THE VOLUME OF THE HEART.

IT is very simple to measure the volume of the heart at autopsies and to calculate an average volume for the adult or child heart but these figures give ur an imperfect idea of the volume during life. Navarro, in the *Revista Española de Medicina y Cirugia* for November, 1919, ii, 17, calls attention to the defects of the clinical methods now in use, and of the superiority for this purpose of radiography. The method of orthodiagraphy is difficult and dangerous and he prefers calculating the ratio of the volumes of the heart and thorax. The subject lies on his face, and by using a technique based on that of Kreussfuss, the author finds that the normal heart is 44 per cent. of the transverse diameter of the thorax. To this 44 per cent., 21 per cent. should be added for the intervening pulmonary tissue to the left and 35 to the right, which accounts for the total 100 per cent. To obtain measurements for the individual as distinguished from the average heart the author has devised a radiocardiometer based on the graphic method of squares as applied to the shadows of the separate segments of the heart and extracardiac tissues. The device is intended in reality for clinical purposes, since it should be a simple matter to state the exact degree of hypertrophy or dilatation of one ventricle or the

entire organ in diseased conditions. Such results would be useful to check up those obtained by ordinary physical diagnosis.

Sodoku.

When it was first learned that rat-bite fever could exist in Europe not a few articles appeared on the subject, but of late it has not received much attention. In *Il Policlinico* for October 10, 1919, xxvi, 42, Bergamini reminds his readers that Frugoni, an Italian, was the first to recognize sodoku in Europe. The affection in many respects recalls recurrent fever and likewise syphilis, both of which are spirochetoses, and the Japanese appear to have shown the spirochetic nature of endemic sodoku. Spirochetosis icterohæmorrhagica is also allied to sodoku in some respects, for the rat is certainly a carrier, that is to say, a reservoir for the spirochete of this disease, even if it does not transmit it. The author reports a case of sodoku in detail in which the following were noted: bite of a rat, cyclic fever, enlarged lymphnodes, exudative erythema, recurrent type of symptoms as in syphilis, permanently enlarged lymphnodes as in syphilis, total absence of other morbid features, sterile blood; positive Wassermann (four plus) as in syphilis; cure by salvarsan as in syphilis. Does the rat which gives the disease have the disease? This is conjectural, for in the European cases at least there has been no chance of catching the offending animal. If it does have the disease the latter is perhaps contagious only during a recurrence of the symptoms.

News of the Week.

The Women's Medical Society of New York State. — The Fourteenth Annual Meeting of the Women's Medical Society of New York State will be held at the Hotel McAlpin, New York City, March 22, 1920. All women physicians are invited. There is a very interesting program provided at both the morning and afternoon sessions. Among the speakers will be Dr. Winifred Cullis of London, England. At luncheon the members of the State Society will be the guests of the Women's Medical Association of New York City. Dr. Josephine Baker of the Department of Health will be the toastmistress at the banquet that evening.

"D" Telephone Numbers for Doctors.—The recently organized Doctors Service Corps, New York City, has sent letters to the New York Telephone Company, to Dr. Copeland, Health Commissioner, and to the Public Service Commission for the Second District, suggesting the use of a large-sized letter "D" to be prefixed to the telephone number of every physician, surgeon, and dentist in the city. A similar mark should be placed over such number at the various operating station switchboards, in order to insure the most efficient service possible on these priority calls, and to eliminate the possibility of fictitious "doctor calls."

Conference of Pennsylvania Department of Labor and Industry. — On Thursday, March 25, 1920, the Department of Labor and Industry will hold its Tenth Conference of Industrial Physicians and Surgeons in the State Capitol at Harrisburg. This conference promises to be of unusual interest as it will be the final day of a four-day Safety Congress held by this Department in which speakers of international prominence will participate.

Police Hospital Plans Halted. — After pledges for $160,000 had been secured toward building and equipping a hospital for the exclusive use of the police of Greater New York and their families, Police Commissioner Richard Enright called a halt on the project. No official explanation of this action was made.

American Medical Editors Association.—The fifty-first annual meeting of the American Medical Editors Association will be held at the Grunewald Hotel, New Orleans, Louisiana, Monday and Tuesday, April 26-27, 1920. This is the week of the American Medical Association. Dr. Seale Harris of Birmingham, Ala., is president, Dr. Charles Chassaignac is local chairman, and Dr. J. J. Wymer, 1216 Maison Blanche Building, New Orleans, is chairman of the committee on hotels.

Three Million "Chronics" in United States.—According to Dr. F. C. Wells, Medical Director of the Equitable Life Assurance Society, there are three million persons in this country who are "continually sick." Thirty-three per cent. of the young women are physically deficient, and sixty per cent. of the boys and girls are physically impaired.

Diphtheria in New York City.—Between January 1 and 25 there had been reported 2,873 cases of diphtheria, as compared with 2,496 cases during the same period last year. This increase, in the opinion of Dr. Royal S. Copeland, Commissioner of Health, is not enough to warrant the report of a diphtheria epidemic.

St. Louis Skin and Cancer Hospital Elects New Officers.—J. Lionberger Davis was elected president of the St. Louis Skin and Cancer Hospital at the recent meeting of the Board of Directors. Other officers elected were: James M. Franciscus, first vice-president; Frank V. Hammar, second vice-president; H. D. Condie, third vice-president; J. H. Farish, treasurer, and Daniel K. Catlin, secretary. Horace M. Swope was appointed chairman of the board. During the past year the hospital rendered 12,495 hospital days' service as compared with 11,339 in 1918. Dr. Martin F. Engman is chief of the medical college staff of the institution.

Gifts to Medical Schools.—The General Education Board of the Rockefeller Foundation has announced the following contributions for the advancement of medicine: $150,000 to Washington University, St. Louis, Mo.; $400,000 to Johns Hopkins University, Baltimore, Md., and $150,000 to the Meharry Medical School, Nashville, Tenn., for the training of negro physicians.

Nursing Drive.—A campaign to raise $1,000,000 to extend the visiting nurse service of the Henry Street Settlement, New York City, will be conducted March 15 to 22. Paul D. Cravath is chairman of the campaign committee.

Chicago Speedway Hospital. — The proposed purchase and completion of the Chicago Speedway Hospital was apparently settled when the House

recently agreed, 106 to 24, to increase by $400,000 its appropriation of $3,000,000 for Government acquisition. This is $100,000 less than was provided by the Senate in the Deficiency Appropriation bill, but supporters believe final settlement is near.

Alcoholic Wards Empty.—Bird S. Coler, Commissioner of Public Charities, New York City, reports that the alcoholic wards in the Department of Public Charities and Bellevue and Allied Hospitals are practically idle as the result of prohibition. Most of the floors of the Municipal Lodging House are being closed, the place having more employees than patrons.

Whiskey on Federal Fair Price List.—At a recent conference in Chicago, attended by Harry Mager, Collector of Internal Revenue, District Attorney Clyne, Hubert Howard, State Prohibition Commissioner, and A. A. Sprague, head of the Illinois Fair Price Commission, it was decided to place whiskey for medicinal purposes on the fair price list. The price was not decided. Druggists, it was stated, were charging as much as $24 a gallon for whiskey that might be sold for $5 a gallon.

Service Men's Dentist Bills Paid by Uncle Sam.—If satisfactory evidence is offered that his teeth decayed while he was in uniform, the ex-service man's dentist bill will be paid by the Government, according to recent announcement by Captain R. Rexford Shaffer, supervisor of the New York State branch of the War Risk Insurance Bureau.

Emergency Hospital Aid.—The United Hospital Fund of New York City has distributed $400,000 of the proceeds of its fall campaign among forty-six member institutions. The usual yearly distribution of the fund is made in May, but this emergency apportionment was made because of the urgent needs of the institutions at this time. Under the preliminary distribution St. Luke's receives $27,850.90, Mount Sinai $27,752.32, New York $23,118.26, Presbyterian $18,472.12, Lincoln $16,567.90, Lenox Hill $14,409.42, Roosevelt $13,318.92, Post Graduate $11,868.72, French $6,789.28, Flower $5,945.54, and Hahnemann $3,649.32.

German Students Resent Professor's Protest for Belgium.—Dr. Nicolai, Professor of Physiology in Berlin University, who, in 1914, protested against the violation of Belgium's neutrality, for which he suffered many indignities, including the loss of his professorship, the confiscation of his property, and imprisonment, has again met with ill-treatment. He was reinstated in his professorship last year, but it is reported that 90 per cent. of the students are violently militarist and nationalist, and they refuse to give Dr. Nicolai a hearing, demanding his resignation. His book, "Biology of War," which was written during his imprisonment, was recently burned in front of Berlin University, the students dancing around the bonfire. He has received letters threatening the fate which befell Liebknecht, Eisner, and Haase. He has been offered professorships by two universities, one in Geneva, Switzerland, and the other in an entente country, the name of which is not stated in press dispatches.

Milk Exports.—The National City Bank has recently compiled condensed milk statistics showing that $120,000,000 worth of this commodity was shipped to Europe during the last five years.

"Movie" X-Rays.—According to announcements from Paris a combination *x*-ray and moving picture apparatus has been invented by Dr. Lormon and Dr. Comandon. With this apparatus pictures of animals can be thrown on the screen and the movements of the various organs shown. Modifications of the apparatus, making it applicable to human beings, will doubtless be forthcoming.

Medicines to Italy.—The American Free Milk and Relief for Italy, it is announced, will extend its activities to include the sending of medicines, clothing, cereals and cod liver oil to the sick and destitute orphans and children of Italy.

"Save the Children" Congress.—Twenty countries were represented at the "Save the Children" Congress which convened in Geneva, Switzerland, on February 26. Farmer Murphy was the American delegate. German representatives, according to press reports, predominated.

The Pope's Relief Fund.—It is announced that on February 21 the Pope's subscription for the relief of poor children in Central Europe had reached 5,000,000 lire.

Doctors Raise Fees.—Members of the West Side Physicians' Business League, Dayton, Ohio, recently voted to raise their rates to three dollars for day calls, five dollars for night calls, and one dollar for telephone consultations. Physicians in other parts of the city, as well as of the county, according to press reports, disclaim having taken similar action.

Southard Memorial Service. — The faculty and students of Harvard University recently held services in memory of the late Dr. Elmer E. Southard, Assistant Professor of Psychology in the university and Bullard Professor of Neuropathology at Harvard Medical School. The services which were held in Appleton Memorial Chapel, Cambridge, were attended also by representatives of the National Research Council, the State Board of Health, and other bodies with which Dr. Southard was identified.

Osler Memorial Meeting.—A meeting in memory of the late Sir William Osler, Regius Professor of Medicine at Oxford University, was held at the New York Academy of Medicine February 28. Dr. George David Stewart, President of the Academy, presided and introduced the speakers, Dr. William H. Walsh of Baltimore, Dr. Thomas McCrae of Philadelphia, Dr. Francis J. Shephard of Montreal, and Dr. Edward C. Streeter of Boston.

Red Cross Workers in Europe.—According to a statement recently issued by Lieut.-Colonel Robert E. Olds, Red Cross Commissioner for Europe, more than 1,000 Red Cross workers are still engaged in relief work in Europe. In Paris a large force is maintained to direct the work of commissions in the following countries: France, 28; Albania, 65; Czechoslovakia, 3; Greece, 5; Italy, 29; Montenegro, 44; Poland, 131; Rumania, 29; Serbia, 96; West Russia, 54; South Russia, 25; England, 5; Vienna, 12.

Colonel H. D. Thomason, Medical Corps of the Army, recently retired, has assumed the duties of Superintendent at Flower Hospital, Sixty-fourth Street and Avenue A, New York City.

Dr. Ruth A. Guy of New York City is now director of a new American Red Cross hospital for babies in Elbasan, Albania, according to a recent report received by the Atlantic Division.

Charitable Bequests.—By the will of the late Charles G. Thompson of New York City six institutions will receive at least $6,000,000, constituting the residuary estate. The institutions named are Columbia University, the New York Historical Society, the New York Hospital, the Presbyterian Hospital, the Association for Improving the Condition of the Poor, and the Children's Society.

If the estate of the late Archibald H. Bull of Elizabeth, N. J., exceeds $2,000,000 after the payment of all taxes, the beneficiaries are to receive bequests just double those provided for in the will. Among the bequests provided are: The Elizabeth Home for Aged Women, $25,000; the Elizabeth Orphan Asylum, $25,000; the Visiting Nurse Association and Charity Organization Society, Elizabeth, $10,000; and the Egenolf Day Nursery, $1,000.

Obituary Notes.—Dr. ARTHUR BROWNELL WRIGHT died at his home in Hartford, Conn., February 4, at the age of 51. He was graduated from the College of Physicians and Surgeons, New York, in 1895.

DR. FRANCIS C. PHILLIPS, an expert chemist, died of influenza-pneumonia at his home in Pittsburgh, Pa., February 16, at the age of 69. He had been professor of chemistry in the University of Pittsburgh for forty years.

DR. FREDERICK SCHOENENBERGER, a Police Department surgeon, New York City, died in Roosevelt Hospital February 20, following an operation for gallstones. He was born in 1875, and was graduated from Bellevue Hospital Medical College in 1896. He specialized in urology, and was adjunct professor of urology in Fordham University School of Medicine. Dr. Schoenenberger was a member of the American Medical Association.

DR. RAYMOND J. HAUSER, Lieut. M. C. U. S. A., of Danville, Pa., died of bronchopneumonia at Camp Grant, Rockford, Ill., on January 18, 1920. He was 33 years of age and was a graduate in medicine of the University of Pennsylvania in 1910. He had served one year in France and one year in Camps Dix and Greenleaf.

DR. HARRY J. TATE of Pittsfield, Mass., newly elected city physician, died of pneumonia in the House of Mercy Hospital, February 11. He was 30 years of age, and was graduated from the George Washington University School of Medicine, Washington, D. C., in 1914. Dr. Tate served as first lieutenant, M. R. C., with the Berkshire Ambulance Corps, enlisting in July, 1917. He spent a year overseas, and was promoted to captain in the 301st Ambulance Company. He was first commander of the Pittsfield Post, American Legion, a member of the Massachusetts and Berkshire Medical Societies, and was affiliated with various other organizations.

Dr. ROBERT C. FORSYTH of Kirkwood, Mo., died of influenza in St. Luke's Hospital, St. Louis, February 8. He was forty years of age, and had practised in Kirkwood for sixteen years. He was graduated from the Washington University Medical School in 1902. He was a member of the American Medical Association and various local societies.

Dr. WILLET J. HERRINGTON of Bad Axe., Mich., died of pneumonia February 10, in his sixty-first year. He was graduated from the University of Michigan Medical School in 1882, and for fourteen years was directing surgeon of the Hubbard Memorial Hospital in his home town. He was a member of the American Medical Association and other organizations.

Dr. ALBERT M. DUNLAP of Cleveland, Ohio, died of pneumonia February 12, in his thirty-eighth year. He was graduated from the Cleveland College of Physicians and Surgeons in 1905, and served as lieutenant in the Medical Reserve Corps during the war.

Dr. WILLIAM C. HASSLER, San Francisco health officer, died of influenza, in that city on February 11. He fell victim to the disease while leading the campaign against influenza in the recent epidemic. Dr. Hassler, who was born in 1868, was graduated from Cooper Medical College, San Francisco, in 1892. He was a member of the American Medical Association.

Dr. EMORY LANPHEAR of St. Louis, Mo., well known surgeon of that city, died of apoplexy at his winter home, Tampa, Fla., February 6. Dr. Lanphear was born in Mitlis, Turkey, in 1859. He received his early education at Hartford Institute and Kansas State Normal School and was graduated from Missouri Medical College (Washington University), in 1881. He continued his studies in various medical colleges in this country and abroad and held professorships at the University of Kansas City, University Medical College, Kansas City Medical College, St. Louis College of Physicians and Surgeons, and many others. He retired from active practice two years ago on account of ill health.

Dr. JOHN A. HUNT of Taunton, Mass., died of cancer February 13, at the age of 65. He was graduated from Boston University Medical School in 1893.

Dr. PHILIP THOMAS KENNEDY of Hartford, Conn., died at St. Francis Hospital in that city on February 14, following an operation for pulmonary abscess. He was born in 1883, and was graduated from the Medical School of Harvard University in 1909, specializing in pediatrics. He held various hospital connections, and was a member of the American Medical Association and various State and local organizations.

Dr. GEORGE W. BROWN of Pratt City, Ala., died February 22, at the age of 62. He was graduated from the Atlanta Medical College in 1877, and had practised in Pratt City for thirty-five years. He was a member of the American Medical Association.

Dr. ELISHA PRICE MERRITT of Atlanta, Ga., died of pneumonia February 15, at the age of 35. He was graduated from the Atlanta School of Medicine in 1912.

Dr. FRANK H. WHITTEMORE, of New Haven, Conn., died of pneumonia February 26, at the age of 65. He was graduated from Bellevue Hospital Medical College in 1874.

Dr. WILEY A. JONES of Cantril, Iowa, died February 17, at the age of 79. He had practised medicine in the vicinity for nearly fifty years.

Correspondence.

WOULD THE INTRASPINAL INJECTION OF A SOLUTION OF CALCIUM SALTS "CAUSE INSTANT HEART-BLOCK?"

To the Editor of the Medical Record:

Sir:—An article by Dr. John Aulde, entitled "Applied Calcium Therapy," which appeared in the issue of the Medical Record for February 14, contains the following statement:

> Some ten or twelve years ago I had a chat with Dr. Meltzer regarding the remote effects of magnesium sulphate introduced into the spinal canal for the relief of tetanus. I asked him if it would be the proper procedure, in case evidences of collapse appeared, to administer calcium salts, to which he promptly replied that it would cause instant heart-block, so that accounts for the physiological antagonism.

This statement was a surprise to me; I have no recollection of ever making it to Dr. Aulde or to anyone else. I do not state it in a sense of denying Dr. Aulde's statement. The negative effect of my not remembering the "chat" would be insufficient to support my claim; Dr. Aulde may be fortunate to possess a better memory than I. But I wish to state emphatically that *I never gave expression to the view, that the intraspinal administration of calcium salts "would cause instant heart-block"*; moreover, I could not have put forward such a claim, since we never made experiments which would justify us in making such a far-reaching positive statement. In the first place, the discovery, that by intravenous injections calcium rapidly abolishes the paralytic effects caused by an overdose of magnesium, does not apply to the intraspinal method; to our disappointment, spinal application of a calcium salt does not interfere with the developed paralytic effects of the overdose of magnesium. This I have repeatedly emphasized in the lectures on the treatment of tetanus by intraspinal injections of magnesium.

Furthermore, it is true that in recommending the intravenous injection of calcium for treatment of paralysis due to the administration of an overdose of magnesium salts, I especially emphasized that the dose of the solution of calcium salts *must be only moderate,* since large doses of calcium following injections of magnesium may prove to be deleterious for the heart. This warning is based upon many incidental experimental observations. But they were made only in recent years and the nature of the deleterious action was not yet studied experimentally.

I am therefore sure that I could not have said "ten or twelve years ago" that the deleterious action of an intraspinal injection of a solution of calcium salts would cause instant heart-block.

S. J. Meltzer, M. D.
Rockefeller Institute for Medical Research.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, February 13, 1920.

Influenzo-pneumococcal and Influenzo-Streptococcal Septicemia.—Dr. Herbert French, Physician to Guy's Hospital, gave a lecture at that hospital on January 30 on influenza, particularly dealing with that of a septic type. French has had a great deal of experience of influenza during the epidemics which occurred in Europe and in England within the past two years, experience gained for the most part in large army camps and in soldiers' hospitals. Some of the findings and conclusions of himself and colleagues are interesting and perhaps differ in important details from those usually recorded. As in all countries, the outbreak of the pandemic in England was generally speaking distinguished by the mild nature of the type. The second outbreak, however, was marked by its high rate of mortality, there being more people killed by it than perished in the course of the entire war, possibly as many dying of it among the forces in Europe alone as were killed in the war. In connection with this high death rate French points out a somewhat peculiar fact and one that does not appear to be generally recognized, namely, that out of one thousand cases of influenza only about two hundred were of the pneumonic type but these were of so extremely virulent a character that they increased the death rate to such a degree that they conveyed the impression that the majority of influenza cases were of the type. Moreover, the pneumonic form did not conform to one type of pneumonia, and although there was a general similarity, different kinds of inflammation were seen. Bronchopneumonia was usually a feature, but by no means always, nor was lobar pneumonia so frequently present as it is believed to have been. Sometimes inflammatory edema-like results were produced of the nature of that supervening on chlorine gas poisoning. In fact the disease was a mixed lesion for which no appropriate name exists, but for which French suggests the name of pneumonitis.

Of all the characteristics of the "pneumonic" cases most stress must be laid on the color of the patient. As a prognostic sign the color is the most trustworthy. The patient may be sallow or white of color or flushed or sunburnt or plethoric, but whatever the degree of the color of the face it is a most hopeful symptom when it remains red. The face may be sallow with the lips and ears alone red, or the patient may be of a rubicund type with general redness of the whole face, or the face may be flushed with the unnatural redness of fever, so long as his lips and ears present a red hue, there is good hope for recovery, no matter what the lung signs, the temperature, the pulse rate, or the respiration rate. On the other hand, when the color of the patient's face, the lips and ears in particular, is of heliotrope or lavender or bluish tint, the outlook is very grave even though in all other respects the patient seems to be progressing favorably. The color then is the surest basis on which to pick out those cases which are likely to end fatally in a day or two from those who, unless a change comes and the patients themselves develop along the same lines later on, will most probably end in recovery. While it is not impossible for a "heliotrope cyanosis" patient to recover it is extremely rare. At one time it was thought that the color might be due to methemoglobinemia, but the spectroscope shows no abnormal pigment in the blood in these cases, nor is there any defect in the oxygen-carry-

ing capacity of the blood; the condition is one apparently of what Professor Haldane has termed "anoxemia" similar to what has been seen in gassed cases at the front and probably due to analogous causes, judging from the histological changes seen in the lungs. It was shown that the condition of the heart had no relation to this color. A man might die and his pulse rate be good half an hour before death. Venesection was of no avail, and if the cyanosis had been due to the heart venesection would have given relief.

Another somewhat distinctive sign of these pneumonic cases is that, as in typhoid fever, many of the former cases give out a faint indefinite smell. It is not the sour smell of perspiration, nor is it merely fetor from the coated tongue or the sordes that is apt to collect on lips and gums. It could not be called pathognomonic. but it has seemed worth while to call attention to it.

Of the post mortem findings with regard to the histological changes in the lung tissues, the most notable are the following: In many sections of the lung tissues there is an appearance in and around the bronchioles and inside the alveoli which at first gives rise to the thought that the paraffin has been imperfectly removed from the specimen. On further testing it seems that the appearance is due to a homogeneous, structureless, non-cellular exudate which fills the bronchioles and the peribronchiolar tissues and forms as it were a plastering round the inside of the alveoli. It is not fibrinous, like the exudate of crupous pneumonia. Presumably it is an albuminous exudate coagulated in the process of fixation and it is very similar to that which can be seen in fatal cases of poisoning by chlorine gas. French is of the opinion that this albuminous exudate throws much light on the nature of the dreaded cyanosis. If the oxygen in the alveoli has to traverse this albuminous layer in addition to the alveolar wall before it can get to the hemoglobin of the blood, it is evident why there is such marked anoxemia. French states that not one single line of treatment can be credited with saving one of the virulent cases. He thinks that, perhaps, the continuous administration of oxygen might have a good effect. French states his belief that Pfeiffer's bacillus is the cause of influenza proper and subjects the filterable virus theory to severe criticism.

Prevention of Venereal Disease.—A meeting was held at the Mansion House on February 5, 1920, arranged by and under the auspices of the Society for the Prevention of Venereal Disease and presided over by the Lord Mayor of London. The speakers were Lord Willoughby de Broke, president of the society; Sir James Crichton Browne, Sir Arthur Sloggett, Miss Norah March, editor of *National Health;* Professor Sir Ray Lankester, Dr. A. Means Fraser, Portsmouth; Miss Ettie Rout, honorary secretary, New Zealand Volunteer Sisters, and Sir William Arbuthnot Lane, one of the treasurers of the society. The meeting was largely attended and on the platform were many well-known physicians and surgeons. It may be said that the Society for the Prevention of Venereal Disease was founded chiefly, if not wholly, with the objest of advocating by every means possible the adoption among the civilian population of England of early self-disinfection for the prevention of venereal disease. Another body, the National Council for the Prevention of Venereal Disease, has been in existence for some considerable time. The body, however, does not recommend early self-disinfection but relies principally on educative measures. The Society for the Prevention of Venereal Disease, the members of which are convinced of the futility of any method of prevention except that of early self-disinfection, is determined to push vigorously a campaign to legalize this method. According to statistics, early self-disinfection has proved successful among troops and, to a small extent, among a civil population. Miss Morah March and Miss Ettie Rout brought forward at the meeting figures and facts to prove this point. Lord Willoughy de Broke who made the opening speech moved the following resolution: "It is obvious that the best way of avoiding venereal disease is to abstain from promiscuous sexual intercourse. It is, however, certain that a large number of persons continue, in spite of moral teaching, to expose themselves to risk, and so to incur and spread disease among the community, the chief sufferers being women and children. Venereal disease is accountable for a large proportion of cases of insanity, nervous diseases, loss of sight, and sterility. These diseases have become a menace to national health and prosperity, and infection can be prevented by means of self-disinfection, if properly applied, immediately after exposure to risk. It is therefore necessary: (1) To instruct the public as to (a) the vital importance of self-disinfection at the time of exposure to risk as a preventive of venereal disease, and (b) the methods of application. (2) To advocate such further steps for the prevention and ultimate eradication of venereal disease as may be deemed advisable."

Sir James Crichton Browne, who seconded the resolution, sharply criticised the stand taken by the National Council for the Prevention of Venereal Disease and the measures proposed by the council to deal with the situation. He stated emphatically that in his opinion the general public should be informed as to the vital importance of self-disinfection and as to the proper use of disinfectants, so that if they exposed themselves to risks they should know what to ask for and how to use it. The time for plain speaking had come. Scientific truth must no longer be hidden under a bushel. Even now, and notwithstanding the published labors of the Royal Commission, the public did not fully realize the magnitude of the evil or the havoc it was causing.

Sir Ray Lankester defined the aims and intentions of the society forcibly and plainly when he said that to realize its purpose of diminishing and possibly abolishing the awful destruction and maiming of life and health due to venereal disease, the society intended to spread as widely as possible an effective knowledge of the use of disinfectants in arresting venereal disease, and at the same time take steps to insure that it should be a simple and easy matter for anyone to purchase and to keep in a form ready for immediate

use without the delay of any further preparation the two disinfectants approved by authority. The resolution was carried and Sir Arbuthnot Lane moved a vote of thanks to the Lord Mayor for the use of the Mansion House.

A World Congress of Physicians and Surgeons.—As no doubt your readers know, it is proposed to form a World's Congress of Physicians and Surgeons. Dr. F. F. Simpson is now in London with introductions from the chief representatives of medicine and surgery in the United States to consult with the leading men of the medical profession here as to the coordinating and standardizing of all branches of medicine so as to form a World Congress of Physicians and Surgeons, composed of the various international congresses and associations already established. The creation of international associations to deal with specialties which are not already thus provided for is also to be considered. A meeting is to be held this day of writing (February 13), at the House of the Royal Society of Medicine to discuss the matter and it is also hoped to hold conferences on the institution of the Congress in Paris, Brussels, and Rome in the near future.

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 12, 1920, clxxxii, 7.

1. The Present Needs of the Tuberculosis Campaign. John B. Hawes, 2d.
2. Diet Reduction with Retention of Protein to Relieve Glycosuria in Diabetes Mellitus. R. L. Fenlon.
3. The Pathology of "Influenzal Pneumonia." Frank P. McNamara.
4. The Possibilities of the Carrel-Dakin Technique in Civil Life. Allen G. Rice.
5. The Treatment of Chronic Ulcers. Frank E. Stowell.
6. An Unusual Case of Metacarpal Fracture. S. S. Dearborn.

2. Diet Reduction with Retention of Protein to Relieve Glycosuria in Diabetes Mellitus.—R. L. Fenlon describes the method of diet reduction employed in a series of fifteen cases as follows: First step. Eliminate the fats from the diet for one or two days, at the same time maintain the proteins and carbohydrates each at 60 to 100 grams (60 grams protein in the severe cases up to 100 grams in the mild cases). Second step. Leaving the proteins as before, halve the carbohydrates each day until the glycosuria is relieved. (The carbohydrates may be reduced more gradually as indicated by the case.) If the glycosuria still persists when 10 grams of carbohydrate are reached continue at 10 grams for three days unless sugar free before. If glycosuria is still present at the end of three days on 10 grams use step three. Third step. If glycosuria is still present add 50 to 100 grams of oatmeal to the diet for two days. Fourth step. If glycosuria persists, repeat the diet used just preceding the oatmeal days, lowering the proteins one-third. Keep the patient two days on this diet if necessary. Fifth step. If not aglycosuric starve, giving only fat-free broths and water for a two-day period. Sixth step. If necessary revert to the oatmeal diet for two days and again starve. When building up the diet if starvation has been used, build up the protein first to 50 or 60 grams. Then gradually increase the carbohydrates to the danger-point. Lastly add fats, 5 to 10 grams a day in severe cases and 25 grams per day in mild cases. If starvation was not used, the protein is already in the diet. In this case increase the carbohydrates 5-10 grams daily to danger point. Then add in the severe cases five grams every second or third day. In mild cases increase 10 to 15 or more grams daily. When the carbohydrates reach 50 grams, if a break has not occurred before, increase fats as stated above. In the series of fifteen cases there were no deaths, and all were discharged sugar and ketone free.

Boston Medical and Surgical Journal.

February 19, 1920, clxxxii, 8.

1. Bodily Mechanics and Nutrition. Lloyd T. Brown.
2. Illegitimacy—From the Standpoint of the Physician. Foster S. Kellogg.
3. Report of Neurological Sequelæ of Influenza in the Boston City Hospital Neurological Out-Patient Department from July, 1918, to July, 1919. Mabel D. Ordway.
4. Placental Tumor. Reginold Dimock Margeson.
5. Rupture of the Pectoralis Minor Muscle. William Pearce Coues.

1. Bodily Mechanics and Nutrition.—Lloyd T. Brown, in this paper which was read before the New England Pediatric Society, made the application to the undernourished child of his studies in the mechanical use of the human body. Realizing the differences of opinion and difficulties of judging good or bad human mechanics, three years ago he examined and made tracings of over 700 normal men of the ages of sixteen to twenty-two. These tracings were compared and divided into four groups according to variations found. An examination and comparison of these four groups showed certain points of difference which are perfectly constant. In Group A, which is called good mechanical use of the human body, he found: (1) the head is straight above the chest, hips, and feet; (2) the chest is up and forward; (3) abdomen is in or flat; (4) back—usual curves are not exaggerated. In Group B, called fairly good mechanical use of the body, there are a few slight changes: (1) head is too far forward; (2) chest is not so well up or forward; (3) abdomen shows very little change; (4) back shows very little change. In Group C, which is called bad mechanical use of the body, the changes are more marked: (1) head is forward of the chest; (2) chest is flat; (3) abdomen is relaxed and forward of the chest; (4) back curves are exaggerated. In the last group, D, which is called very bad mechanical use of the body, these four points are exaggerated to the extreme. If the normal is considered the condition found in the average or the great majority of a large group of cases, and if this normal or average is believed to be the correct or best condition, then one is led to think that the Group C position is the normal or best, as 55 per cent. of the 700 men examined belonged to this group. The D group came next with 25 per cent, the B group third with 12.5 per cent., while the A group was fourth and worst with 7.5 per cent. In order to find out which groups gave a story of more trouble or sickness in the past, certain questions were asked concerning the past histories of the men. The results of these questions showed that the operation for appendicitis had been done 1½ times as often in the C and D groups as in the A and B groups; that 2½ times as many men had been operated on two or more times in the C and D groups as in the A and B groups; that three times as many men in the C and D groups showed albuminuria as in the A and B groups; that seven times as many men in the C and D groups as in the A and B groups had bachaches. These figures are suggestive, and, as the writer points out, recall the tracings of men in the A.E.F. who fell down and were unable to stand the strain, which indicate that here, too, the C and D groups, although they are the average or more than average, are not the normal, if by normal is meant as near the perfect as possible. The writer maintains, in closing, that an examination such as was made of the Harvard students and the results of putting the men in the D group to hard work in the war, shows very definitely that this training should begin with young children and that it is the duty of the pediatric and orthopedic branches of the profession to see that it begins there.

New York Medical Journal.

February 7, 1920, cxl, 6.

1. An Introduction to the Endocrines in Gynecology. Samuel W. Bandler.
2. Indications for Internal Gland Therapy: A Résumé of the Present-day Findings and Their General Application. Walter Timme.
3. Endocrine Neuroses and Their Therapy. John Rogers.
4. Endocrinology in Daily Practice: The Importance in Diagnosis and Therapeutics. William V. P. Garretson.
5. The Pineal Body: Its Structure, Function, and Diseases. Smith Ely Jelliffe.
6. A Case of Acromegaly. Martin W. Barr.
7. Endocrine Tropism—Adrenotropisms. David M. Kaplan.
8. Interdependence of the Function of the Ductless Glands. J. Christopher O'Day.

1. **An Introduction to the Endocrines in Gynecology.**—Samuel W. Bandler, avoiding the discussion of laboratory tests, studies in metabolism, examination of the blood, vagotonia, or sympathicotonia, confines his consideration of the subject chiefly to the premenstrual and menstrual phenomena, devoting his attention to simple, straightforward, clinical facts. This, with the observation of the patient as a human being (that is, with just a touch of psychology or the study of behavior), plus the element of heredity, completes his scheme of procedure. Endocrine abnormality, he holds, may focus its effect on a definite point or function. An affection of a gland causing either a plus or a minus reaction may therefore evidence itself by totally different symptoms. For instance, diminution of hypophysis activity may result in a typical dystrophia adiposogenitalis. In another patient there may be diabetes insipidus, in another amenorrhea with adiposity. The hypophysis, when hyperactive, may produce acromegaly, dysmenorrhea, metrorrhagia, fibromyomatous growths, fibrosis uteri, an exaggerated metabolism resulting in glycosuria, or the symptoms may be of a general nature associated with excitability or irritability of the type called hysterical. Varying degrees in the intensity of the gland changes, as well as in the location and extent, furnish gradations in symptoms. With a given etiology, several of the endocrine glands may be injuriously affected. These may result in asthenia after labor, after prolonged lactation, after infections, after influenza, and these should be diagnosed as cases of pluriglandular endocrine exhaustion. In other cases one gland may be singled out for marked injury, as, for instance, the adrenals or the thyroid. On the other hand, the test to which any one or more of the glands have been subjected by physiological or pathological conditions may result in an increased secretory activity of one or more members of the chain, as in thyroiditis. The best instance of this is to be found during pregnancy and after labor when many patients give evidence of improved health, bony growth, and general systemic exhilaration. This is merely a continuation of the increased glandular activity aroused in the endocrine chain by the growing ovum. Based on the belief that the ductless glands preside over the development of the inherited body and mind, controlling and regulating many of their functions through all the years of life, the writer offers the following theory of treatment by endocrines. 1. Give those extracts of which the body is producing too little. 2. If the body is producing too much of any one extract, attempt to counteract this overactivity by giving other hormones which diminish, oppose, or inhibit this oversecretion. This, if rationally followed out, calls for a knowledge of the physiological action of the various glands and their probable hormones; one must note the changes produced by overactivity or underactivity of the glands as evidenced by definite physical signs and other signs essential to diagnosis; the gland extracts must be administered in a therapeutic manner, which affords the opportunity of verifying these physiological and pathological facts; and by the results obtained one may prove the correctness or fallacy of either theory or diagnosis.

Journal of the American Medical Association.

February 21, 1920, lxxlv, 8.

1. Physical and Hygienic Benefits of Military Training as Demonstrated by the War. Meritte W. Ireland.
2. Pathologic Anatomy of Traumatic Fractures of Cranial Bones and Concomitant Brain Injuries. E. R. Le Count and Carl W. Apfelbach.
3. Traumatic Fracture of the Cranial Bones: Clinical Considerations, with Especial Reference to Extradural Hemorrhage. W. B. Moody.
4. Postdiphtheritic Paralysis, with Report of Two Cases. Samuel W. Boorstein.
5. Blood Pressure in Operative Surgery. Albert H. Miller.
6. An Outbreak of Botulism. Dwight W. Sisco.
7. The Eye as a Portal of Infection in Respiratory Diseases. H. J. Corper and J. J. Enright.
8. Maternal Mortality. C. Henry Davis.

5. **Blood Pressure in Operative Surgery.**—Albert H. Miller emphasizes the importance, before every surgical operation, of a physical examination, including an estimation of the blood pressure. During operations blood pressure tests provide an invaluable index to surgical shock, hemorrhage and anesthetic overdose. The sphygmomanometer should be used not only in selected cases but as a routine measure. One thus becomes accustomed to normal variations in the blood pressure during operations and is able to detect signs which indicate vital changes in the patient's condition. The Fowler position should not be used after an operation until the circulatory condition has been proved to be satisfactory by blood pressure examinations.

7. **The Eye as a Portal of Infection in Respiratory Diseases.**—Corper and Enright, with a view to corroborating and elaborating the work initiated by Maxcy (*Journal of the American Medical Association*, March 1, 1919), undertook the experiments which are here reported in detail. The experiments were carried out on patients with pulmonary tuberculosis who were capable of expectorating (lung) sputum. They were chosen for the twofold purpose of obtaining satisfactory pulmonary material and with a view to using patients with a respiratory system of reduced protective mechanism such as may occur acutely at any time in any person but not often in a manner available for satisfactory experimental purposes. Suspensions of *B. prodigiosus* were instilled into the eye, after which various parts of the nasopharynx were examined. These results are given in tabular form. It was found that the microorganisms manifested a tendency to follow definite paths. If instilled into the right eye the organisms are found on the right side of the nasopharynx and on the right tonsil, while the left side is free from them, as are also the interior portions of the mouth. Instillations of strong argyrol into the eye were found to follow a similar definite course in the nasopharynx. The direct determination of the presence of microorganisms in the trachea and on the vocal cords, which might indicate a downward passage into the lower respiratory tract after eye instillation, is difficult, and a number of procedures were used by the writers for this purpose. A series of ten cases were examined by passing a metal tube into the trachea from four to six hours after the instillation of *B. prodigiosus* into the eye. The nasopharynx was negative for the organism in these cases for about two hours. It was found that only a small area could be swabbed, but two of the ten cases revealed positive cultures from the vocal cords, one within six hours, the other four hours, after the instillation. In a series of twenty cases the nasopharynx and sputum were examined to determine whether the sputum was positive for *B. prodigiosus* after eye instillation for a longer period of time than was the nasopharynx. The time of the appearance of the last positive cultures from the nasopharynx and pharynx and from the sputum in the twenty cases ranged from one and one-half to two hours in the case of the pharynx, and from one and one-half to two and three-quarters hours in the sputum. From these and the various other findings the writers hold that the eye must be considered as one of the important portals of infection in respiratory diseases, and, although the greater part of the infectious material entering by way of the eye is subsequently swallowed and passes into the gastrointestinal tract, a small but definite portion of it finds its way into the larynx and trachea, where it may persist even as long as a week, as was noted in one case. In its passage from the eyes, the infectious material traverses a definite channel dependent on which eye it has entered or into which it has been introduced. Infectious material that is ingested is far less likely to enter the respiratory tract than that entering by way of the eye or nose.

The Lancet.

Jauary 31, 1920, li. 5.

1. An Address on the Position of the Medical Profession in Relation to National Physical Education. K. Digby Bell.
2. An Address on the Indications for Cesarean Section. H. Beckwith Whitehouse.
3. Cerebrospinal Fever in Infants and Young Children: Its Treatment and After-Effects. Helen M. M. Mackay.
4. Edema as a Symptom in So-called Food Deficiency Diseases. A. Douglas Bigland.
5. The Treatment of Chronic Gonorrheal Rheumatism by Vaccines Given Intravenously. Archie R. Fraser and A. G. B. Duncan.
6. A New Pylorus. G. Gore Gillon.

2. **An Address on the Indications for Cesarean Section.**—H. Beckwith Whitehouse divides the indica-

tions for classical cesarean section into two groups: (a) Cases where a definite obstruction to the passage of the child exists, from disproportion between the fetal and maternal bony parts, malpresentations, or neoplasms, etc. (b) Cases where urgent delivery is called for in the absence of previous dilatation of the birth canal either for the sake of (1) the mother, as in eclampsia; (2) the child, as in placenta previa. The writer performed cesarean section eleven times during the past year, with the following indications: Pelvic contraction: flat pelvis, 2 cases, round pelvis, 5 cases; placenta previa (central), 1 case; eclampsia, 3 cases. The maternal mortality was nil, and there was but one fetal mortality, in one of the eclampsia cases. In this case the infant died on the fifth day, its death, in his opinion, being due to neglect upon the part of the nurse. In four of the cases the cesarean section was performed in the patients' homes and as emergency measures, without any preparation, such as the usual routine before a pre-arranged abdominal section.

5. **The Treatment of Chronic Gonorrheal Rheumatism by Vaccines Given Intravenously.**—Fraser and Duncan were led to employ vaccines in cases of gonorrheal rheumatism as a consequence of having noticed, in cases of this condition in which the patients became victims of influenza during the epidemic last winter, that during and for some time after the influenzal pyrexia there was a marked lessening of the arthritic pains in these patients, and that some freedom of movement in the affected joints resulted. These patients had been bedridden for months, and were showing no response to treatment, in spite of the fact that all the most hopeful lines had been tried on them. These observations recalled the fairly well known fact that in India the more elderly natives submit to plague inoculation not from dread of plague or faith in the vaccine, but because experience has taught them that it eases their rheumatism. Consideration of these facts led the writers to think that a rise of temperature must help the tissues considerably in counteracting germs and their toxins. This is in line with the observations of various other workers. In fifteen cases, four of which are given in detail, the vaccines were given intravenously. A quick reaction marked by a rise in temperature was the result, but there was no marked change in the pulse-rate, nor was there any other untoward symptom. They believe that giving the injections intravenously secures a greater and almost immediate protection. The mechanism would seem to consist of a selective stimulation of the hemopoietic system by non-specific bodies. Probably no single factor is responsible for all the changes that occur, but the intravenous injection upsets the balance of the serum constituents, and the series of changes thus caused establishes a condition favorable to recovery from infection. The vaccines used were not freshly prepared. As a result of storing, probably the toxins contained had broken down more or less. The injection of these, possibly, non-specific germ constituents would seem to have caused the production of specific antibodies. The largest dose of gonococci used was 2000 million. There was no appearance of a clinical negative phase. No benefit seemed to result from an injection that was not followed by pyrexia. At the time the treatment was commenced the patients were extremely debilitated, with a rather fast and weak pulse, which was easily accelerated. There was marked improvement in all cases.

British Medical Journal.

January 31, 1920, 1, 3083.

1. Psychopathology and Dissociation. William Brown.
2. The Importance of the House-Fly as a Carrier of E. Histolytica. P. A. Buxton.
3. Analysis of One Hundred Consecutive Cases of Cardiac Disease. W. Black Jones.
4. On the Direct Cultivation of Tubercle Bacilli from Tissues. G. Haswell Wilson.
5. Nasal Drill: An Investigation of Its Value in the Treatment of Adenoids. Gertrude H. Hickling.
6. Ectopic Vesicæ Treated by Implantation of the Ureters in the Rectum. C. C. Holman.

2. **The Importance of the House-Fly as a Carrier of E. Histolytica.**—P. A. Buxton undertook an investigation for the purpose of determining as far as possible the extent to which the house-fly is a carrier of the organisms causing diarrhea, dysentery, and allied conditions. The investigation was carried through in one small area in Amara, Mesopotamia, on the lower Tigris, between Feb. 1 and Nov. 3, 1918. The total number of flies dissected was 1027. The number containing "apparent feces" was 645, or 63 per cent. The number containing human intestinal parasites was 42, or 4.09 per cent. The number containing *E. histolytica* cysts was 3, or 0.3 per cent. The intestinal parasites are the eggs of worms and cysts of protozoa. The "apparent feces" note was recorded if the gut of the fly dissected contained brownish material enough to be seen by the naked eye, and if on being made into a film the brown material agreed in its appearance with human feces. Generally it was swarming with bacteria. The fact, among other findings, that he never found a cyst or egg of any parasite of dog or ox or horse suggests very strongly that the feces found in the fly was human in origin. It was found that apparently the female fly is twice as much a carrier of feces as the male. The detection of cysts of *Entameba histolytica* only three times in over a thousand flies might at first be taken as evidence that the fly under the conditions studied is of minor importance as a carrier of amebic dysentery. On the other hand, it is impossible to remove the whole amount of feces contained in a fly; if a given fly contains but one or two cysts, it is quite possible that these may escape detection. Furthermore, it is by no means easy to see the cysts at all in some films. It may be safely said, then, that 0.3 per cent. by no means represents the number of flies carrying cysts of *E. histolytica;* Buxton thinks the actual percentage 0.5 or possibly higher. This represents a very large number when it is recalled that the fly is found throughout the year in Mesopotamia, and that in spite of the excellent sanitation of most of the units in the area, the fly is abundant in messes and cookhouses every spring and autumn. From his studies Buxton concludes that one may expect to find the egg of any human intestinal worm, or the cyst of any protozoan in the fly if only one looks long enough. It appears that in a well-sanitated area in Lower Mesopotamia over 60 per cent. of the flies carry human feces, over 4 per cent. of them actual human entozoa, and probably at least 0.5 per cent. the cyst of *Entameba histolytica.* One is justified, therefore, in regarding the fly in this country as not only a potential, but an actual and major factor in the carriage of the bowel disorders which are here so regrettably numerous.

4. **On the Direct Cultivation of Tubercle Bacilli from Tissues.**—G. Haswell Wilson describes a method of isolating tubercle bacilli from tuberculous tissues. The method depends on the use of (a) a special medium for culture, and (b) the trituration of the tissue with dry quartz sand before the application of antiformin to destroy contaminating organisms. The procedure is summarized as follows: 1. The disintegration of tuberculous tissue and the destruction of contaminating bacteria by antiformin can be greatly facilitated by a preliminary trituration of the tissue with quartz sand. 2. This procedure appears to exercise no deleterious effect on the bodies of the bacilli or on their vitality. 3. The growth of tubercle bacilli on egg media of the Dorset type is enhanced when the media are prepared with a twenty-one day tryptic digest of horse heart instead of with water. 4. Egg media intended for the growth of tubercle bacilli should be prepared from eggs which are as nearly as possible new-laid. 5. The addition of glycerin to such media inhibits the growth of bovine strains, and the other cultural characteristics of bovine and human strains are well defined.

The Canadian Medical Association Journal.

February, 1920, x, 2.

1. Sir William Osler, Bart., M.D., F.R.S., etc. F. J. Shepherd.
2. The Influence of Sir William Osler on Medicine in America. Thomas McCrae.
3. The Pathological Collections of the Late Sir William Osler. Maude E. Abbott.
4. Focal Infections. Ileal and Colonic Stasis. George E. Armstrong.
5. Chronic Intestinal Stasis. D. T. Smith.
6. The Winnipeg Epidemic of Encephalitis Lethargica. William Boyd.
7. Obstetric Paralysis—Its Cause and Treatment. James Warren Sever.
8. The Treatment of Empyema in Lobar Pneumonia by Early Aspiration. Thomas McCrae.
9. Blood Transfusion. Charles K. P. Henry.

7. **Obstetric Paralysis—Its Cause and Treatment.**—James Warren Sever states that obstetric paralysis, a paralysis produced during birth, is due to an injury of greater or less extent to the nerves of the brachial plexus. The resultant paralysis is characteristic; the whole arm hangs vertically, the elbow extended, the forearm pronated, and the whole arm inwardly rotated. The paralysis is a flaccid one. By numerous dissections on infantile cadavers the writer has shown, among other things, that traction and forcible separation of the head and shoulder puts the upper cords, the fifth and sixth cervical roots of the brachial plexus, under dangerous tension. This tension is so great that the two upper cords stand out like violin strings. Any sudden force applied with the head bent to the side and the shoulder held would without question injure these cords. Further observation shows that forcible abduction and elevation of the forearm and shoulder put the lower cords of the plexus, the eighth cervical and first thoracic, on a stretch, and when much force is applied it may well lead to a tear, rupture, or other injury to these segments. This condition is seen in breech cases, with arms extended. It may also follow sudden strain when the arm is elevated, such as the so-called hostler's paralysis, caused by the sudden elevation and strain of the arm which occurs when a hostler holds a rearing horse. With the shoulder held and the head carried to one side, with the clavicle intact, considerable force was necessary to injure the plexus. The suprascapular nerve always snapped first, apparently for the reason that it had not so much freedom of play as the others. Even with considerable force the fifth and sixth cervical nerves could not be completely torn across at Erb's point, but frayed out inside the sheath, following a partial tearing or rupture of the sheath, which always gave way first. In some cases there could be produced an evulsion from the spinal cord of the fifth and sixth cervical roots. With the clavicle removed, the whole weight of the shoulder came practically directly on the plexus, and less force had to be exerted to cause an injury. With the clavicle intact there was apparently always enough room, even with the arm elevated and hyperextended forcibly between the clavicle and plexus so that direct pressure from the intact clavicle on the plexus did not seem a possible cause of the paralytic condition. In no case, even with all the force he could apply with his hands, could the writer rupture the joint capsule, or even separate the humeral epiphysis. Neither could he dislocate the head of the humerus. The clavicle can be broken with great force, but fracture of the other bones which go to make up the shoulder joint is practically impossible. Most birth fractures occur in the clavicle, or in the humerus, at about the junction of its upper and middle third. It is not possible to produce a paralysis of the Erb type by the fracture of any bone but the clavicle. In studying Lange's theory, the writer injected the shoulder joints of several infants with methylene blue, and then caused a rupture of the anterior portions of the joint capsule. After several weeks on their backs in the preserving fluid, dissections were made on the infants, and in no case had the methylene blue gone above the clavicle, but completely surrounded and invaded the plexus in the axilla. These observations showed that the exudate from a ruptured capsular ligament of the shoulder does not leave the nerves alone in the immediate proximity of the shoulder joint and seek out Erb's point, the junction of the fifth and sixth cervical segments, at least two or three inches above the clavicle, as others have held. The evident vulnerability of the upper cords of the plexus under any degree of traction made it surprising that the paralysis is not of much more frequent occurrence. *X*-ray studies were made in about two hundred cases of patients ranging in age from two days to eighteen years, and in only two cases had there been fracture, one of the clavicle and one of the upper third of the humerus. Both fractures had healed without incident. The *x*-ray and clinical findings give the classical picture of obstetric paralysis. The cases resolve themselves, with respect to treatment, into two divisions, namely, those to be treated with massage and exercises, principally those of the upper arm type; and those to be treated by operation on the plexus, usually those of the lower arm type. Unless the early treatment has been adequate, the upper arm type will also come to operation, not for plexus repair, but to correct contraction deformities. The writer describes his operation for this purpose. The prognosis in all upper arm type cases is good, provided the case is watched from the start, and treatment properly carried out. In the lower arm type the outlook is not so good, although many of the patients regain use of the upper arm in spite of the persistent paralysis of the lower arm and hand. From this extensive study Sever draws the following summary: Obstetric paralysis is due to stretching or tearing of the cervical roots of the plexus brachialis. It occurs in boys as frequently as in girls. It occurs more often on the right than on the left side. The upper arm type is much more frequent than the lower arm type. It affects both arms very infrequently. It is practically always associated with a difficult labor, in which ether and forceps have been used and force has been applied. Not uncommonly the baby is asphyxiated. Head presentations show the larger percentage of occurrences of both types of cases. It may rarely be associated with fracture of the clavicle but is not the result of a fractured humerus or a dislocated shoulder joint. The prognosis for a useful arm is good in the upper arm type and bad in the lower arm type.

La Presse Médicale.

January 24, 1920, xxxviii, 7.

Unpublished Notes by Laennec on Hepatic Cirrhosis.—Letulle has recently had access to many original and unpublished MSS. by Laennec, some of which relate to cirrhosis of the liver. He was the first to describe the atrophic cirrhosis which goes by his name, but it does not appear that certain chapters devoted to this subject have ever been published. This subject was a favorite of his early days and apparently the pressure of other duties made it necessary to side-track it. Had the "Treatise of Pathological Anatomy" gone through another edition the MSS. in question would possibly have appeared in the chapter dedicated to cirrhoses. The text is descriptive of pathological studies of the most minute and conscientious character. The author isolates mass cirrhoses first. He is not writing of the liver *per se* but of cirrhosis in general with frequent allusions to the liver. It was of course before the days of microscopic control. From mass cirrhosis he passes to cirrhoses *en plaque* and cystic cirrhosis but these two forms receive but ltitle attention. In the mass form he goes extensively into the clinical symptomatology. Much space is devoted to ascites as a concomitant and the symptoms are in part due to cirrhosis and in part to ascites. As a rule the subject with cirrhosis has no appetite and is obstinately constipated. Occasionally we see crises of vomiting and diarrhea which are not prolonged. The author devotes much space to multiform eruptions seen in these subjects, which may possibly belong to *acne cachecticorum* as cirrhosis *per se* is not to-day accused of causing dermatoses. Laennec seems to have found the bile secreted about as usual by these patients and saw but a very few cases of jaundice of any kind. Strange to state there is no reference to alcoholism as a cause. The recurrent febrile and pseudomalarial attacks mentioned by moderns are not cited by Laennec. In an illustrative case the patient had jaundice and ascites when first seen. After tapping, her appetite promptly returned. The ascites, however, recurred as fast as it was relieved and the patient soon succumbed. A thorough autopsy was made beginning with the cranial cavity. The liver did not entirely fill the hypochondrium and its surface was studded with those minute bosses which apparently coincide with the hobnail liver of the English. Laennec does not liken them to any familiar object. The gallbladder contained normal bile. There is no mention of a *caput medusæ*.

"House Burials" in Macedonia.—During the typhus epidemic in Macedonia last year American Red Cross doctors and nurses found that the natives were burying their dead beneath the dirt floors of their homes, in order that the living might retain the food tickets which entitled each person to a certain ration of foodstuffs each day.

Book Reviews.

SHELL-SHOCK and Other Neuropsychiatric Problems Presented in Five Hundred and Eighty-nine Case Histories from the War Literature, 1914-1918. By E. E. SOUTHARD, M.D., Sc.D., Director (1917-1918), U. S. Army Neuropsychiatric Training School (Boston Unit); Late Major, Chemical Warfare Service, U. S. Army; Bullard Professor of Neuropathology, Harvard Medical School; Director, Massachusetts State Psychiatric Institute (of the Massachusetts Commission on Mental Diseases); Late President, American Medico-Psychological Association. With a Bibliography by NORMAN FENTON, S.B., A.M., Sergeant Medical Corps, U. S. Army (Assistant to the Medical Director, Base Hospital 117 A.E.F.); late interne in Psychology, Psychopathic Department, Boston State Hospital; Assistant in Reconstruction, National Committee for Mental Hygiene. And an Introduction by CHARLES K. MILLS, M.D., LL.D., Emeritus Professor of Neurology, University of Pennsylvania. By vote of the Trustees of the Boston State Hospital, Monograph Number Three of the Psychopathic Department. Boston: W. M. Leonard, 1919.

THIS book, the compilation of which was begun in the preparedness atmosphere of the United States Army Neuropsychiatric Training School at Boston, 1917-18, is primarily for physicians, but, as the lamented author states in the preface, some of the material has interest for line-officers, who may see how much "criming" is a matter for medical experts. Of the 982 pages, 903 are devoted to the body of the text and the remaining 79 pages to the very exhaustive bibliography. An index of 21 pages completes the volume. A few illustrations and charts are given.

The subject matter of the work is arranged in five sections, embracing psychoses incidental in the war; shell-shock: nature and causes; shell-shock diagnosis; shell-shock treatment and results; epicrisis. Under the first category are included the syphilitic group (syphilopsychoses); the feeble-minded group (hypophrenoses); the epileptic group (epiletoses) the alcohol-drug-poison group (pharmacopsychoses); the focal brain lesion groups (encephalopsychoses); the symptomatic group (somatopsychoses); the presenile and senile group (geriopsychoses); the manic depressive group (cyclothymoses); the psychoneurotic group (psychoneuroses); and the psychopathic group (psychopathoses).

Throughout the first four sections, which contain the case reports, each subject is introduced by a boxed legend. The last section includes the discussion of terminology, the diagnostic delimitation problem, the nature of war neuroses, diagnostic differentiation problem, general nature of shell-shock, and treatment: general observations. The province of this masterly volume is aptly stated in the introduction: "Dr. Southard's book will prove useful to many workers —to the medical officer whose duty it is to examine decruits for the service or to pass upon and treat them while in service; almost equally to the medical officer in time of peace; to authors of textbooks and treatises and to contributors to neurological and psychiatric journals; to lecturers and clinical demonstrators; to the examiner for the juvenile courts; and to members of the psychopathic, psychiatric, and neurological staffs of our hospitals."

MANUAL OF OBSTETRICS. By EDWARD P. DAVIS, A.M., M.D., F.A.C.S., Professor of Obstetrics in the Jefferson Medical College, Philadelphia. Second edition, revised. Philadelphia and London: W. B. Saunders Company, 1919.

THIS is one of the best known of the smaller books on Obstetrics, and it is not surprising that a new edition is in demand. The present revision includes new matter on the following subjects: Differential diagnosis of early pregnancy; treatment of eclampsia by sedatives; prolapse of pelvic organs complicating pregnancy; chorio-epithelioma; cystic degeneration of the chorion (hydatidiform mole); anesthesia and analgesia in labor; placental bacteremia; inversion of the uterus complicating labor; septic infection at the placental site complicating labor; basiotripsy; and abdominal cesarean section (the Porro operation). To those in search of a concise and authoritative account of modern obstetrics the present volume can be unhesitatingly recommended. The last chapter in the volume deals with "The medicolegal aspect of obstetric practice," and is of more than ordinary value; it contains information for which one looks in vain in many of the larger works on the subject.

FATIGUE STUDY, The Elimination of Humanity's Greatest Unnecessary Waste, a First Step in Motion Study. By FRANK B. GILBRETH, Member American Society of Mechanical Engineers; and LILLIAN M. GILBRETH, Ph.D. Second Edition, Revised. New York: The MacMillan Company. 1919.

DURING the period of the war, which roughly corresponds to the period between the appearance of the first and the second editions of this book, there was notable increase in the recognition of the importance of the elimination of unnecessary fatigue among workers. This recognition arose from the imperative need for the conservation of the strength of the workers, for the increase in production and the elimination of waste, and for the promotion of co-operation. Since the close of the war, these needs have been no less imperative. In this book will be found the definitions and the objects of a fatigue study and the methods by which such studies are best carried out. The results of carefully developed investigations have, as a rule, been most satisfactory, not only to owners but to workmen as well. This work will be both interesting and useful to all of those who have occasion to deal with fatigue conditions.

SANITATION FOR PUBLIC HEALTH NURSES. (The Fundamentals of Public Health). By HIBBERT WINSLOW HILL, M.B., M.D., D.P.H., late Director, Division of Epidemiology, Minnesota State Board of Health, and later Director, Institute of Public Health; M.O.H. of London, Canada; and Professor of Public Health, Western University; now Executive Secretary, Minnesota Public Health Association; Author of "The New Public Health." New York: The Macmillan Company, 1919.

THE purpose of the author of this little volume,—to give to Public Health Nurses a concise view of the fundamentals of modern Public Health as it is to-day, with particular reference to such aspects as may be conveniently listed under Sanitation,—seems to be admirably fulfilled. The sixteen chapters deal with the following questions: Definitions and relationships of hygiene, sanitation and public health; the general course of an infectious disease; typhoid fever as a typical infectious disease, para-typhoid, typhus; more eruptive infectious diseases (scarlet fever, scarlatinoid German measles, measles, small-pox and chicken pox); infectious diseases of the throat, larynx and adjacent areas (diphtheria, tonsillitis, septic sore throat, Vincent's angina, whooping cough, mumps, and colds); poliomyelitis and cerebrospinal meningitis, syphilis and gonorrhea; tuberculosis (human and bovine), leprosy; immunity and anophylaxis; epidemiology; outline of body operation; food; water; milk; flies, mosquitoes, etc.; "cleanliness" and "health"; vital statistics. An index completes the volume.

THE MEDICAL CLINICS OF NORTH AMERICA. New York Number. Volume 3, Number 2. September, 1919. Philadelphia and London: Published Bi-monthly by W. B. Saunders Company.

THIS issue of the Medical Clinics contains thirteen contributions from seven institutions in New York City. They are all of interest and it is perhaps unfair to single out one or two for comment. Dr. Mosenthal's discussion of the Symptoms and Treatment of the Retention of Waste Products in Nephritis is illuminating and instructive and should be of aid to the practitioner in his consideration of these difficult conditions. The author has upset several longstanding traditions and his contribution marks a distinct advance. Rothschild and Wilensky present an article on Cholelithiasis in which they discuss the relation of this condition to the cholesterin content of the blood. It is exceedingly interesting and is likely to prove a valuable aid in directing the treatment of these patients. Other contributions are only slightly less important.

Society Reports.

CLINICAL CONGRESS OF THE AMERICAN COLLEGE OF SURGEONS.

Ninth Annual Meeting, Held in New York City, October 20-24, 1919.

(Special Report to the MEDICAL RECORD.)

First Day—Monday, October 20.

THE PRESIDENT, DR. WILLIAM J. MAYO OF ROCHESTER, MINN., IN THE CHAIR.

Address of Welcome.—Dr. J. BENTLEY SQUIER of New York, chairman of the committee on arrangements, made an address of welcome on behalf of the New York surgeons. He said that three times in as many years New York had arranged to welcome the members of the Clinical Congress of the American College of Surgeons, and twice they had failed, once owing to the necessity of converting the congress into an enormous recruiting station when it seemed more expedient to hold the meeting in a more central place and Chicago was chosen; the second failure was due to the invasion of another enemy, the influenza, and the congress had to be suspended while they fought that scourge. The third attempt was here—none the less hearty because delayed, infinitely more happy because a peace treaty, with or without reservations, had nearly been ratified by a world that at least believed the war was over and that they could devote themselves to subjects of pathological causation and not to the traumatisms of war. During the past three years New York had advanced in the art of welcoming. It had become a habit, a daily civic duty. It was only necessary for the wireless to S O S that a ship was off Sandy Hook bearing important passengers when every New Yorker instinctively put on his silk hat and frock coat and stood ready to rush to the spot designated when City Hall sounded the alarm. The custom of giving the keys of the city with its freedom meant little nowadays. A more gentle tribute to pay a guest was to give him the keys to your wine cellar with your welcome. Then a guest really got something which warmed the cockles of his heart and left a lasting remembrance of good will. To those who were the rulers of the college's destiny Dr. Squier said New York was proud that the first Clinical Congress under the auspices of the American College of Surgeons should have been held within her gates in 1912. New York to-day was speechless in admiration for the work of their secretary general during wartime. His powers of organization, as chairman of the medical board of the Council of National Defense, stood out with the brilliancy of Mars at perihelion. He indeed helped win the war.

Address of the Retiring President.—Dr. JOHN G. CLARK of Philadelphia delivered this address in which he stated that the Clinical Congress of Surgeons of North America had participated in two great events, one the great war and the other the epidemic of influenza. He paid tribute to those who had served and sacrificed themselves in the former and it might be said that doctors and nurses served as valiantly and died as heroically at their posts during the latter as did the heroes of the Argonne. They were now at the entrance of a third event, a new era which they hoped would be the era of renaissance in medicine. Europe had been so weakened and impoverished by the war that it would be at least a decade before she would recover herself and it would take twenty years to restock the ranks of her scientists depleted by the war. The question before us was, "Were we prepared to 'carry on' until Europe had had time to recover?" We did not wish to assume scientific leadership but to continue to advance science while Europe was recovering. Many young physicians came home from the war filled with enthusiasm and many others, inspired by the experiences of the war, were stirred to new ambition. There would soon be a great influx of young medical men from our South American countries. To all these we owed the duty of being prepared to offer opportunities for study that would lead to the master's degree. The wretched post-graduate work of past years should be cast on the scrap heap. In a six weeks or a six months course the student was given merely a smattering and then went into the community to practise medicine. Out of every 100 graduates there was probably only one who had a real creative mental capacity. Men of this type should be segregated and shielded from the necessity of competing for a livelihood by scholarships which would enable them to carry on research work under favorable conditions. The new epoch in medicine should be a renaissance combining the best practical work with the fullest opportunities for research.

Inaugural Address: The Relation of Cancer to the Prolongation of Human Life.—Dr. WILLIAM J. MAYO of Rochester, Minn., delivered this address in which he said, in part, that America was confronted with the problem of reconstruction following war. How she might best meet international competition along with failing immigration and an exodus of temporary residents who were now returning to their European homes with their savings earned in America was the problem. No one among us could be so mean of spirit as to desire the American laborer to return to prewar conditions, but rather did we desire that the laborer and his family should be well housed, well clothed, well fed, and that his children, the future American citizens, should be well educated and equal to grappling with the problems of their time. America must compete in international trade with countries which, devastated by war, contained peoples willing to work long hours for small pay, under labor conditions which we hoped never again to see in this country. Successful competition demanded efficient production. Every person filling an unnecessary position between production and consumption was a double liability; inasmuch as the labor of another was required to maintain him, and what he might produce was lost. This parasitic class was a great source of social unrest in America. Since the close of the Civil War fifteen years had been added to the average length of human life. With present knowledge and present conditions fifteen years more might be added. It was certain that ten years more would be added, at the most productive age from the standpoint of injury. When the speaker was a boy it was difficult for a man of forty to find a new job, and for a man of fifty it was practically impossible. To-day the older men were great assets to the country. If, as a nation, we advanced the time of production for each person ten years, we could well afford to shorten hours of work and improve living conditions, and we should be able to compete with those countries which in long hours and poor living conditions shortened human life, decreased production, and increased social unrest. The introduction of potable water had made prohibition possible. Prohibition would enormously increase production. In Vienna the per capita consumption of spirituous and fermented liquors was reduced 40 per cent. following the introduction of a pure water supply. If one traced the temperance movement through the states of the Union, one found that it was not the appeal to the self control which was behind this great movement, but the advent of potable water.

In discussing the relation of surgery to the prolongation of human life, Dr. Mayo stated that the arch enemy of middle age and beyond was cancer, and our measures both for prevention and cure had not advanced according to the increasing need. One woman in nine and one man in thirteen died of cancer and this proportion of cancer deaths would be maintained in the enormously greater number of persons reaching the cancer age. We must spread more widely the fact that chronic irritation was the cause of the disease. Good dentistry had eliminated a percentage of cancers of the jaw due to the irritation of defective teeth. Cancer of the lip and tongue was on the increase as the habit of smoking was on the increase in both sexes. It seemed to be a well established fact that the incidence of cancer of the breasts was in direct ratio to the amount of covering of the breast and the pressure exerted on it. The influence of drinks too hot to be held comfortably in the mouth in the production of chronic irritation which preceded the development of gastric cancer seemed probable. Unfortunately less

was known about the causes of cancer of the large intestine and rectum. The majority of cancer patients came to operation too late to be cured. The paradox in increased experience in operating accompanied by higher operative mortality and a smaller percentage of cures was seen, and the explanation lay in the increased operability. The surgeon who reported only percentages of operative death rate and of cure, without stating operability, gave us little information. Too little attention had been paid to traumatic transplantation of malignant cells during operation. A considerable percentage of adenocarcinomas of the ovary were due to spontaneous grafting of cells having their origin in cancer of the stomach. These cells were grafted on to the break in the ovarian surface due to the discharge of the ovum, and the secondary infection in the ovary, by rapidity of growth, might mask the primary disease. Other ways in which transplantation of cells might occur were mentioned which showed the need of devising operative methods that would more effectively prevent cell transplantation as well as the traumatic detachment of cancer infected thrombi into vascular channels—a complication which frequently caused postoperative metastatic carcinoma of the liver and lungs. Radium, the *x*-ray, and the radiant energy of heat had a useful field in extending operability, preparing the cancer field for operation, as also after treatment, reducing the percentage of recurrences. Radiotherapy destroyed cells for a certain distance, cells were sterilized at a greater distance so that their reproduction was checked, and connective tissue was caused to develop which acted as a barrier to the further extension of the malignant process. Radiotherapy often failed when malignant cells became attached to the walls of the three-coated blood vessels from which they drew sufficient nourishment to withstand the effect. We had greatly extended the use of radium and had obtained good results in the past three years, especially in inoperable cancer of the large intestine and upper rectum. A colostomy was made as close as possible to the growth and through it radium was introduced directly into the lumen of the carcinomatous area. In the stomach, by means of a Witzel gastrostomy and the introduction of a tube into the cancerous lumen of the area, radium might be directly applied, while the patient was temporarily nourished by means of a jejunostomy. In making suggestions concerning cancer research Dr. Mayo asserted that it was probable that there was a measure of immunity against cancer in all persons and that this was sufficiently great in some to prevent them from having cancer. A search for the cause of such immunity and a means of increasing it was greatly to be desired. The more primitive and important the function of an organ the greater its immunity. The small intestine was primitive and seldom was the seat of new growth; the large intestine had a short heredity and was a frequent seat of neoplasm. The testicle was primitive and was seldom the seat of neoplasm; the ovary was descended from the testicle, had a short heredity, and was the frequent seat of neoplasm. Surgery was striving by all means within its power to reach pathological processes before they became gross. Abstract sciences were being called to their aid, especially physics and biochemistry, in giving a better understanding of physiology and pathology. In this connection the action of colloids was of significance. The biochemists had shown that when certain substances were in the colloid state they were more toxic than when they were in other conditions and this peculiarity had been attributed by some physicists to the energy contained in the colloid body. The physical state of matter might influence those early changes which might result in cancer. The benign cystoid appendix, the escape of its colloidal contents from an aperture in the wall of the appendix into the peritoneal cavity, might result in the grafting of hypoblastic elements upon the peritoneum, with the sequence, pseudomyxomatous peritonitis, myxomatous peritonitis, colloid peritonitis, and eventually cancer. It might be assumed perhaps that the physical activity of colloid particles attacked the tissues and prepared the field for grafting. Again it might change the nature of the disturbed mucous cells in the cystic contents of the appendix and thereby set in motion a series of events which resulted in cancer. The use of energy in the form of rays such as radium, *x*-ray, and heat were examples of biophysics in relation to medicine. These things served to direct attention to the contributions of the abstract sciences to cancer research and to emphasize the need of more intensive study in these new fields.

Gunshot Fracture of the Femur.—Sir ANTHONY BOWLBY of London read this paper, in which he stated that gunshot fracture of the femur occurred in 1½ per cent. of all wounded men. It was one of the most dangerous injuries of war, the danger being proportionate to the extent and nature of the injury of the soft parts even more than to the extent of the bone lesion. An important factor to be considered in estimating the danger of a fracture of the femur was the length of time that was often liable to elapse before the patient could be adequately treated. The early experience of the war taught them that fractures should be splinted as near the front as possible. The treatment of these fractures was considered under two divisions: (1) Treatment at the front, and (2) treatment at general hospitals. At the beginning of the war the splints supplied at the front were very inefficient as well as very few. Within a few months, however, they had been able to obtain supplies of stouter splints made with a metal bracket eight inches long so as to permit access to the wound. These proved very serviceable and were employed for a year and a half at aid posts and field ambulances. The writer described the steps leading up to the adoption of the "Thomas Outfit" and stated that with the use of this outfit the transport of the patient to the casualty clearing station was greatly simplified, for, as soon as the limb was fixed in extension and slung, pain was either altogether prevented or reduced to a minimum, bleeding was soon checked, and the steadying of the fragments effectually prevented further injury to the soft tissues and the spread of sepsis. It was found that the best means of applying traction on the field was by means of steel calipers fixed in the sole of the boot below the instep. The routine treatment of the patient when he arrived at the casualty clearing station was to put him under general anesthesia and thoroughly remove with knife and forceps all damaged tissues and foreign bodies. After operation the Thomas splint was again applied, but this time the extension was fixed to the skin by strapping or glue. In a large number of cases of fracture of the femur primary amputation was absolutely necessary and in such cases should be performed as soon as the condition of the patient permitted. The conditions which commonly necessitated amputation were: complete smashing of an area of bone, extensive comminution of the lower articular end of the femur, laceration of the femoral vessels, extensive destruction of muscles and skin, and gas gangrene. Primary amputation for fracture of the femur was attended with a much higher death rate than was amputation in the thigh for injuries of the leg, and also the higher up the limb was removed the greater the mortality. Primary amputation at the hip was so uniformly fatal that it had been advised not to perform it at all. In discussing the principles of treatment, the writer stated that the apparatus employed should be a skeleton metal splint which permitted traction to be applied either directly downwards or else in various degrees of abduction and flexion. The direction of traction and the amount of flexion and of abduction were guided by frequent radiograms. These were taken by a movable apparatus used at the bed. Without the frequent use of the *x*-ray it was not possible to obtain uniformly good results. The length of the limb was measured daily at first and later less frequently. Even when the fragments were separated by an interval of one or two inches, the gap would be completely filled in by new bone. Fixed extension proved not to be as good as continuous extension. On the whole the use of the patient's body weight was the method most in favor. Movements of the knee-joint were begun early, and slight flexion of the knee was to be preferred to traction on the fully extended limb. For fractures about the upper third and the neck the patient was placed either upon the hammock-like swing cradles invented and described by Major Sinclair or else upon the specially segmented mattress devised by Major Pearson. This latter had been adopted by the Army

Medical Department for use in all cases of fixture of the femur under treatment in England. When union was sufficiently advanced it was the custom to get the patient out of bed while maintaining the length of the limb by the application of "walking caliper splints" fixed to the heel of the boot. Cases treated by delayed primary suture showed a more rapid union of the fracture and a great shortening of the period of pyrexia and were less liable to late necrosis of fragments and to secondary abscess. The question of the removal of bone was not entirely settled when the war ended. There seemed to be no doubt that, on the one hand, the removal of all fragments which might necrose hastened the healing of the wound, while, on the other hand, the removal delayed the union of the fracture and in the opinion of some had been responsible for permanent nonunion in not a few cases. The author quoted statistics showing the results that had been obtained in the treatment of fractures of the femur early in the war and compared with the results obtained in 1918 at the front, at base hospitals, and in special hospitals in England. The final results that were obtained in the limbs that were saved in 1918 showed a great improvement over those of the early part of the war. The majority of cases recovered without shortening; in one series of sixty cases, thirty-six had no shortening, while the remaining had shortening of only 0.2 of an inch; in only 5 per cent. of all cases was there more than one inch shortening. The difficulties of correcting malposition almost disappeared in France as soon as a full length limb could be secured. Eighty per cent. of the cases recovered with good position. In fractures of the shaft it was most important to support the bone at the site of fracture so that the natural anterior curve of the femur was either very fully maintained or even slightly exaggerated. Stiffness of the hip-joint should never occur except in cases where the fracture involved either the neck of the bone or the trochanter. This could always be prevented if care was taken that the foot was not cramped by bandages. Sinuses were seldom met with in the absence of necrosis. It had been the custom recently to remove sequestra earlier than in former years.

Sir Robert Jones of Liverpool said the paper had left very little for him to say, but that he would take the opportunity to express his gratitude for the assistance rendered him by American surgeons. The good results obtained in fractures of the femur in France were also obtained in the cases that came to England. They had obtained an average of only one-quarter of an inch shortening in those cases treated with calipers. In their experience in Liverpool the average shortening was ⅝ of an inch. This carried a very important lesson, namely, that all those cases were treated in the simplest possible fashion with Thomas splints or those similarly made which enabled the patient to be transported in comparative comfort. It must be remembered also that the results secured at the front ought to be secured in civil life with the greatest possible ease without radical operation. None of the cases was subjected to internal splinting. In the early part of the war the men who now treated by internal splinting all lost their limbs. It was not possible to have expert surgery in every hamlet, but it could be made clear to every man that he should treat fractures in the simplest possible way. By treating fractures of the femur as Sir Anthony had described, it was possible not only to get no diminution in the length of the leg, but to get an actual increase. They had learned in the prewar days that weight bearing at too early a period after a fracture of the femur increased shortening, and what was true in the prewar days was true of the compound fractures of war. Hence they made use of caliper splints. These were Thomas splints going to the heel of the boot so that there was no pressure on the leg and the heel did not touch the floor. When these calipers were worn a patient with an ununited fracture could walk with consummate ease, and the patient with a gap in his femur could walk without lameness. This was an important feature in the treatment of soldiers, many of whom had sinuses persisting for months. There were many types of deformity in connection with fractures of the femur, one being a sagging above the knee, and an outgoing of the upper fragment. This sagging required only a bandage. There was no excuse for any deformity in these cases. The deformity resulting from a little overlapping was not as bad as that from a meticulous apposition. In reply to the question, "Do we operate on all cases of deformity of the femur?" the speaker said that if they got good function and good alignment they did not operate if they had even as much as one inch shortening. There was no time when there might not be a recrudescence of infection. There might even be a recrudescence of gas gangrene after twelve months. They did not operate unless they found an erroneous deflection and then they operated in a simple way, doing an osteoplasty. In dealing with postoperative war deformities they found that a stiff knee was often a more difficult proposition than the prewar stiff knee and it did not do so well with passive motion. If one operated on a malunion there was often a greater stiffness than before operation, so that it was essential before attacking bone to decide just what was to be done. If one had a knee with 5° flexion, it was bandaged at 20°. When the patient could lift the limb to 20° it was bandaged at a greater degree of flexion thus gradually increasing the degree of flexion. They had found that it was not advisable to attempt forcible movements, as they might result in rupture of a strand of the quadriceps or stretching of the patellar ligament.

Dr. Fred N. G. Starr of Toronto said he thought that as surgeons they should impress on the public that their service in the war was not an experimental expedition, but for the purpose of giving to the wounded the benefit of their experience gained in a hard school. They were prone to allow the public to rate the surgeon too low, and then there was difficulty when they wanted legislators to do anything for them. He was delighted to hear Sir Robert Jones speak of the Thomas splint. Recently he had had the good fortune to come across the original article of Thomas written in 1875, in which he said it enabled one to handle the patient as though he were a toy, without pain. He had seen that so often that he was thoroughly convinced of the value of the Thomas splint. In fractures of the femur treated by the application of the Thomas splint, frequently when the patient was first allowed up there was lengthening even to an inch. That was different from their prewar experience. One of the benefits of the war experience was the healthy competition between the special hospitals that get some little device that would make for the comfort of the patient or better results in the treatment. All accident ambulances should be equipped with Thomas splints and the men in charge of the ambulances taught how to apply them at the site of the accident. As Dr. Mayo had pointed out, we must consider the welfare of the laboring man.

Dr. Alexander Lambert of New York, President of the American Medical Association, made a brief address of welcome in which he said that the city possessed many opportunities for the study of medicine and surgery which were little realized and it was with genuine pleasure he saw so many here to take advantage of a few of these opportunities, and to enjoy them as they should be enjoyed. They hoped in the near future to draw more and more of the profession here to partake of these advantages. It had been a great pleasure to be present and listen to our friends from abroad.

Second Day, Tuesday, October 21.

Brain Tumor Statistics.—Dr. Harvey Cushing of Boston read this paper. It was impossible, he said, to cover this large field in the short time allotted. However, one could say that in surgery, as in agriculture, it was of advantage to take stock of results of methods employed, to see what developments should be carried further, and what ground should be allowed, as it were, to lie fallow. With this in mind, he had undertaken a statistical study of brain tumor cases (or suspected brain tumor cases) reported during a fifteen-year period. Generally speaking, about 20 per cent. of these were pseudotumors, but 80 per cent. were undoubtedly brain tumors, of which half were verified by operation or autopsy. As the number of verified cases increased, and as one went deeper into the complexity of the subject, it became more and more evident that dogmatic statements belonged to the young and unwise. Statistical presentation was possible but not profitable in a subject in which so many elements were to be consid-

ered. In reviewing such a work as that by Osler and MacCrae on abdominal tumors, one saw that to-day it would be impossible, and to attempt to cover the field of brain surgery in one work would be an unthinkable waste of time. The first point in dealing with statistics was to know what one was talking about. Confusion and ignorance as to what were really brain tumors was undoubtedly less than before. Doubtful cases had to be regarded as pseudotumors, and must be excluded from lists of true tumors. Figures of verified cases had increased; thus from 1890-1900, 11 cases had been observed at Johns Hopkins Hospital; from 1902-12, 337 cases; from 1912-17, 500 cases, and the following year, 1,000 cases. A recent series of 93 cases showed 84 of presumable tumor, 50 of which were certified. Another important question to settle was, which were operative fatalities and which operative recoveries. A case was cited of a young man who suffered from profound attacks of unconsciousness. At operation a large tuberculoma was found. An effort was made to remove it in its entirety. Such operations had an extremely high mortality (in 12 cases of tumors removed, all ended fatally), therefore they were very anxious to have this patient recover. The operation appeared successful. In 3 weeks the patient was up and about feeling well. He was started for Saranac Lake for convalescent treatment. He missed his train and was found wandering about and brought back to the hospital. He then developed tuberculous meningitis and died. Was that an operative fatality? Was that brain tumor or not? Two other cases were cited of patients who entered the hospital within one week of each other. Both suffered from the rarest kind of brain tumor, a cholesteatoma, or mother-of-pearl tumor. From a superficial study of statistics one might suppose this tumor was common, but only 6 had been recorded in the literature. One case was cerebellar and a laminectomy had to be done as well. It was very necessary to establish some standard for "cures." How long must one wait before claiming a cure? In the matter of diagnosis the field of vision was most important. For instance, in the case of a young girl suffering from glioma one could state that there was some pressure uupon the geniculate pathway and not upon the chiasm. This girl was apparently cured by removal of the tumor. It was of the highest importance in these cases to agree upon certain standards of classification so that surgeons might know they were speaking the same language as regards results.

Dr. CHARLES H. FRAZIER of Philadelphia said that Dr. Cushing had made a life study of technical problems and his work was a contribution to American surgery. He would like to refer to the use of callosal puncture in this field. In all pretentorial tumors the symptoms were due to distention of the ventricles which often brought matters to a fatal issue. The increased tension appeared before localization was possible. He had hoped that an opening could be made and drainage instituted in the corpus callosum, and that in an inoperable growth the life of the patient could be prolonged by this means. It was, however, of but transitory benefit. Lately he had combined callosal puncture with subtentorial decompression. His attention had also been attracted by the relation of chronic meningitis to brain tumors. An exploratory operation did not always exclude brain tumor, as the growth might be overlooked. In many cases, however, it seemed that one was dealing with a preexisting meningitis. It was better not to wait to localize a tumor, but to operate early. The use of radium was another point to be mentioned. There was clinical evidence that with the use of radium the tumor underwent retrograde changes. In one such case, that of an enormous cerebellar tumor, so adherent that its removal was impossible, the use of radium was combined with operative measures, and 5 years later there was no sign of recurrence. In another case, where the patient was stuporous and bedridden from a tumor at the cerebellar pontine angle, a tube of radium was imbedded and left for a definite time *in situ*. The patient had recovered so far as to be able to return to work. The speaker's experience with radium had been limited, but it would appear as if this was a distinct clinical aid. As to Dr. Cushing's question in regard to operative mortality, he did not feel that when the patient died of subsequent meningitis it should be charged up to operative mortality. As to the length of cure, this depended on the type of tumor. Endothelial growths were slow-growing. Seven years would not be too long to wait for recurrence. All cases should be under observation at least 5 years.

Dr. ALLEN B. KANAVEL of Chicago said that Dr. Cushing's papers were always landmarks in surgery. Brain surgery stood in particular need of such classifying studies, especially as regarded the point as to how many patients returned to society as self-supporting members. Good results depended not only upon the skill of the operator but upon the opportunity of early and correct diagnosis. The profession was too apt to believe that such symptoms as projectile vomiting, headache, and choked disc were diagnostic. Progress would not begin until medical men learned that these were not the signs of brain tumor, but of its terminal stage. When this was learned, they would be able to cure, not merely relieve, the patients. Symptoms and signs of brain tumor could be classified (1) as due to irritation or depression of the neurological or physiological function of the part involved; (2) as due to irritation or depression of the adjacent parts; (3) as symptoms inherent to the disease, such as the Wassermann reaction, or a high leucocytosis; (4) as the group of terminal symptoms—increased tension, choked disc, headache, projectile vomiting. From the localization standpoint, only the first two groups were important. Too often the case progressed far beyond the stage where successful operation was possible. It was therefore necessary to arouse the interest of the profession to the diagnostic phase of the early stages. A nation-wide study should be inaugurated. Considerable funds would be required for its accomplishment, but it offered a fruitful field for the amelioration of human suffering. Such an enterprise might be established under the auspices of the American College of Surgeons, with the chairmanship of Dr. Cushing. Classified data could be collected and published. This would lend luster to American surgery and undoubtedly give rise to the performance of curative operations, instead of palliative ones.

Dr. CHARLES A. ELSBERG of New York said that anyone who had followed the history of brain surgery during the last 15 years would feel that this field had not received the attention it deserved. The justification for specialization in neurological surgery was well recognized. In a series of 500 cranial operations, 236 were for brain tumors, verified by operation or autopsy; 20 per cent. of these patients died while still under care. The improvement in results in ten years was very striking. The mortality had dropped from 43 to 14 per cent. Last year it was 10 per cent. This was due to combined improvement in diagnosis and technique and more skilful surgical judgment rather than selection of cases. In regard to cholesteatoma, he had seen one case in which three-fourths of one hemisphere was involved in the growth; that is, a tumor as large as a child's skull was found within the skull of a man. The growth was successfully removed and the patient recovered.

Empyema, with Particular Reference to Its Pathogenesis and Treatment.—Dr. ALEXIS V. MOSCHCOWITZ of New York City presented this communication. He said that knowledge of the pathology and pathogenesis of empyema was necessary in order to understand its treatment. His views had been greatly modified by extensive autopsy experience. The view hitherto held was that the pluræ became infected by contiguity with the lung. That did not seem logical, because it did not take place in other serous cavities. It would seem as if contamination must occur from the pleura. In most cases a sub-pleural abscess was found connecting with the empyema cavity. This was the rule rather than the exception, as found at autopsy. A rupture occurred of the subpleural-pulmonary abscess. When the cavity was irrigated with an irritating solution, such as Dakin's, a persistent cough was produced. The analogy between the pleura and the peritoneum was very close, differing only with the greater mobility of the lung, as compared with the sluggish peritoneal peristalsis. The stages were: serous pleurisy was converted into exudate, then encapsulation occurred, which might be either diffuse, localized, or multiple. Seropurulent pleurisy was not encapsulated, but purulent pleurisy was always so. An absolutely free empyema containing

frank pus was an unknown quantity. Frank pus was usually an end-product. The states could be divided into (1) formative, or rupture of abscess; (2) acute, or increase of fluid and toxemia; (3) chronic. The reason why thoracotomy was not permissible in the early stage was that the fluid ran out and atmospheric pressure, at 15 lbs. to the square inch, rushed in, collapsing the lung. This was badly borne by the patient and caused fluttering in the mediastinum with rapid heart action. It pushed out the other lung and disabled the heart. Thus early thoracotomy was attended by terrible mortality. Statistics improved in proportion as the surgeons became frightened by the high mortality. When the stage of adhesions had been reached these formed an anchor for the lung to the side of the chest and then it was safe to operate and evacuate the pus. An acute pyopneumothorax was different. These patients stood early operation. The statistics as to the use of the Carrel-Dakin treatment were rather rosy, but some cases did stay cured. In cases where a pneumothorax had occurred, this tended to disappear. It was safe to sterilize the cavity and close it over a pneumothorax.

Dr. JOHN L. YATES of Milwaukee said that anything foreign to the serous membrane was an irritant—air, blood, plasma, serum, thrombin, fibrin, etc. This irritation, whether due to toxins or to foreign body, provoked an acute serous reaction. Before adhesions formed, the serous fluid had formed and entered the cavities. This was sufficiently irritating to provoke a serofibrinous reaction apart from bacteria, and secondary foci might become more acute than the primary one. The subserosa was extremely resistant, and the best prevention of empyema lay in keeping the pleural serosa in constant apposition. Drainage should be done later. Primary thoracotomy could be done only by maintaining pulmonary inflation.

Dr. JAMES F. MITCHELL of Washington, D. C., said he had been asked, "Just what would you do for empyema?" He thought the answer depended on the type of case. These were of three kinds: (1) acute, (2) chronic, (3) late intractable cases. The profession agreed that early operation was dangerous in streptococcal empyema. It was found that pressure in one side of the chest was not independent of pressure in the other. There was a definite relation between the opening and the amount of air in the lungs. When the lung was restricted by pneumonia the size of opening compatible with life became smaller. Adhesions rendered the opening safer. Attention to diet and early exercise were found to be most important therapeutic aids. The Carrel-Dakin method depended on its intelligent application. Three points might be emphasized: (1) Avoidance of early operation; (2) vigorous application of the Carrel-Dakin method; (3) attention to diet and exercise. Persistent cases should be examined by the *x*-ray method. Stereoscopic plates should be made both with and without bismuth, because the bismuth might obscure a foreign body. The chest wall might be closed regardless of an existing cavity, provided the latter were sterile. The cavity tended to disappear with expansion of the lung. Certain cases would progress to the third stage. *X*-ray studies were then important and the bacterial content should be kept as low as possible. The operation should be as simple as possible. Sloughs should be removed. Small flaps should be used to close the opening. Early exercise should be instituted. There were few cases that would not respond to comparatively simple operations, and the patients so treated would become able-bodied men, without subsequent deformity.

Surgical Treatment of Exophthalmic Goiter.—Dr. GEORGE W. CRILE of Cleveland, Ohio, presented this paper. The conclusions summarized were based upon personal experience of 2,250 thyroidectomies. Fifty per cent. were subjected to ligations. In the last series, 333 cases were first submitted to ligation, then to thyroidectomy. Among 116 ligations one death occurred in the stage of dissolution. Thyroidectomies were done at first without any special precautions, which they had since learned were important. The first 100 cases had a 16 per cent. mortality. With the use of gas and oxygen anesthesia this was reduced to 2.5 per cent. By the adoption of special management of cases, the mortality had been limited to 0.6 per cent. Special operative precautions included: Light anesthesia, gas and oxygen; multiple stage operation; exclusion of the psychic factor. Since the war special precautions had been added against postoperative hyperthyroidism due to excessive chemical activity and destruction by oxidation. With each degree of rise of temperature this chemical activity was increased 10 per cent. With a temperature of 106°, metabolism was increased 70 per cent. Another point of importance was the discovery by the British Research Department that the wound could be left open under a dressing of 1:5000 flavine. This permitted the surgeon to stop at any point at which he found the patient was not enduring the operation well. Lobectomy was performed under analgesia, as the inhalation anesthesia interfered with internal respiration in a patient already suffering from suboxidation. Hypersensitiveness was sufficient to destroy the patient. Complete team work was essential to success in handling these patients. It could be said that the operation was performed by the hospital and not by the surgeon. The differential diagnosis was greatly aided by the Goetsch adrenalin test and basal metabolism determinations. The psychic control of the patient was of the highest importance, as was the preoperative and postoperative care. When there was an excessive postoperative temperature the patient was put in an ice pack. In view of the striking results obtained no case was rejected on account of its gravity.

Dr. DEAN LEWIS of Chicago said that two types of goiter had something in common. Those cases marked by tachycardia without exophthalmos did not differ from ordinary thyreotoxic goiter. The cases of hyperplasia of the thyroid epithelium presented the classical four signs of exophthalmic goiter. Surgeons were apt to want to operate too soon, but these cases had to be nursed along and the exercise of judgment made all the difference between one surgeon's success and another's. The speaker said he did not know what postoperative hyperthyroidism was; he did not think any other surgeon did. He thought Dr. Crile was inclined to attribute too much credit to his staff and too little to his own skill as an operator.

Dr. CHARLES H. MAYO said he felt considerable diffidence in following this galaxy of stars. They did not all agree, yet they often arrived at the same results. He felt that the people of this country had a claim to a birthright of good health, which they might lose through ignorance. A control of the situation would bring the people into their just rights. In regard to goiter, the Surgeon General's report showed that 15 per 1,000 was the rate in the Northern Pacific States. There was almost none in New Hampshire and Vermont. There were perhaps more mistakes in diagnosing exophthalmic goiter than in any other condition. The thyroid was not essential to life, but it was synonymous with making life worth living. The cell changes in the thyroid were due to increases of biochemical products by bacteria coming from different parts of the body and acting on the thyroid. Two-thirds of the cases were simple hyperplastic glands. A second type was caused by areas of degeneration throughout the gland. A hyperplastic gland sometimes went with myxedema—a sort of burned-out condition. Thyroid substance working with adrenin controlled the cell metabolism. In hyperthyroidism there was a burning of fats, a rapid oxidation, and these people literally destroyed their own cells. The thyroid gland bore relation to the elimination of nitrogen. Retention of nitrogen led to tetany. Creatin and creatinin had almost the same chemical constitution as the thyroid secretion. There was, however, no positive determining factor to tell what was the controlling influence in thyroid action.

Third Day—Wednesday, October 22.

Stiff and Flail Joints.—Sir ROBERT JONES of Liverpool delivered this address, in which he stated that one of the common products of the results of war injuries was the flail joint. The greater number of these disabilities were the direct results of excisions deliberately performed at casual clearing stations or base hospitals. They were performed in order to save the limb from amputation or the patient from death, by minimizing local sepsis and preventing general sepsis. Cases of so-called limited section had resulted in better function than was obtained in those in which the excision had been extensive. Moreover, cases in which

sepsis had been overcome and bones allowed to remain in position had resulted sometimes in a very good firm ankylosis with excellent function if the position of election had been maintained. There was no reason why any joint should be allowed to heal at functional disadvantage. A flail joint might follow as the direct result of excision following the removal by the surgeon of large comminuted pieces of bone, the direct loss of bone from missiles, and the extrusion of necrosed bone during sepsis. The extension applied should be very moderate and of short duration. In the treatment, ankylosis should be aimed at rather than mobility. In limiting the extent of excision muscular attachments should be preserved. The fact that they aimed at ankylosis did not mean that they attained it, but the effort left the best possible results for reconstruction. The rule should be that, as soon as the surgeon could do so, he should place the bones as nearly together as he could and in the best position for future functioning, whether a pseudoarthrosis or an ankylosis occurred. The author described in detail typical procedures to be employed in the treatment of various joints. He considered bone grafting as generally understood of very limited application in injuries of the upper part of the shaft of the femur. Ankylosis in the case of limited excision of the hip was of no advantage and certainly did not justify the severe operation which it would necessarily entail. The only practical cure of a flail knee was ankylosis and if the bones were in good position nothing was needed but to saw the ends and fix them with screw or nail. Where there was a wide separation associated with sinuses it was necessary, after sawing the ends of the bone, to bring a bulky sliding graft from the tibia or femur and wedge it in at right angles to the line of the joint. A flail ankle was so rare that he could not recall an instance of it as a result of a war wound. Many operations for fixing the shoulder had failed because the surgeon had been content to bare the glenoid and freshen the humerus. This was quite insufficient. It was extremely important before the arm was ankylosed to ascertain whether the scapula was mobile and whether it retained its normal position in regard to the humerus. If the scapula was fixed and the arm abducted the result was a tragedy, for the patient would have a fixed abducted shoulder with an arm that he could not lower. In the elbow, if the bones were pointed and distant, nonoperative treatment could not be successful even with good muscular control. Operation must be designed whereby large apposition of raw bone surfaces was secured. The principle for operation was to freshen the bone ends, split them without detaching the fragments, enlarge the area of bone apposition, and firmly immobilize. The attempt should never be made to stabilize a flail joint and permit of voluntary movement unless there was sound muscular control. War had taught us to discard methods of force in favor of persuasive and gentle methods. In closing, he paid a tribute to the young surgeon who had left an indelible impression upon the evolution of surgery. He felt that these younger men should be given more liberty of action, that the older surgeon should make more use of them, and that they should be given larger opportunities to be useful. It was a tragedy to see men of thirty or forty years of age forced to content themselves with the crumbs that fell from the table of Dives. They should be offered the hand of friendship even when they criticised and sought to improve upon our methods.

Dr. JOSEPH A. BLAKE of New York expressed his deep appreciation of the masterly presentation of this subject upon which there was no one better informed than Sir Robert Jones. He also voiced the gratitude of American surgeons for the assistance so generously extended them by the British surgeons which had resulted in saving the lives of many American soldiers. He had nothing in the way of criticism or addition to the subject presented. In his opinion the question of stiff and flail joints should be considered, first, from the standpoint of prevention and, second, from the standpoint of treatment. If the treatment of the articulations was properly carried out a stiff joint rarely occurred unless there was disease, and consequently the preventive treatment was extremely important. If one wished to conserve the motion of a joint he should never allow it to be lost. This meant motion from the time of the injury, not several times a day, but by an arrangement whereby unconscious movement might be made at any time. It was desirable that the patient should make the motions himself, since active motion not only maintained the functions of the muscles but made new bone conform to the architecture of the joint. Not only did active motion prevent deformity, but it favored healing by improving the nourishment of the parts. The reconstruction of muscles was possible only in the hands of a man who understood the technique thoroughly and also understood the after-treatment. It had been impossible to make this treatment general because there were not the men to carry it out. In a joint already stiffened one was confronted with the alternative of permanent ankylosis or a return to motion by proper treatment. In the first class, one must consider whether motion was more valuable than a possible loss of stability. He had great faith in active motion by the patient himself under proper instruction and guidance, but active motion should never be carried out to the point of traumatism. The practice of breaking up a stiff joint under an anesthetic was utterly and absolutely reprehensible and should never be done. Traumatism thus inflicted not only caused suffering but, worse, necessitated repair, and consequently additional ankylosis. It was surprising how little force disrupted a bone in which rarefaction had taken place as the result of disuse.

Dr. JOHN L. PORTER of Chicago said he was very glad to hear the frequent use of the word ankylosis in the presentation this evening. In his work at Base Hospital 46 he had dealt with a number of cases of flail shoulder and flail elbows, cases in which the articular ends of the bones had been shot away, the wounds had become infected, and scar tissue had formed in the gaps. They had devised a special wire splint for the treatment of these cases, because it was evident that flail joints were produced by the action of gravity in a joint in which the bones were not sufficiently well approximated. With this splint they had been able to hold the bones at the shoulder and elbow together and to secure sufficient fixation, though not ankylosis, to make the joint useful. When healing was complete active and passive motion was instituted. A flail shoulder was caused by the fact that the humerus had lost its fulcrum, and a flail elbow by the fact that the ulna had lost its fulcrum. There were numerous devices for splinting that would supply a fulcrum for flail elbows. While they were justified in trying to secure some mobility in the upper extremity, the chief consideration was stability. Since stiff joints were of as much interest as flail joints and much more frequent, he wished to say a word about them. During the last decade various operations had been devised, known as arthroplasties, all of which had as their object the keeping of denuded joint surfaces apart and permitting motion. In the beginning they interposed autogenous flaps of fat and all sorts of tissues that would permit of motion. It seemed that they were in danger of losing sight of the fact that stability must be preserved if the joint was to be useful. The results of such operations on the knee-joint were as a rule disappointing as they left the patient with neither a flail nor a stable joint, and often with 35 degrees of motion instead of 90 degrees. With such a knee a man could not go up and down stairs. He felt that he would rather have a stiff knee fixed at an angle of 10 degrees than an unstable joint. A stiff shoulder was very disabling if it was fixed close to the body, but if the arm was in the position of election, a slight abduction, one could get along quite comfortably. In reply to the question as to whether they had accomplished anything worth while, it might be said that they had learned that more stiff joints could be mobilized than formerly because they had seen some good results. They had already seen very excellent results in the smaller, non-weight-bearing joints. They had learned that they should not transplant an inelastic tissue on to a synovial surface. They had learned that supposedly absorbable substances did not absorb and that a foreign body introduced into a joint was always a foreign body and interfered with mobility. If they were going to get anywhere their mechanical shortcomings and surgical enthusiasm must

be counterbalanced by a fair amount of common sense.

Dr. JOEL GOLDTHWAIT of Boston, in offering tribute to the British delegates, said that the fact that in our army there were only 4,000 cases of amputation was due to the established methods of handling the wounded taken largely from England, for which Sir Anthony Bowlby was responsible. Then in the treatment after the first line work we had followed almost absolutely the methods laid down by Sir Robert Jones. In May, 1917, when the request came for 20 orthopedic surgeons to assist Sir Robert Jones, these were sent and others followed, until we had nearly 100 men being gradually trained in correct methods of orthopedic surgery who were ready for our service when we needed them. These men had been trained in the preservation of function, and as a result over 400 young surgeons had come back to this country trained as nothing else could have trained them. A flail joint was something one rarely saw in civil life, but stiff joints were quite common. There had been a decrease in the number of operations on stiff joints. It was a simple matter to mobilize a stiff joint, but the procedure should be designed with the idea of getting as useful a limb as possible. The shoulder in the proper position was much better stiff than flail. A flail elbow was better than a stiff joint. The knee-joint should never be mobilized when once it was completely ankylosed. The hip-joint was fairly easy to mobilize, and many times the patient was better off if this joint was mobile. Fingers were very easy to mobilize. The question to be taken into consideration in deciding whether to mobilize a joint was whether it was going to put the patient in a position where he would be able to earn his livelihood.

Sir ANTHONY BOWLBY said that the first time they had come into contact with the American surgeons was when the British had urgently requested their help. That was at the time when they had decided that many more operations should be done at the front and the question was to find surgeons to do them. Their casualty clearing stations had but six surgeons per thousand men, whereas the Americans provided seven surgeons. At that time the British were working with an average of two and a half surgeons per thousand men. It was only by changing the men from one part of the front to another that they had been able to keep pace with the wounded. The wounded during the battle of Paschendale numbered 196,000 and during that fight they had under anesthesia 60,500 wounded soldiers. At a later period they operated on a corresponding scale, caring for 311,000 wounded men during three months. The number of limbs and lives saved by early splinting could not be exaggerated.

The Physician and Surgeon in the Industrial Era.—Dr. OTTO P. GRIER of Cincinnati read this paper. In introducing his subject, he said that two outstanding problems presented themselves for solution. First, how might permanent international peace be secured, and, second, how might national peace be brought about? Permanent international peace could not come unless there was peace among those who made up this nation. We could not have permanent peace within the nation if the majority of people were badly or unjustly dealt with, and were suffering want, for this interfered with production and the government became unstable. This was not only an industrial era but an era of the greatest industrial strife. Labor was organized. This was the day of group actions and the medical profession must readjust itself in accordance with the group idea. Was it right that the physician who had a close view of the living and thinking of the people should play so small a part in their lives? Were they doing all they could to bring about the health and sanity that were basic at all times to the national welfare? It had occurred to labor to seek compensation for loss of time and wages through illness ahead of the medical and surgical professions, with the result that workmen's compensation laws and group insurance schemes were being promoted without seeking the guidance of those best fitted to inspire and direct such undertakings. As a consequence of neglect to take cognizance of these things on the part of the leaders of the profession they had the general practitioner tinkering with industrial injuries with the result that disability was prolonged and there was a greater loss of time and wages to the workman, a loss in time and money to the employer, and to society a greater burden. Was it not the surgeon's responsibility to get the injured man under the care of the best trained surgeons in the profession? To their failure to keep abreast of the times in these matters might be attributed in a large measure the fact that in President Wilson's Industrial Conference the medical and surgical profession had no representatives. If the profession did not awaken from its social or rather unsocial, torpor legislation would be passed to please labor or capital but would have no consideration for the interests of the profession. Did these facts suggest why they had not been successful in their demand for a Federal Department of Health? The autocratic employer of yesterday was more than matched by the employee of to-day. Was the medical profession not the latent force which if properly applied would do much to lessen the strife and narrow the gulf between capital and labor by humanizing industry? If there was such an opportunity for human service should they not fit themselves to meet it? Their usefulness in the discussion of social problems had not thus far been noteworthy. However, during the past decade there had been developed in response to the demand of industry the industrial physician who was desperately trying to cope with the industrial problems and the surgical problems which were quite different from the problems the physician met ordinarily. He must be familiar with all the factors which affected the health of the employee, with the sanitation of the factory and the workingman's home, his food and his habits, with occupational diseases, with the effects of fatigue and long working hours, and he must know to what extent the laborer's soreness of mind was the result of long hours and the monotony of his work. The medical profession must square itself with the new social era. To enable it to do this provision should be made for the special training of physicians and surgeons through the establishment of university departments, post-graduate courses, and endowed research institutes. The industrial physician must be attentive to the rising standards of medicine, for he was the moulder of opinion in behalf of preventive medicine.

Dr. JOHN J. MOOREHEAD of New York said the facts and figures given by the previous speaker emphasized the medical and surgical problems incident to industry in these after-the-war days. War was and always had been a waste in things human and material. The human salvage organization represented by the medical corps of our army did an enormous work during our period of conflict, a work in which the membership of this congress was well and creditably represented abroad and at home. Those of them who had been in the war had learned in a hard school to centralize their efforts and to appreciate the effect of directed effort, of effort focused upon one problem, and that problem was human salvage. And now, a year after the actual conflict had ended, a new problem awaited us, another salvage problem, the reclaiming of those laid low by industrial warfare. Our attention even before the war was being directed to this problem, we were awakening to the necessity for better care of the injured, to the prevention and cure of occupational disease, to the many phases of sanitation in the workshop and more especially in the homes. It needed no argument to convince us that thus far only desultory attention had been given to the care of the injured, to those problems of traumatic surgery which caused so much disability, which produced often a state of crippling that was a reproach to modern surgery. With a profession aroused to a high pitch of enthusiasm by their success in caring for the war wounded was it too much to expect that the surgical and medical lessons of the war could be carried to an equal grade of care for those injured in peace times? The problem was largely one of education, of direction given primarily in the medical college, transmitted by the visiting staff to the hospital interne, made the subject of clinical demonstration at surgical meetings. Several of the colleges had already inaugurated special courses in these branches—Johns Hopkins, Harvard, University of Michigan, Cincinnati University, and others. In this city Columbia University was undertaking a similar project. The medical student of the future was sure

to be better posted than those of the past generation in the care of the injured. The time had gone by when a visiting surgeon could delegate the care of the fractures in his service to his junior, who in turn passed them to the house surgeon, who in turn passed them to his junior. We should recognize that traumatic surgery was, in the mass, major surgery, not minor surgery; that the care of an infected hand or a fractured ankle required at least as much surgical skill and judgment as the care of an internal appendix or a hernia. We should take advantage of the great mass of information at our disposal respecting the after-care of the injured, the newer methods for shortening disability, for preventing deformity, for reducing the numbers of the crippled. We should realize that this was a problem on the road to becoming a specialty, one demanding a training and experience that made of its possessor a teacher, a leader. The other problems of pathological surgery had been mastered by a similar concentration of effort; this problem would yield to a similar process. One concrete suggestion offered was that this congress establish a counterpart of the Inter-allied Surgical Conference, that great group of surgical and medical minds that met in Paris every two months and standardized the proved methods of treatment based on enormous experience. Their expressions of opinion became virtually an authoritative textbook. When they had a bureau of standards of this sort, made up from the membership of this congress, they would have placed this problem in an advanced position, and would have a consensus of opinion the best obtainable, they would have made a real progress, and would have solved one of the most important problems now confronting a reunited profession intent on carrying that spirit of service displayed in war into this after-the-war period. Educational leadership was all that was needed to make of this duty an accomplishment; of this opportunity, an acceptance; of this reproach, a credit; of this menace, a success; of the cripple, a restoration. Preventive medicine had no greater goal, surgery no better prospect.

Dr. William O'Neill Sherman of Pittsburgh said it was only within the last decade that mechanics, chemistry, and engineering had made it imperative that medical men readjust themselves. The psychological time had arrived for scientific medicine and surgery to take its place in industry. The human factor was the greatest asset in industry if properly conserved and directed. There were at least 500,000 industrial accidents in the United States annually and 90 per cent. of employees needed medical or surgical care in the course of the year. The vast majority of the injuries were minor wounds that might easily be converted into serious wounds if not intelligently cared for. Industrial accidents were responsible for the loss of many millions of dollars yearly. This frightful loss could be greatly diminished by applying military surgery to industry. The problems of military and industrial surgery were similar. The average practitioner was ignorant so far as training for military service was concerned and the same was true in regard to his training for industrial surgery and industrial hygiene. Men trained for this work might be secured through the establishment of courses of military and industrial surgery, medicine, and hygiene in all medical colleges, and by endowed research institutions in industrial surgery and hygiene with provision for postgraduate work in these branches. Harvard had established the first school in industrial medicine and surgery.

Dr. Jonathan M. Wainwright of Scranton, Pa., said it did not matter just how large or small the casualty list was; it was large enough to demand the most careful attention. Much might be done in the way of reconstruction. Here all the methods of physiotherapy were applied. If the question were asked as to which was more important the dispensary or the operating room, he would say the dispensary, for it served more patients than the wards of the hospital or the operating room, yet the consultant seldom went into the dispensary. He spent his morning in the operating room and when he had finished the major operations said, "That is all except a few minor cases which the house surgeon will attend to." Perhaps among these minor cases was one of a palmar abscess, and this required more care and judgment in making the incision than an appendectomy. Perhaps the man with the palmar abscess was an engineer, a useful man with his life before him, and it was more important that he be properly treated than that the old lady with a cancer of the breast who was already a burden to herself and society should be properly cared for. The hospital should offer the greatest good to the greatest number; the dispensary was economically and industrially more important than the hospital and should be provided with the best trained talent. We should ask ourselves whether the thousands of injured people were getting all they deserved. Was the community doing what it should do? Were adequately equipped physiotherapy departments available? Was surgical care available for the patient who could not afford it? Did this representative body owe anything in this connection to the community which it represented?

Mr. R. M. Little of the Safety Institute of America, New York, spoke from the point of view of American industry. He claimed that 700,000 industrial workers in the United States lost more than four weeks' time as the result of accidents annually. There were at least 22,500 industrial deaths annually, and our industries turned out each year at least 15,000 workmen suffering from permanent disability. The loss of nine days annually by each of 50,000,000 laborers on account of sickness (the estimate of the United States Department of Labor) meant a tremendous industrial and economic loss that ought to be brought to the attention of the American College of Surgeons. Industry was responsible for the stability, wealth, credit, and resources of the nation. It was imperative that the knowledge of the surgeon be brought to bear practically upon the problem of the tremendous national loss due to sickness and disability among those engaged in industry for the welfare both of the country and of the world. Every medical school must have soon in operation a chair of industrial medicine and surgery, so that medical students could be trained for this industrial service. If the physician and surgeon were to succeed they must have the industrial point of view. The Museum of Safety had improved conditions and had made excellent progress. Accidents, through their efforts, had been reduced in some plants as much as 80 to 90 per cent. It was perfectly possible for the surgeon to accomplish as great results if he found a way to apply his skill. The physician had always waited for the patient to come to him. Let him carry the message to Garcia. He must go into industry and there have well equipped clinics and hospitals as good as the profession could devise. There was a paramount need in industry for well trained medical and surgical officers. He admired the ethical ideals of the profession, but what it was not possible for them to do individually, could they not do collectively? They could correspond from the office of a secretary with the large industries, chambers of commerce, merchants' associations, and trade bodies, and could convince them of what medicine and surgery could do if its knowledge were applied to the solution of industrial problems. The reduction of accidents and the loss of time through sickness were necessary for a full productive life. At present the country was not producing within 50 per cent. of what it should be producing and for this reason as well as for many others this organization should lend its help.

The Standardization of Hospitals.—Dr. John G. Bowman of Chicago, chairman of the Committee on Hospital Standardization, outlined the following minimum standard which the American College of Surgeons asked hospitals to put into effect: "(1) That membership upon the staff be restricted to physicians and surgeons who are (*a*) competent in their respective fields, and (*b*) worthy in character and matters of professional ethics. (2) That the staff hold meetings at least once each month to review and analyze the successes and failures in the treatment of patients. (3) That accurate and complete case records be written for all patients and filed in an accurate manner in the hospital. (4) That clinical laboratory facilities be available for study, diagnosis, and treatment of patients." Such a standard would not only assure proper care and treatment of patients but would put the board of trustees of hospitals in possession of essential information which many such boards did not now receive. Among the 617 general hospitals of more than 100 beds in the

United States and Canada, about 478 could not now present even a fairly complete analysis of their clinical work. It was urged that communities withhold their support, financial and otherwise, from hospitals whose trustees could not inform the community as to the character of treatment received by their patients, such as would be provided by the college's minimum standard. Matters of incompetence should be dealt with in no uncertain manner. The doctor scarcely existed who, if incompetent and his incompetence was brought to his notice at frequent intervals, would not either endeavor promptly to perfect his training or retire from membership on the staff. The same principle was true regarding character and professional ethics.

The Acute Abdomen.—Dr. JOHN B. DEAVER of Philadelphia read this paper, in which he declared that the fact that the acute abdomen was a condition calling for careful judgment and thoughtful consideration was obvious; that it occupied too prominent a place in mortality statistics was unfortunately all too true. It must be admitted that among the reasons for this was the fact that too many untimely and unsuitable operations were performed in the treatment of this serious condition. This was in part due to the want of intimate knowledge of living surgical pathology, in part to too great a reliance on laboratory findings which did not always correspond to the findings at autopsy and *in vivo*, and to the hesitancy to resort to radical measures in the hope that the symptoms might pass away under what was called conservative treatment. The acute abdomen was not, as a rule, the result of virgin pathology. In the majority of cases it was the outcome of a chronic pathological process which had existed for a well marked period of time, and to conditions that should have pointed the way to surgical treatment. Occasionally the acute abdomen resulted from conditions not recognized by even the most astute. These included mesenteric thrombosis; acute obstruction due to intestinal strangulation by an unusual formation, such as a diverticulum; obstruction in an internal fossa, or to hernia through a congenital hole in the mesentery or in the diaphragm. The reduction by taxis of an irreducible hernia should be relegated to the practice of the middle ages. The more common causes of the acute abdomen such as chronic appendicitis, typhoid perforation, chronic salpingitis, ovarian cyst twisted on its pedicle, chronic intestinal obstruction, pelvic lesions, or hernia of long standing, should be recognized if the patient were carefully studied. The foolish belief that chronic ulcer, chronic gallbladder disease, chronic pancreatitis, etc., could be cured by medicine, diet, rest, etc., was a perverted faith that courted disaster. The acute abdominal conditions following surgical procedures were intestinal obstruction, secondary abscess, and peritonitis. After discussing each of these conditions and the difficulty of diagnosing the traumatic acute abdomen, Dr. Deaver said that every abdominal wall which showed a penetrating wound, whatever its location and whatever the agent that inflicted the wound, should be opened. Similarly, severe blows on the abdomen, or a fall on the abdomen, or a crushing between wheels or between cars, should bring to mind the possibility of one of the various subacute injuries that not infrequently occurred. In these cases it was better to open the abdomen on suspicion and find nothing there than to wait for an assured diagnosis and hemorrhage. The earlier the acute abdomen was seen the more confident could one be of the diagnosis, and the earlier suitable treatment was instituted the more favorable would be the prognosis. Of course, suitable treatment meant surgery. There were certain conditions of the abdomen in which surgery was not indicated and it was these that he placed among the "untimely" operations which swelled the mortality lists. Prominent among them were acute dilatation of the stomach, acute postoperative gastric dilatation, acute gastroenteritis simulating appendicitis, conditions operated on too often with fatal results. A more frequent mistake was that of regarding an acute appendicitis with peritoneal irritation as enteritis and deferring operation until too late. Pneumonia and diaphragmatic pleurisy, causing upper abdominal rigidity, had been mistaken for the acute abdomen; operation, and especially anesthesia, was unfavorable in such cases. The gastric crises of tabes had been mistaken for the acute abdomen. The doctor and the laity should know the harmful possibilities of the purgative. The danger of giving morphine before arriving at a diagnosis was, he believed, well understood, and the purge belonged in the same class, but was more deadly than morphine. In obstructive conditions there was never anything gained by delay. In the acute abdomen that was amenable to surgery, early intervention was of course the best procedure. On general principles it might be said that in the presence of the acute abdomen with diffuse peritonitis, in the absence of a reliable history or a reasonably sure diagnosis and of a localized point, it was the part of good judgment to defer operation, treating the patient by strict anatomical and physiological rest. In circumscribed or localized peritonitis, with definite knowledge of the point of origin of the peritoneal inflammation, operation was comparatively, if not entirely safe, with proper technique. The dependable factors for determining for or against operation in this condition were: (1) experience, (2) interpretation of a carefully elicited history, and (3) careful examination. The carefully elicited history was the point around which diagnosis would develop. He did not attach the same importance to the blood count that some surgeons did. In this hackneyed subject much that was important had not been thoroughly standardized. Here was a field of research quite as important and profitable as much that he observed less worthily bearing the name of research.

Dr. J. M. T. FINNEY of Baltimore said that Dr. Deaver had forgotten one important thing and that was that all surgeons were not John Deavers. There were two important things to be borne in mind, one was the diagnosis and the other the treatment. The main question was how to get the diagnosis. He cited several cases in which the symptoms pointed to an acute abdominal condition and the patient was found in the course of twenty-four hours to have measles. These cases served to emphasize the danger of mistaking something else for an abdominal crisis.

Dr. GEORGE E. ARMSTRONG of Montreal spoke of the acute traumatic abdomen and cited cases illustrating the difficulties in diagnosis referred to by the previous speakers. After certain traumatic injuries to the abdomen there was a quiescent period of from twelve to twenty-four hours for the surgeon and the patient to decide what was to be done. In two cases coming under his observation after traumatic injuries, the small intestine had been completely severed and the local reflexes had closed off the ends of the intestine and prevented leakage. The symptoms in these cases were not alarming and the question was what to do. When the acute abdomen was well developed the diagnosis was easy. The symptoms that justified the surgeon in opening the abdomen were: (1) a history of injury of a character that might have caught the intestine between the impinging object and the vertebræ; (2) if that injury was followed by practically complete disability, in the sense of complete disability following the fracture of a limb; (3) if the patient lay in bed practically helpless; (4) if associated with that history and disability there was abdominal tenderness. Under such conditions one might advise opening the abdomen, and, if the circumstances were favorable, as soon as possible. The speaker emphasized the evil of purgatives and said one could easily see their disastrous effect in cases such as those mentioned in which the intestine had been divided and the ends closed by reflex action of the nerves. He also emphasized the inadvisability of giving morphine and stated that rest and application of ice would relieve the suffering. Morphine would relax the local reflexes, and might permit of dangerous leakage. There were cases in which it was well to have the courage to keep cool and to wait when the symptoms were few.

Dr. STUART MCGUIRE of Richmond, Va., said he had tried to find something in the paper to criticise but he approved of everything that Dr. Deaver had written. He thought, however, that some of the principles enunciated needed elaboration or surgeons who did not have Dr. Deaver's skill might perform operations which Dr. Deaver would not approve of in practice. It was necessary to make clear that the acute abdomen was not always surgical and that sometimes when it was surgical it had reached the stage in the

disease when operation would be unwise. The statistics of Dr. Cabot and of others showed the large number of mistaken diagnoses and many unnecessary operations. Such unnecessary operations had been performed in typhoid fever, acidosis, pyelitis, measles, and other diseases. Lead colic had been operated on for gallstones. As to the untimely operation, the question was not as to the necessity for operation but as to the time it should be performed. In the acute abdomen there were three stages, namely, contamination, reaction, and peritonitis. In some cases by postponement of operation and treatment by palliative measures a desperate case became a safe risk. Personally, when he was in doubt he was inclined to wait. A surgeon frequently in operating found old adhesions that showed that possibly at some time the patient might have been considered a suitable subject for operation and yet had survived without it, so that one could not always say that a patient would die unless an operation was performed. It was better to correct a pathological condition when it was found, however, than to wait for an emergency. In conclusion he agreed with the condemnation of the purge, but he thought morphine had not been given all the credit it deserved. It should not be given while the diagnosis was obscure, but when the diagnosis was once made the patient should have the relief from suffering that morphine would afford. He believed in the Fowler, Ochsner, Murphy treatment.

(*To be concluded*)

Therapeutic Hints.

Glycerin Substitute in Cough Mixtures.—J. Lennox recommends the following substitute for glycerin in cough mixtures:

Irish moss	½ ounce
Water	24 ounces

Boil for 15 minutes, strain, make up to 19 ounces by the addition of boiling water, then add one ounce of glucose, mix, and strain. Where a mucilaginous, demulcent ingredient, agreeable to the taste, is desired this will be found to meet the requirements. The liquid keeps for a reasonable length of time.—*The Prescriber.*

Tickling Cough.—A. Kinsey-Morgan has found the following codein prescription of service in allaying the tickling cough which is so often an annoying after-effect of influenza:

℞	Codeinæ	gr. iss
	Acid. citric	gr. ivss
	Syrup. tolut	ʒiv
	Syrup. prun. virgin	ʒiv
	Aquæ	ʒiv

—*The Lancet.*

Eczema Treated by Rectal Saline Injections.—Percy B. Spurgin cites a case of very severe generalized eczema treated by means of rectal injections of saline solution. A simple soap enema was first given, followed by a rectal saline containing sp. vini gallici i oz. This was retained. A slight improvement was noted the next day, the patient sleeping and taking food better than he did before. Two days later there was a noticeable improvement. Saline and brandy were given every other day, after clearing the bowel with soap enema. The patient was apparently past all hope when this form of treatment was commenced, and the really extraordinary change which took place in a few days was deeply interesting and gratifying.—*British Medical Journal.*

Early Basedow's Disease.—W. H. Foreman of Indianapolis cites a case of early Basedow's disease in which the symptom of vomiting brought the patient to the hospital. Treatment was directed against the hyperthyroidism, but it should be remembered that this condition is often superimposed on an unstable nervous system, and, if the cardiospasm has persisted to the point of hyperplasia and hypertrophy of the cardia, frequent and complete dilatation of the cardia are necessary for the relief of the symptoms. Quiet and rest in bed, with plenty of fresh air and a nourishing diet of liquids and soft foods, with frequent feedings and small amounts at a time, are recommended. Bromides to quiet the nervous symptoms, with quinine and hydrobromide and ergotine for the effect upon the thyroid gland, were used with benefit in the case cited. Where the toxicosis affects the accelerators more than the vagus, as in the case reported, digitalis does little good.

The use of quinine and ergotine is empirical, but he has found from clinical experience that these agents are of value in reducing the goiter, and in reducing or modifying the secretion, modifying or relieving the symptoms. He has used to advantage the following thyrotoxic goiter tablets recommended by Crotti:

℞	Sodium arsenate	0.001 gram
	Sodium phosphate	0. 12 gram
	Salol	0. 10 gram
	Sodium bromide	0. 05 gram
	Calcium oxalate	0. 05 gram

In conjunction with these tablets polyglandular tabulets are used to counterbalance disorders in the respective glands. These consist of the following:

Pituitary gland (desiccated)	0.05 gram
Suprarenal gland (desiccated)	0.05 gram
Pancreas (desiccated)	0.05 gram
Corpora lutea (desiccated)	0.05 gram

—*Indianapolis Medical Journal.*

Bitters.—W. A. Bastedo, in discussing the pharmacology of certain drugs used for stomach effects, takes issue with Carlson, who, from certain experimental observations, holds that the whole value of bitters in medicine is mental and that they are in the same class as an inert but widely advertised patent medicine. Bastedo has noted in many cases of achylia gastrica that bitters have the power to create or increase appetite, though having no effect on the gastric secretion. In many persons with subnormal nutrition, as in convalescence from acute illness, a bitter is useful provided that it is taken not more than five to ten minutes before the time for eating. It acts in achylia gastrica as well as in cases with gastric secretion. In subacidity it promotes the secretion of gastric juice. It should be administered in just sufficient dose to give a strong, bitter taste and not in amounts large enough to have a depressant action in the stomach. If the patient is in a state of normal nutrition, but psychically disturbed about eating, it will be useless. If the appetite is already normal this kind of medication may not only fail to increase appetite but may even lessen it. If the stomach and bowels are deranged bitters may nauseate. The effect on the appetite is solely the local one on the taste buds, therefore it cannot be obtained if the bitters are hidden in capsules or coated pills.—*American Journal of the Medical Sciences.*

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Original Articles.

A FURTHER CONTRIBUTION TO THE ETIOLOGY OF THROMBOANGIITIS OBLITERANS.*

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1. *Introduction.*—This paper is devoted to a discussion of the disease to which Buerger has given the name of "Thromboangiitis Obliterans." Buerger considers the disease probably due to an infection and suspects as its primary cause a microbic, toxic or other agent, though, as he stated in 1914, his attempts at detecting it had been futile.

The disease is of such frequent occurrence here in New York that most of the members of the Academy have undoubtedly been brought in touch with it. I personally first operated on such a case some thirty years ago, when the disease was still known as endarteriitis obliterans and by a great variety of other names. The terrible mutilation found in its wake, the constantly increasing number and the great sufferings of the patients induced me to make a special study of this mysterious affliction. For some years now I have examined into the disease clinically and of late I have also looked up the literature on the subject. The result of my investigations is, in agreement with the theory of Buerger and others, the conviction that thromboangiitis obliterans represents a poisoning of the system. I ascribe the disease to tobacco smoke poisoning. Had these patients left tobacco alone, whatever other disease they might have developed, they would surely, I believe, not have contracted thromboangiitis obliterans. I maintain, that symptom complexes, similar to the syndrome found in these cases, if not caused by smoking, are not thromboangiitis obliterans, but some other disease.

The feature of tobacco abuse in the history of these cases has already attracted the attention of many observers. But to my knowledge no one, so far, has undertaken to make the abuse of tobacco primarily responsible for the disease—to trace the development of its symptoms to long-continued, excessive cigarette-smoking. That is what I shall attempt to do in this paper.

2. *The Three Stages of Tobacco-Smoke Poisoning.*—The effect of smoking upon the human system shows three stages:

(*a*) The acute poisoning with its well-known symptoms.

*Read before the New York Academy of Medicine, December 4, 1919.

(*b*) The long period of tolerance, with its many times repeated subacute poisonings, and either no symptoms at all, or only such which yield to abstinence from smoking and do not return when the patient commences again to indulge. For the vast majority of smokers, the intoxication ends here. But, if during this stage the absorption of tobacco-smoke poisons into the system exceeds their elimination from the system, the accumulation eventually causes:

(*c*) The stage of saturation of the system with tobacco-smoke poisons, which is heralded by the more or less sudden onset of serious functional and organic disorders. The symptoms may still yield to abstinence, but are, it seems, no longer cured by it; they reappear upon the slightest indiscretion in smoking, apparently having sunk merely just below the threshold of outward manifestation. Once saturated, the system seems to stay saturated.

3. *Thromboangiitis Obliterans, the Stage of Saturation.*—It is in this saturated condition, I claim, that we usually find our thromboangiitis obliterans patients when we first see them. They are *past* the initial stimulating effect of the poisons and have been under their depressing effect for some time. The interval between successive poisonings has been too short for the eliminating capacity of the glands. A vicious circle has set in of the hypofunction of the poisoned sympathetic nervous system, the weakening thereby of the function of the sympathetically innervated glands (kidneys, intestinal, and salivary glands, and the glands of the air passages) which eliminate the poisons, the consequent accumulation of those poisons in the system, and thereby again, the aggravation of the hypofunction of the sympathetic nerves.

4. *Predisposition.*—But, inasmuch as not all those who abuse tobacco to the same extent as our patients have done, are seized with thromboangiitis obliterans, the disease, I believe, clearly demands for the onset of the vicious circle the presence of an additional factor. I look for it in *a predisposition of the nervous system.* As a matter of fact, all the patients seen seem to be thus predisposed. They all are Russian-Polish Hebrews who have immigrated from, or (exceptionally) whose ancestors immigrated from, a narrow belt stretching from the Baltic to the Black Sea. The centuries of persecution under which generations of these Jews have gone there through life in a more or less constantly hysterical condition have left their imprint upon these people. They are neurasthenics by heredity.

5. *Quantity of Cigarette Smoke Inhaled.*—These Hebrews begin to smoke cigarettes when they are twelve to fourteen years of age, or even earlier. Those born here have more likely than not belonged

to that 25 per cent. of underfed New York school children of Dr. Copeland's statistics, and frequently, no doubt, have stilled with smoking the craving of hunger, the cigarette taking the place of the luncheon. The smoking soon becomes a habit and is continued for ten, twenty, thirty years and more, day after day, the consumption amounting to anywhere from ten to one hundred cigarettes in twenty-four hours. They do not smoke cigars or pipe, nor do they chew. The smoking, of course, is not evenly distributed over the twenty-four hours. The patients are mostly members of labor unions. Deducting eight working hours, one hour for meals and seven to eight hours for sleep, there remain seven to eight hours available for the smoking of, say, on an average, twenty to fifty cigarettes. Assume a cigarette to contain 1, 4 grammes of tobacco; assume 1 gramme of cigarette tobacco to develop 2,000 c.c. of smoke; assume one-third of the cigarette to be thrown away and 20 per cent. of the developed smoke to escape into the air unused. Under these assumptions pass, from the stated average of cigarettes, 36,000 to 75,000 c.c. of smoke through the mouth, or—if he inhales—also through the lung of the smoker, that is, in, say, five hours of actual smoking, 120 to 250 c.c. of smoke per minute, or one quart of smoke every four to eight or nine minutes. This gives an idea of what such smoking amounts to on week days, with an extra orgy on Sundays.

6. *The Poisons Contained in Cigarette-Smoke and Their Absorption.*—The absorption of poisons from that volume of smoke, conservatively figured, is:

(*a*) Of nicotine 20 to 50 milligr. for ordinary smoking, and 80 to 200 milligr. for inhaling, inhaling quadrupling the absorption (20 milligr. of nicotine is a dangerous dose).

(*b*) Of cyanic hydrogen 1 to 6 milligr. (60 milligr. being the fatal dose).

(*c*) Of carbon monoxide from 1 to 6 per cent. of the smoke, or from 360 to 4,500 c.c.

(*d*) Of sulphuretted hydrogen 1 per mille of the smoke, or 36 to 75 c.c.

(*e*) Of pyridine about one-third of the nicotine.

(*f*) Of ammonia 5 times the amount of nicotine (100-250 milligr.).

The absorption of tobacco smoke poisons into the system does not seem to depend so much upon the amount and quality of the tobacco used as upon the manner of using it, the absorption rising from cigar to pipe to cigarette. The reason seems obvious. Cigarette smoking requires more frequent aspirations of air. Of the three, the cigarette has the most quickly progressing and, in that sense, the hottest fire, hence the most intense steam development from the moisture in the tobacco, the most effective dry distillation in the zone adjoining the fire and the greatest volume of smoke reaching the mouth of the smoker from a given weight of tobacco within a given time. All these features seem to be factors influencing the degree of absorption of the smoke poisons in the mouth and in the lung of the smoker.

7. *Intermittent Limping.*—By inflicting the effect of such excessive smoking upon an hereditarily weak nervous system, these people have hanging over them, or are actually seized with, the symptom-complex known as "intermittent limping" (*claudication* in French). In the well-to-do among these Hebrews the disease, as a rule, is arrested at this stage, or can be prevented from going beyond it by rest and conservative treatment. But in those not so favorably situated, those who toil with their hands and feet for a daily wage, in these Hebrews the disease often advances to its final culmination: "*gangrene.*" Viewed from this angle, thromboangiitis obliterans is an occupational disease: long-continued exertion of one and the same group of muscles of the upper or lower extremities eventually induces the onset of local gangrene in the exerted extremity. Numerous instances could be cited confirming this observation.

The intermittent limping of thromboangiitis obliterans is intermittent limping of the extremities. But intermittent limping is by no means confined to the extremities, nor is it confined to thromboangiitis obliterans. Generally speaking, intermittent limping is the interruption of the functioning of organs by reason of the temporary insufficiency of their blood supply, either through a permanent loss of caliber of the artery feeding the organ, or through vasomotor spasms which temporarily reduce the lumen of the artery, or through both. The impaired capacity of the artery is still sufficient for the demands of the organ when at rest, but insufficient to supply the larger blood-volume required by the organ when at work. The consequence of this condition is a characteristic cycle of events in cases in which voluntary muscles are the organs involved: the insufficiency of the artery causes ischemia in the active organ, the ischemia causes pain, the pain enforces the suspension of activity, the enforced rest restores to the organ the sufficiency of the blood supply and therewith brings to an end all the symptoms caused by its preceding insufficiency. Upon renewal of the activity a repetition sets in of the same cycle of events.

In the intermittent limping of thromboangiitis obliterans the site of the affected blood vessels is peripheral; in other similar cases it is probably central, the affected arteries being looked for in the anterior or in the posterior portion of the cord. When the blood vessel lesions are in the cord, the disease is not thromboangiitis obliterans. There is a great similarity of symptoms in a variety of diseases of this kind, and some authors have been so much impressed with it that they have called the spurious (functional) angina pectoris "intermittent limping of the heart," and the intermittent limping of the extremities "peripheral angina." We also read of "intermittent limping of the brain," of "intermittent limping of the intestinal tract," etc.

8. *Probable Causes of the Localization of the Disease in the Extremities.*—These considerations suggest the question: Why, under conditions of tobacco-smoke poisoning, are the lesions located in the extremities, and why are the viscera comparatively immune? In view of the observation that exertion seemingly plays an important rôle in determining the part which is seized by the disturbance in circulation, one of the reasons must apparently be looked for in the fact that the extremities are doing the severer part of the work performed by the body. Another reason may be found in the difference in the anatomical structure of visceral and skeletal

muscles, the former being smooth, the latter striated. Not only is the chemistry of their metabolism and their innervation different, but also the character of their blood supply. The smooth muscles, where they occur, are placed within a large reservoir of blood, from which their comparatively small circulatory requirements are readily covered, while the skeletal muscles have the large blood-volume, which they require, carried to them from a distance and have to rely for its sufficiency on the unimpaired vis-a-tergo of the heart as well as on the proper functioning of the blood vessels. It is here that the tobacco-smoke poisons get in their deleterious work.

9. *Collective Effect of the Various Tobacco-Smoke Poisons Upon the System.*—There is first to be mentioned the joint effect of the several poisons, an effect common to all: they interfere in one way or another with the delivery of oxygen to the tissues; they cause more or less tissue-asphyxia.

When in addition thereto intermittent limping sets in, and, in consequence of the insufficiency of the blood supply in intermittent limping, the delivery of oxygen is still further reduced, the oxygen hunger of the tissues must approach a degree otherwise seen only after death in the final tonic contraction of the muscles, when the circulation has stopped altogether. Most likely there occurs in thromboangiitis obliterans in the living tissue of the active muscles what normally happens only in rigor mortis: so large a production of lactic acid, that the available supply of oxygen in the muscular tissue is insufficient to reoxidize all of it promptly, as it does in the active muscle under physiological conditions. Even were the production of lactic acid to remain normal, there would still be a relative overproduction of it by reason of the diminution of the oxygen supply in intermittent limping; there would even then seem to be more acid than the available oxygen could take care of. Such oxygen deficiency would in either event mean free acid. But as there is no chance for the existence of free acid in the system, two chemical actions probably take place: first, the transformation by lactic acid of the neutral diphosphate of potassium (or sodium) of the muscular tissue into the acid monophosphate of potassium (or sodium); second, the transformation in the metabolism of lactic acid, the mother substance of aldehydes, into aldehydes.

Either of these chemical actions, if they actually thus occurred, would be detrimental to the system. The acidity of the nourishing fluid would probably induce plasma-coagulation in the tissue cells; it certainly would also reduce the normal capacity of these cells for oxidizing dextrose. The unassimilated dextrose would then accumulate in the blood and perhaps thus cause the hyperglycemia which we have shown to exist in thromboangiitis obliterans. On the other hand, aldehydes are known to cause intima proliferation in the arterioles and thickening of their muscularis, the very lesions observed in thromboangiitis obliterans.

The lesions resulting from the causes just mentioned seem to show a predilection for such localities, where the network of the small-sized arteries is densest, the arterial blood pressure lowest, and the changes of blood pressure by change of posture greatest: in the tips of the toes and in the tips of the fingers, spots which are also known to be subject to the spastic effect of tobacco-smoke poisons upon the arterioles in acute poisoning. For, although we are dealing with a chronic condition, the acute poisoning also comes into play, because the always renewed excesses in smoking frequently superimpose an acute poisoning upon the saturated system. An aggravated condition of this kind I have seen in a case recently under observation.

The location of the symptoms at the ends of the extremities makes thromboangiitis obliterans appear related to the trophic vasomotor neuroses. All these diseases, such as acroparesthesia, acroasphyxia, erythromelalgia, Raynaud's disease, sclerodactylia, etc., show a predilection for the manifestation of their symptoms at the "acra," viz., the tips of toes and fingers, the point of the nose and of the tongue, the chin, and the ears. The cause of this phenomenon must be looked for in the unequal development of the muscular coat of the smallest and largest arteries, it being greatest in the arterioles, practically nonexistent in the aorta and in the pulmonary artery, with intermediate steps between the extremes, the development decreasing as the arteries grow in diameter. The vasomotor nerves consequently have very little influence upon the largest arteries, great influence upon the arterioles.

10. *Specific Effect Upon the System of the Individual Poisons.*—In addition to the collective effect of all the poisons in combination, each single poison has still its additional specific effect.

A. Nicotine: (a) Specific Effects of Nicotine Upon the Sympathetic Nerves and Their Ganglia.—Nicotine has a selective affinity for sympathetic nerve ganglia, an affinity so pronounced that physiologists determine by means of nicotine whether or not a ganglion belongs to the sympathetic system. Applied in sufficient concentration nicotine interrupts the connection through a sympathetic ganglion of preganglionic with postganglionic nerve fibers by opening the synapse of the ganglion, thus paralyzing it.

As the action of nicotine does not seem to depend on the summation of repeated equal effects, but appears to increase with the concentration of the solution, and as in thromboangiitis obliterans we are dealing with a saturated system, it is my contention that in these patients the *nicotine concentration* is sufficiently great to affect their hereditarily weak sympathetic nervous system and, in the course of time, to put it into hypofunction.

(b) Specific Effect of Nicotine Upon the Adrenals.—Closely related to the sympathetic nerve tissue is the chromaffine* tissue. Both tissues take their origin from the same embryonic cells at a comparatively late stage of fetal development. As a consequence thereof chromaffine cells accompany the sympathetic nerves throughout their extent in accumulations of varying size, so-called paraganglia. The most important of them is the medulla of the adrenal glands. All these paraganglia are supposed to secrete the hormone "adrenalin."

Quantitatively, their secretion is found to depend upon the state of excitation of the sympathetic nerves: when these nerves are in hypofunction—as

*Called chromaffine because of the affinity that this tissue has for chromic acid in microscopic staining.

here assumed for this disease—the adrenals are also in hypofunction.

(*c*) *Indirect Specific Effect of Nicotine Upon the Parathyroids.*—That condition of the adrenals takes us a step further to the parathyroid glands. Experimental proof exists of a probable physiological balance in the blood between the adrenal and parathyroid secretions. As the function of the parathyroids does not seem to depend upon innervation, nerve action as a disturbing effect of the balance, therefore, seems excluded, adrenal hypofunction must be considered equivalent to *relative* parathyroid hyperfunction, though the parathyroids may have remained perfectly normal in every respect, including their function. In other words, the insufficiency of the adrenals becomes apparent as excessive effect of the normal parathyroid secretion; the inhibitory activity of the parathyroids is released, and thereby the functioning of the sympathetic nervous system is further depressed, viz., the adrenal hypofunction aggravated. Here we strike another vicious circle to which the above-mentioned deficient eliminatory function of the kidneys, intestinal, and other glands, which secrete to the surface, may probably be related. The parathyroid glands are supposed to govern the calcium metabolism of the system. It is believed that the calcium content of the blood determines the degree of excitability of the vasomotor apparatus. Consequently, our patients should show vasomotor symptoms. Here again, the theory advanced fits in nicely with our clinical observations. To mention just one, a never-missing symptom: the great pallor of these patients, despite a frequently-found high blood count and a high hemoglobin content of the blood.

The pallor is also otherwise explainable on our theory. Nicotine is known to exert a direct excitation upon the vasomotor center in the medulla oblongata. As in thromboangiitis obliterans, under our assumptions, nicotine is circulating with the blood, the vasomotor center and all the several subcenters—the final ones being probably in the walls of the blood vessels themselves—must be kept in a state of constant excitation which finds expression in vasoconstriction.

(*d*) *Perverse Function of Internal Gland Secretions.*—Experimental proof has been brought which in addition to the presence of hypo- and hyperfunction makes probable the existence of perverse function; that is to say, the normal secretions of healthy internal glands produce the opposite of their physiological effect in diseased or degenerated muscles; *e.g.* in a tobacco-smoke poisoned muscle, or a group of such muscles, the diseased arteries would, under conditions of perverse function, become contracted instead of dilated, whenever that muscle is made to perform work, especially if it is daily exerted and, perhaps, overtaxed. The blood volume reaching the active muscle, instead of being increased, as it should be, would then be decreased below the volume carried to the resting muscle. Such perverse function would go far toward explaining the ischemia of working muscles in thromboangiitis obliterans.

(*e*) *Probable Effect of Nicotine Upon the Pancreas.*—Taking up next the consideration of the effect of nicotine upon the *pancreas*, it can be confidently asserted that, despite the hyperglycemia found by us in every instance, thromboangiitis obliterans patients are not diabetics. They have not got diabetes mellitus; they exhibit neither excessive hunger nor excessive thirst, nor do they ever go into coma, nor is their sugar-tolerance curve of the diabetic type. Nevertheless, the pancreas may be affected in these cases. Experiments are on record in which trophic disturbances of the pancreas were produced by a variety of artificial lesions of the duodenal mucosa. Whether nicotine is an agent capable of doing such damage does, so far, not seem to have been investigated. Apparently the question is answered in the affirmative by at least one case, a recent clinical observation of mine. In a man, thirty-one years of age, with paroxysmal, intense vomiting spells and frequent watery stools, present for over a year, the symptoms could not be traced to any other cause than to chronic nicotine poisoning from excessive cigar-smoking. His blood test showed hyperglycemia, and the sugar-tolerance curve showed diabetic characteristics. The patient was cured by mere abstinence from smoking and no other medication; it was, therefore, a case of non-saturation. The hyperglycemia test was found normal four months later. I venture to construe this interesting observation as a proof that nicotine getting into the stomach and into the duodenum with the saliva is apt to affect the pancreas.

Inasmuch as the pancreas is seemingly a reservoir for potassium, in the sense that the liver is a reservoir for glycogen, the question arises whether under the influence of nicotine the discharge of potassium from this reservoir is of a volume to more than compensate the above mentioned (9) loss of muscular potassium, or whether it just equalizes the loss, or whether it still leaves in the system a deficiency of potassium. Moreover, there is the uncertainty whether lactic acid in the muscular tissue combines with potassium or with sodium. In other words, the question is presented whether the physiologically prevailing potassium-sodium balance of the blood has remained intact, or has been disturbed, and, if the latter, whether the case is one of potassium poisoning or of sodium poisoning.

Observations are found in the literature that in potassium-poisoned dogs the changed chemical composition of the muscular tissue reduces its contractility; the dogs become weak in their hind legs, maintain a sitting posture and tremble when made to stand up. In the light of these facts, might not the quick fatiguing of our patients when walking be explained in part also by a disturbance of the potassium-sodium balance?

I proceeded to investigate this question clinically. In patients whom we treated with duodenal flushing, I added large doses of sodium bicarbonate to the flushing solution; up to 4 ounces of the salt were daily administered for three to four weeks, often up to six weeks. I am not ready, however, to report the results seen. Similarly, iodide of potassium as well as iodide of soda was administered in gradually increasing doses; here, too, results cannot be reported as yet, beyond stating that the pains seemed to yield more readily to the sodium addition than to the potassium addition.

In both instances it may be wise to add atropine and tannin—antidotes of nicotine—to the flushing

solution. Tannin is supposed to reduce the toxic nicotine combinations to harmless salts. Perhaps the addition of a slight dose of phloridzin might also be advisable to break up the imperviousness of the kidneys to sugar, caused by nicotine. Diminution of the hyperglycemia appears desirable, because the circulating excess of dextrose depletes the tissues of fluid and thus increases the viscosity of the blood.

B. Specific Effect of Pyridine.—Of the other poisons contained in tobacco-smoke, pyridine seems to stand next to nicotine in importance. In medium doses it poisons the plasma of the erythrocytes and, by bringing about the separation of the plasma from the stroma, reduces red blood corpuscles to "shadows." Since, as stated, we are dealing in thromboangiitis obliterans with a saturated system, I claim for the pyridine-concentration that it is sufficient to damage the red blood corpuscles as indicated; that lesion would then stimulate the bone marrow to overproduction and furnish a second reason as well for the erythrocytosis already alluded to (10 A. c), as also for the high hemoglobin percentage so frequently observed in patients with thromboangiitis obliterans.

The other reason for bone marrow irritation probably is the tissue asyphxia mentioned above (9); for, the general effect of the oxygen hunger produced by these several poisons is, I presume, more or less the same as that produced by the oxygen hunger occurring through a quick change from low to high altitudes, under which conditions the organism also answers with an increase in the number of erythrocytes and an increase of the hemoglobin content of the individual erythrocyte.

The relationship between the red blood corpuscles and the cells of the endothelial lining of the blood vessels is so intimate that there is no toxic substance known which would damage the one without damaging the other. Hence, it is perhaps permissible to assume that pyridine exerts a deleterious influence also upon the endolethial cells of the arterial intima.

C. The Specific Effects of the Other Poisons Contained in Tobacco-Smoke in Some Volume: Cyanic Hydrogen, Carbon Monoxide, Sulphuretted Hydrogen, and Ammonia.—They are briefly:

(*a*) Cyanic hydrogen (CNH). So small a dose as a 1/20,000 norm. solution of this chemical produces inhibition of oxygenation in the tissue cells.

(*b*) Carbon monoxide (CO). Clinical observations have shown frequently repeated CO poisonings to cause severe alterations of the central nervous system and of the vascular system.

(*c*) Sulphuretted hydrogen (H_2S). In the presence of H_2S the effect of CO upon the blood is intensified.

(*d*) Ammonia. In the metabolism ammonia ordinarily neutralizes acids, but, when introduced into the system in large volume, tends to disturb the physiological sodium-potassium-calcium balance of the blood in favor of calcium. (See 10 A.c.)

11. *Effects of Poisons in General.*—Regarding poisons in general, it has been found that, where the relatively rapid introductin of a poison into the system causes alterations of the media of blood vessels, the same poison, when administered in small doses over long periods of time, produces a pathological condition of the intima of the blood vessels.

12. *Female Immunity.*—If the theory put forth in this paper, viz., the theory that tobacco smoke poisons are the paramount etiological factor in thromboangiitis obliterans, can be upheld, the puzzling mystery of the sex limitation of the disease would have found a very unmysterious explanation: the majority of women do not smoke; at any rate, women do not commit such excesses in smoking as men do.

I thought at one time that menstruation might be responsible for the female immunity; again, that the immunity might be due to the proved antagonism between the male and the female sexual internal secretions. However, I have abandoned these possibilities in favor of the nonsmoking hypothesis.

13. *A Working Hypothesis for Further Discussion.*—I will stop here discussing clinical facts and submitting conjectures for their explanation. The material is so enormous that it is almost more perplexing to determine what to omit than what to report. The ramifications of the subject seem endless. In this brief survey of the whole matter it appeared possible only to land here and there on the summits and throw short glimpses into the valleys. The purpose of my effort is to reveal the vastness of the work still to be done in thromboangiitis obliterans before we can feel that we have touched bottom; also to develop a working hypothesis for that task. This object, I hope, has been accomplished, at least to some extent: for, the theories which I have ventured to submit seem to fit in well with the clinical observations.

14. *Recapitulation.*—If I may briefly recapitulate what has been stated above, I would say:

(1) The characteristics of the patients who are particularly prone to develop thromboangiitis obliterans seem to indicate an hereditarily weak sympathetic nervous system. Hence, the functioning of the eliminating glands (kidneys, etc.), innervated by that nervous system, is probably subnormal.

(2) When the system of such a patient is kept incessantly flooded with tobacco-smoke poisons over long periods of time, the elimination of the poisons by the just mentioned glands is liable to fall behind, and the system will gradually become saturated with the poisons. This is the starting point of the trouble. Vicious circles of various types, a general upset of physiological balances in the blood, tissue asphyxia, etc., are induced, and cause, secondarily, blood vessel lesions which in due course lead to the onset of the symptom-complex known as "intermittant limping" and, under certain conditions, to the culminating development of the disease, "gangrene."

15. *In Conclusion.*—The only real cure for the disease is *prophylaxis.* People so constituted as these Hebrews are *should not smoke.* They should be warned in good season—at home, in school, from the pulpit—of the deleterious effects and serious consequences to them of the excessive use of cigarettes.

Before such a course can show results, many years will have passed by. Meanwhile we shall be called upon to treat these cases. I am strongly of the opinion that, in order to obtain more light upon

the subject, we shall have to break away from the theory expressed in the word "thromboangiitis." I have used the term in this paper in deference to the other participants in the symposium. But the angiitis, like intermittent limping, gangrene, etc., is only *one of the features* of the disease, not the disease itself. The disease proper, in all probability, is of the blood, not of the blood vessels; more precisely, if further investigation should establish as fact the theory here advanced, the disease is caused by the absorbed tobacco-smoke poisons circulating with the blood and in the lymph.

In order to make real progress in the treatment of thromboangiitis obliterans patients, as we meet them in our daily practice, we shall have to concentrate our efforts, it seems to me, upon finding useful antidotes, their proper dosage and the best method of their application. When we have learned how to render harmless in the system, and how to further the elimination from the system, of the several poisons with which these patients seem to be saturated, preventing at the same time by strict injunction against smoking the renewal of *acute* poisonings, we may, I believe, confidently look for results. The treatment of the advanced stage of the disease, with far-reaching gangrene, will, of course, remain operative, as heretofore.

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700 MADISON AVENUE.

SUMMARY OF THE CHEMICAL BLOOD FINDINGS IN THROMBOANGIITIS OBLITERANS.

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SINCE the literature of thromboangiitis obliterans does not record study of the blood chemistry, a series of investigations of purely biochemical nature were initiated to determine: (1) If there were any changes in the chemical composition of the blood, (2) If any test of diagnostic value could be applied in this disease.

Nitrogenous Constituents. The blood of 15 patients was examined for the non-protein nitrogenous constituents. They were found to be within normal limits, thereby ruling out the possibility of retention of any of these waste nitrogenous substances.

Cholesterol. The cholesterol content of the blood serum was within normal limits.

Chlorides. The chloride concentration of the blood plasma did not vary from the normal figures.

Acidosis. No acidosis was demonstrable, the CO_2 combining power of the blood plasma being normal.

Calcium. The calcium content of the blood plasma showed the normal concentration.

Blood Sugar. A few cases in this series showed a high blood sugar concentration, and this observation led to further investigation. Jacobsen and others have shown that the ingestion of large amounts of glucose produces a temporary hyperglycemia, and often glycosuria. Some workers even state that a definite diagnosis of certain metabolic disturbances can be made from a study of the carbohydrate tolerance. Briefly the sugar tolerance test consists of administering a definite amount of glucose on a fasting stomach and determining the concentration of sugar in the blood and urine, at various time intervals thereafter.

Different investigators, using different time intervals, for the collection of specimens, have obtained in the same disease results which do not agree. The sugar tolerance test was applied in over 300 cases and the technic which has been followed in these cases was used in the investigation of thromboangiitis obliterans. In brief the test consists of administering 100 grams of glucose to the patient on the morning of the test, the patient having had no food since the previous evening. The blood and urine are examined for sugar content before, forty-five minutes, and two hours after ingestion of glucose. The normal concentration of blood sugar at the zero hour varies between 60 and 120 mgs. and may be averaged at 100 mgs. per 100 c.c. We have one case which showed an initial blood sugar of 210 mgs. at the zero hour, without glycosuria.

The normal reaction following ingestion of glucose shows a rise of blood sugar to about 150 mgs. at the forty-five minute period, and a return to or about the original concentration at the end of the two-hour period.

McCaskey has shown that three distinct types of reaction are obtained after the ingestion of glucose. In our investigations of some 300 cases we have also obtained these three reactions and have arbitrarily classified them as type I, II, and III.

Type I starts at about normal figure and reaches a figure of about 200 mgs. at the end of the forty-five minute period and is as high or higher at the end of the two-hour period.

Type II has a normal concentration of blood sugar at the zero hour, and attains a concentration between 150 and 180 mgs. at the forty-five minute period and returns to the normal at the end of the second-hour period.

Type III at the zero hour is about the normal or somewhat higher, but falls to a lower figure at the forty-five minute period with a rise at the end of the second hour.

Our original investigation of the first 16 cases of thromboangiitis obliterans was completed before subsequent investigations resulted in finding the three types of sugar reaction just described. At that time we thought there was a hyperglycemia reaction peculiar to thromboangiitis obliterans. The results of further investigation of the sugar tolerance test on 36 verified cases of thromboangiitis obliterans revealed the following:

1. The blood sugar concentration at the zero hour varies between 96 and 210 mgs. with an average of 115 mgs. per 100 c.c., the urine showing no sugar at the zero hour.

2. The blood sugar at the end of the forty-five minute period varied between 106 and 344 mgs., with an average of 179 mgs., and 36 per cent of the cases showed sugar in the urine at the forty-five minute period, of which 23 per cent. had a lower blood sugar concentration than 150 mgs. Six cases had a blood sugar concentration of 180 mgs. or higher without showing sugar in the urine, and 69 per cent showed a concentration of 150 mgs. or more.

3. The blood sugar at the end of the two-hour period varied between 96 and 288 mgs., with an average of 146 mgs. 33 per cent. showed sugar.

4. In 3 cases, or 8 per cent of all the cases, type I reaction was obtained.

5. 92 per cent of the cases gave type II reaction.

6. In none of the cases did type III reaction result.

In contrast, the series of 300 other cases gave 36 per cent. type I, 55 per cent. type II, and 9 per cent. type III.

THE PATHOLOGY OF THROMBOANGIITIS OBLITERANS.*

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NEW YORK.

It was with some reluctance that I accepted the invitation of your Chairman to speak on the pathological aspect of the disease to which I have given the name "thromboangiitis obliterans," for it seemed to me that enough had been said in the past to make this phase of the subject clear. However, I was persuaded to speak in the belief that a graphic review of the histological alterations characteristic of the disease may possibly limit to some extent the promulgation of hypotheses on etiology that are of purely theoretical nature.

I will concede that the exciting etiological factor has not as yet been discovered; nor am I presumptuous enough to suggest that anything more has been done by my own studies than to point out in what direction future researches on etiology should be conducted. My own investigations of the *acute stage* of the disease, thromboangiitis obliterans, warrant me in feeling confident that some specific agent, quite foreign to the many factors, predisposing or otherwise, that have heretofore been held responsible, must be the exciting cause.

I shall point out to you to-night by a series of lantern slides that the disease has two pathological stages that correspond with certain phases of the clinical picture.

*Read before the N. Y. Academy of Medicine, December 4, 1919.

I refer, on the one hand, to the so-called *healed stage* where the thrombotic occlusion of the vessels, both arteries and veins, has given way to organization, canalization, and connective-tissue formation in the occluding clot, with conversion of the arteries by an obliterating process into hard cords; the stage which may correspond with a clinical picture profuse with active symptomatology. For, one must remember, that what is clinically recognized as thromboangiitis obliterans is, as a rule, no longer a syndrome produced by the disease itself, but a combination of subjective and objective phenomena dependent upon impoverished circulation; and that, with all the well-known manifestations, such as intermittent claudication, blanching of the limb on elevation, rubor in the dependent position, trophic disorders, and gangrene well developed, we may still be dealing with arteries that are *healed* so far as the disease thromboangiitis obliterans is concerned.

And, on the other hand, I allude to *the acute stage*, that in which definite evidences of inflammatory processes can be discovered. My histological slides will demonstrate that we are dealing with phenomena that go hand in hand with an active inflammatory invasion of arteries and veins, be they affected in the territory of the superficial vessels or in the territory of the deep: phenomena, that afford the true clue to the investigator for researches on etiology.

When I learn from time to time of the most interesting explanations given by various authors and commentators as to the cause of this malady, I am not a little surprised that individual predisposing factors are dignified by the appellation "Exciting Cause." We have heard much regarding hyperglycemia, or an increased sugar content of the blood, and dyscrasias of endocrine origin, as causative factors; but we must not forget that enough clinical and pathological data are at hand to furnish us with a reliable concept as to what is actually influential in producing changes in the vascular system. By this I mean, that the arteries and veins, *par excellence*, furnish examples of tissue complexes requiring *several factors* for production of pathological alterations. And, strange to say, one or another of these factors (that are merely predisposing agents) are apt to be singled out and heralded as the true cause. When my own pathological studies convinced me that certain specific histological, architectural alterations in the vessels were characteristic of the disease thromboangiitis obliterans, it was not difficult to conclude that a special exciting agent, be it a toxin or organism, must play a rôle here, in addition to the many other conducive circumstances that may play larger or smaller parts. These specific alterations I shall discuss later on, mentioning here only that they occur nowhere else in thrombotic processes and seem to be a pathognomonic for thromboangiitis obliterans, just as the peculiar pathological pictures of tuberculosis are attributable to the tubercle bacillus, and the changes seen in the glands of Hodgkin's disease are doubtless the reactions to special agents.

Reverting to the peculiar reaction of arteries and veins, let me emphasize the fact that more than one factor must be invoked in the case of these peculiar tissue channels. Thus, stasis, locomotion, dependency of the limbs, activity of circulation, vis-a-tergo, tobacco, age, sex, and thermal influences—all these play greater or lesser rôles in determining thrombotic and atheromatous occlusion.

As for tobacco, its influence has been recognized for many years. Erb many years ago in papers written subsequent to his publications on intermittent claudication, attributed extensive atherosclerotic conditions of the lower extremities in the main to the influence of tobacco. Just how far the absorption of tobacco poisons is responsible for the degenerative changes in the arterial walls cannot be determined accurately, but that it may be safely regarded as a predisposing cause, no one will venture to deny. So also in thromboangiitis obliterans, it is possible that the use of tobacco may render the vessels more susceptible to special agents, be they toxic or infectious, but that tobacco is the only and exciting cause is exceedingly doubtful and highly improbable.

Doubtless many of you have seen cases of migrating phlebitis in patients who are heavy smokers, where the territory of the saphenous vein becomes gradually occluded, and where the differential diagnosis between migrating phlebitis of what I term the "bland type" and migrating phlebitis associated with thromboangiitis obliterans must be made. If we exsect a portion of the vein in thrombophlebitis of the *bland type*, we find, it is true, slight changes in the media, but an occlusive thrombus that presents *none* of the characteristic lesions that I shall later describe. In such cases we are dealing with a mere thrombosis, superimposed upon vessels that are damaged by various influences, tobacco or other causes. *In thromboangiitis, however, when migrating phlebitis occurs, certain specific architectural changes can regularly be diagnosticated and found under the microscope.* That something else must call forth or evoke such remarkable architectural complexes seems unquestionably true.

In arteriosclerosis, too, thrombotic lesions occur when the so-called keystone clots close the last remnant of lumen of the partially narrowed vessel. But in this clot the typical lesions of thromboangiitis are absent.

If I were asked to formulate a general concept of thromboangiitis obliterans I should answer as follows: Imagine a patient seeking relief for acutely swollen superficial veins of the lower or upper extremities, of sudden advent, and with all the manifestations of an acute thrombophlebitis. Imagine this process involving a considerable portion of the distal territory of the internal saphenous vein, followed by abatement of symptoms, and consequent resolution or healing. You will be in no doubt as to the general pathology nor as to the clinical course of the condition, though your estimation of the etiology will in most instances, at least, be obscure.

Transfer this picture to the deeper vascular system, over the distribution of the external and internal plantar arteries and veins, the dorsalis pedis, anterior tibial, posterior tibial, and the peroneal arteries and veins, that is, with lesions in territories where objective manifestations are absent—and you will be depicting to yourselves, what corresponds to my own conception of the pathological process in the disease, thromboangiitis obliterans. So here, too, we postulate an acute inflammatory and

thrombotic lesion, but one involving deep arteries or veins, or both, as the initial stage of the pathological anatomy.

Whereas, the patient afflicted with an inflammatory and thrombotic lesion of the superficial veins presents objective signs easy of recognition, the patient suffering from thromboangiitis obliterans in its earlier stages may offer no objective evidences suggestive of the true nature, or of the site of the lesion. It was but in a very few cases of my own series (more than 300) that I felt justified in ascribing certain symptoms to the incipient stage of the disease. Severe, non-localizable shooting pains in the calf or foot, attended with difficulty in walking, or, possibly with tender calf muscles, with or without vasomotor symptoms and coldness in the foot, with or without obliteration of the dorsalis pedis and posterior tibial pulses, may be the only symptoms. It is only when we compare the history with the future clinical course and pathology that we can relegate such indefinite signs to the onset of the affection. In most instances, however, the patient will not seek advice for such initial symptoms, either because they are not sufficiently severe to require the attention of a physician, or because they are incorrectly regarded as rheumatic in origin, possibly due to trauma, cold, the presence of flat or weak foot, or because they are explained on the basis of some other minor ailment.

Strange to say, patients afflicted with thromboangiitis obliterans may present symptoms which differ in no way from those attending the thrombophlebitis of the superficial veins, or so-called migrating phlebitis. These are the cases of thromboangiitis obliterans in which an acute inflammatory thrombosis involves smaller or larger portions of the external or internal saphenous vein, radial, ulnar, median cephalic or median basilic vein. Such cases are the most instructive of all. For they are the ones which afford us material for pathological study. Here the veins are accessible; portions can be surgically removed when the lesions are in the acute inflammatory stage and submitted to histological examination.

While the former type of cases is difficult to diagnose, the variety with concomitant migrating phlebitis can be recognized by a study of the vein lesions under the microscope. If the tissue be examined when the lesions are still in the early inflammatory stage, before organization or healing has taken place, certain characteristic and specific lesions can be identified, changes which I have elsewhere described as pathognomonic for thromboangiitis obliterans.

Having learned that the incipient lesion of thromboangiitis obliterans is an acute inflammatory one, involving the arterial and venous walls, we will expect an occlusive thrombosis as the immediate sequence, and will not be surprised to learn that this stage gradually gives way to one of organization and canalization, resulting in a healed product in which the vessel becomes converted into a cord, more or less adherent to its surroundings, in which even the neighboring nerves may become agglutinated and enveloped in fibrotic vascular cord.

It is the interference with the circulatory conditions of the limbs brought about by the extensive occlusive process that is responsible for most of the clinical manifestations of thromboangiitis obliterans. So that it may be correctly said that patients afflicted with thromboangiitis obliterans do not suffer directly from the disease itself but from the disastrous occlusive thrombosis which signalizes Nature's method of healing a vascular lesion that has long since disappeared.

From a study of the pathological material, and from a comparison of the lesion with the clinical history, we must conclude that insidious or clinically unrecognizable exacerbations of the lesion may occur from time to time, so that the involvement of the vascular territory with the obliterative lesion is a progressive one until the summit of the organized clot reaches the popliteal, in rare cases the femoral or even the iliac arteries. It will not occasion astonishment, therefore, that clinical manifestations, too, become more and more serious as time goes on.

Nor must we be surprised if thromboangiitis obliterans simulates clinical complexes brought about by arterial occlusion from other causes. Differentiation from arteriosclerosis, endarteritic occlusion, and other thrombotic conditions may at times be difficult. It is the fact that thromboangiitis obliterans occurs in *very young individuals* in whom both the vis-a-tergo and the cardiac power are adequate for compensation, and in whom the vascular adaptability is elastic in its scope—it is this fact that accounts for the seemingly almost inexplicable circumstance that gangrene occurs so late, or may be absent, in spite of vast and extensive obliteration of arteries and veins. It is to the development of the collateral circulation, therefore, that we owe, in part at least, the production of a very peculiar, striking, and characteristic clinical picture, recognizable even though manifestations of the acute stage of the disease, or manifestations, such as migrating phlebitis, are absent.

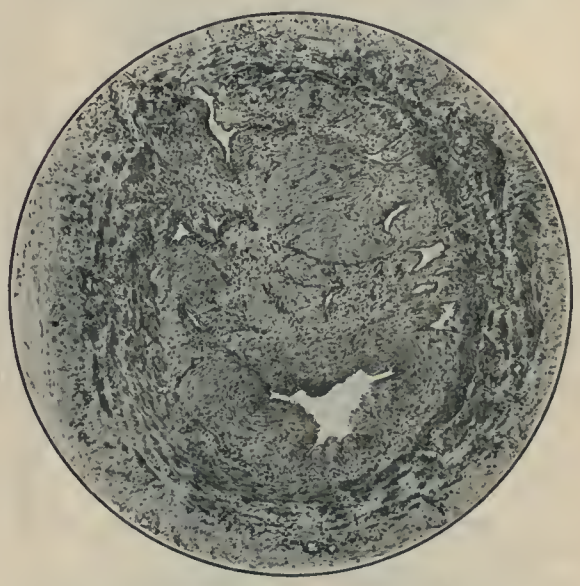

Fig. 1.—"Old" type of occlusion in a deep vein; lumen occupied by vascularized dense connective tissue.

Gross Pathology.—The deep vessels of the amputated legs regularly show an extensive obliteration of the larger arteries and veins. Besides this there are two other lesions which vary greatly in their intensity, namely, the periarteritis and the arterio-

sclerosis. The appearance of the vessels on gross section depends upon the age of the occluding process. Usually the vessel is seen to be filled with a grayish or yellowish mass that can be distinctly differentiated from the annular wall of the vessel,

FIG. 2.—Intermediate stage of organization of occluding clot.

and that appears to be pierced at one or a number of points by an extremely fine opening through which a minute drop of blood can be squeezed (Fig. 1). Such obturating tissue is firm in consistency and does not at all resemble the crescentic or semilunar occluding masses typical of arteriosclerosis. The vessel itself is usually contracted, so that its wall appears somewhat thickened. This picture is characteristic of arteries or veins which are the seat of a very old obliterating process, and is to be found most frequently in the peripheral portions of the vessels, although at times this type of lesion may extend throughout the whole length of the vessel from the dorsalis hallucis into the popliteal.

As we trace certain of the obliterated arteries or veins upward, we are apt to meet with a change in the character of the obturating tissue. Frequently it becomes softer, more brownish in color (Fig. 2), and terminates abruptly in the lumen of an apparently normal vessel. At other times the brownish tissue gives way to soft, reddish masses which are evidently the results of recent thrombosis. In some cases this thrombotic process occupies large portions of the vessel's course; in others it is of short extent and terminates in a long cone of recent thrombus.

The veins share equally with the arteries in the lesion of occlusion. In some cases the veins are more extensively involved than the arteries, and this is particularly true of the collaterals of the posterior tibial, which are often closed when the anterior tibial veins are open. As for the arteries, we usually find an obliteration of a part or of the whole of the anterior tibial; occlusion of the dorsalis pedis, and dorsalis hallucis, of the posterior tibial and plantar vessels, with or without involvement of the peroneal. Sometimes the anterior tibial is practically normal in its upper half or upper two-thirds. More rarely a large portion of the dorsalis pedis is open, with the beginning of the occlusion in the upper part of this vessel or in the lower part of the anterior tibial.

Besides the lesion of occlusion there are two other striking changes, namely, a certain amount of arteriosclerotic thickening and periarteritis. Arteriosclerosis is absent in the younger cases. When present it is never pronounced except in those rare instances in which the patient has suffered from the disease for many years, and has reached the age of forty or more. As a rule, we note but a very slight degree of whitening or thickening of the intima, here and there, in the patent portions of the vessels. In a very few cases small atheromatous patches are present.

A much more interesting and more important change is the fibrotic thickening of tissues immediately about the vessels. Wherever the vessels are occluded there is apt to be an agglutinative process which binds together the artery and its collateral veins, and sometimes also the accompanying nerve, so that liberation of the individual vessels by dissection is difficult. The adhesive condition is due to fibrous tissue growth and varies considerably in its amount. The periarterial fibrosis varies, sometimes being almost absent, at other times so great that isolation of the vessels or nerves becomes impossible and the vascular structures make up one dense rigid cord.

Histopathology.—Let us review the pathological changes in the obliterated vessels in the sequence in which we have met them in the course of our studies, beginning with the most common lesion in the "healed" stage, as it is encountered in the majority of the diseased vessels, removed from an amputated arm or leg.

Such vessels, be they arteries or veins, are filled with connective tissue (Fig. 1) bearing numerous canalizing vessels (Fig. 3), often some pigment of

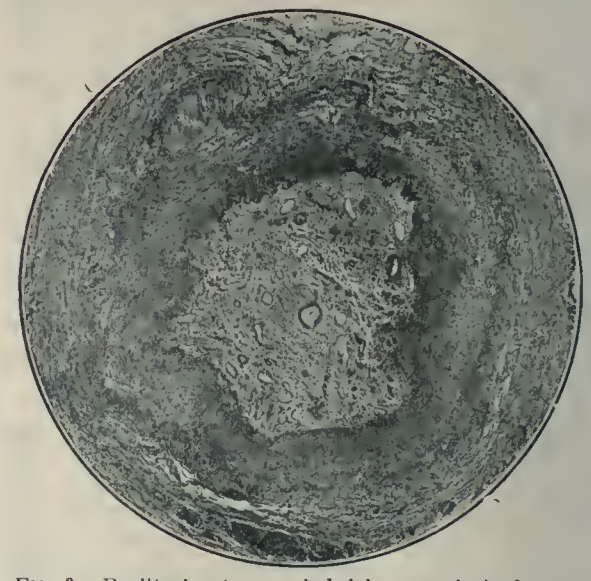

FIG. 3.—Popliteal artery occluded by vascularized connective-tissue pigment, small vessels, and capillaries being features.

blood origin, not infrequently presenting a cribriform appearance in the freshly cut surface of a transverse section (Fig. 4). That the obliterating lesion should have been misinterpreted and regarded as an obliterative endarteritis is not sur-

prising when we look at the pictures afforded by the artery seen in Fig. 5, where a large canalizing vessel simulates a narrowed lumen and crowds the rest of the organized clot to one side. Such a vessel may be seen to divide, if its course be followed

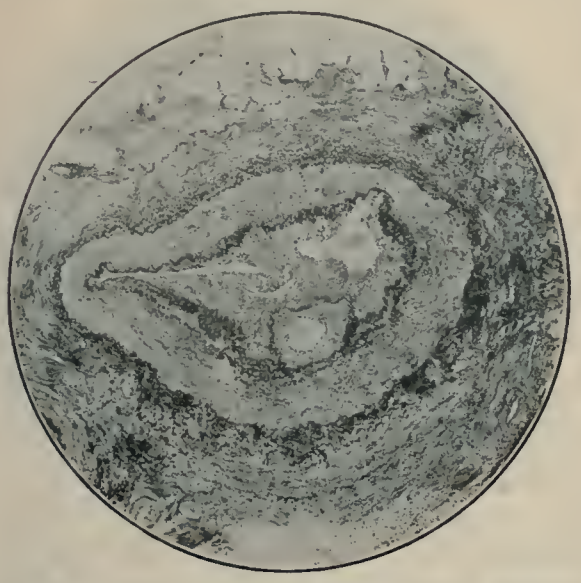

Fig. 4.—"Old" occlusion of the fenestrated or cribriform type; large canalizing vessels in fairly dense connective tissue filling the lumen of an artery.

in serial sections, and the manner of its formation distinctly seen. In Fig. 6, also, there is a vein in which the picture of an endarteritis is mimicked.

All stages of the process, from the finished organized product back to the early thrombotic lesions where arteries and veins are filled with red clot, were studied in the forty amputated legs and two amputated arms. For our purpose here it will suffice to call attention to the earliest or "acute" stage of the disease, as we were able to discover it in the vessels of but two of the forty amputated legs.

In many vessels the wall is diffusely infiltrated with leucocytes, more marked in some places than in others, and the lumen completely occluded by red clot in which certain characteristic foci, elsewhere referred to as "miliary giant-cell foci," make a striking picture (Fig. 7). When these were first encountered in our studies their significance was not understood, except in so far as they seemed unique and specific for thromboangiitis, not having been seen in thrombosis due to other causes.

More recent investigations have clarified our notions, so that to-day a satisfactory explanation can be given for these very peculiar and seemingly "specific" morphological alterations. A change even earlier than this was sometimes found in the deep vessels, namely, foci of pus-cells in the periphery of the red clot, such areas being the precursors of the "miliary giant-cell foci" that resemble miliary tubercles. The suspicion that we were dealing with some specific microbial process was already aroused when the peculiar appearances in deep vessels were noted, not only because such changes had never been seen elsewhere, but also because the typical foci could even be discovered in "daughter" canalizing vessels of arteries that were already in the healing stage. Fig. 8 shows such a specific focus taken from a canalizing vessel that was evidently the seat of an "exacerbation" or "recrudescence" of the disease thromboangiitis obliterans.

Material, however, whose source is confined to amputated members, must needs be difficult to obtain, for seldom will it be our fortune to see the early lesions. Amputation is naturally only considered after the disease has progressed for many months or even years, when the patients are suffering from the mechanical phenomena due to obstructed inadequate vessels rather than from the acute stage of the disease.

It was, therefore, a happy circumstance that the superficial subcutaneous veins of the arms and legs were found to be involved by what has elsewhere been termed an associated migrating phlebitis. From this source we were able to obtain adequate material for the establishment of the facts that the veins under the skin may be the seat of thromboangiitis obliterans; that the acute type of lesion in the superficial veins gives a specific picture similar to that in the deep vessels, and that the development of the lesion in its incipient stages can be studied, enabling us to explain the production of those bizarre appearances heretofore so inexplicable in their nature.

Let us turn to Fig. 9, in which a tributary of the internal saphenous vein presents a purulent focus in a portion of the obturating clot. The rest of the clot is composed of red cells, some white cells, and fibrin already in the process of organization by capillary ingrowth. The purulent focus can be seen to be invaded by leucocytes from the media and adventitia (Fig. 10) and certainly does not represent merely agglutinated leucocytes derived from the intravascular blood.

Such foci vary in size, and it can be definitely established that their growth occurs by virtue of

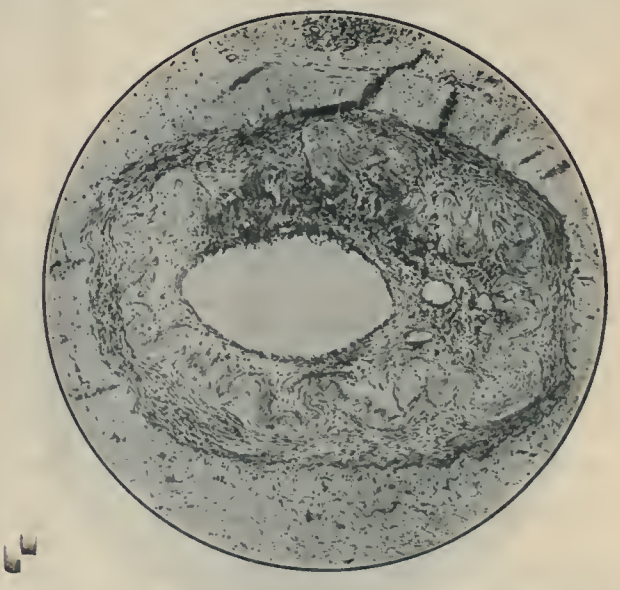

Fig. 5.—"Old" occlusion in artery simulating "endarteritis obliterans"; eccentrically situated large canalizing vessel crowding rest of tissue to one side (to the right in the illustration).

the immigration of leucocytes. Next in the life history of the lesion comes an attempt at healing these suppurative areas, and in this process are found those characteristic and peculiar pictures elsewhere called "miliary giant-cell foci." Evidently

the microbial agent, toxin or whatever it may be, is concentrated especially in these areas.

Here it is instrumental in attracting leucocytes into the formation of miliary abscesses, and it may

Fig. 6.—New lumen found in organized clot in vein simulating endarteritis obliterans (elastic tissue stain).

exert a more protracted force or influence in preventing that orderly and typical organizing process that is so characteristic and so well known. Instead of the rapid ingrowth of angioblasts with the production of young capillary sprouts, the vessel-forming cells (angioblasts) seem to lose their power of purposeful penetration into the suppurative areas—grow wild, as it were, become distorted and atypical, and arrange themselves along the periphery of the foci in the form of cells that we recognize as "endothelioid." Often they can be seen penetrating for a considerable distance into the leucocytic focus—fraying out, never able, at this stage, to produce capillaries. On the other hand, they do frequently terminate in the production of the typical giant-cells. This is the earliest stage in the attempt at organizing or healing these miliary foci.

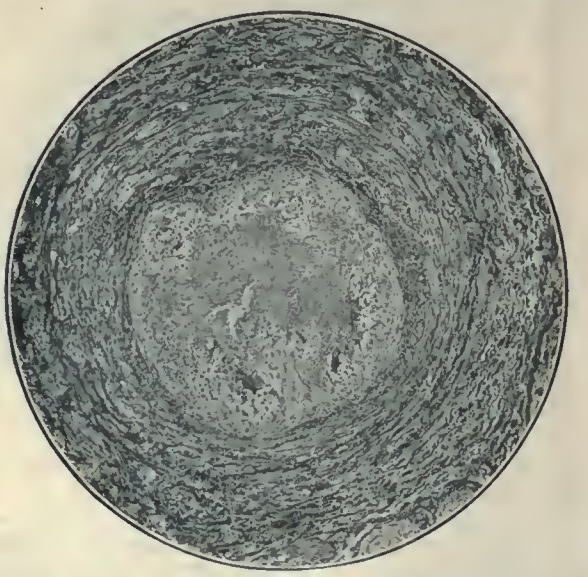

Fig. 7.—Acute, early lesion with "miliary giant-cell foci" in periphery of clot filling lumen of deep vein.

At the same time, the typical successful organizing process may be found going on in other parts of the lumen of a vessel. Thus, in Fig. 9, the crescentic area adjacent to the miliary focus is occupied by red clot and fibrin, successfully and normally organized by angioblasts.

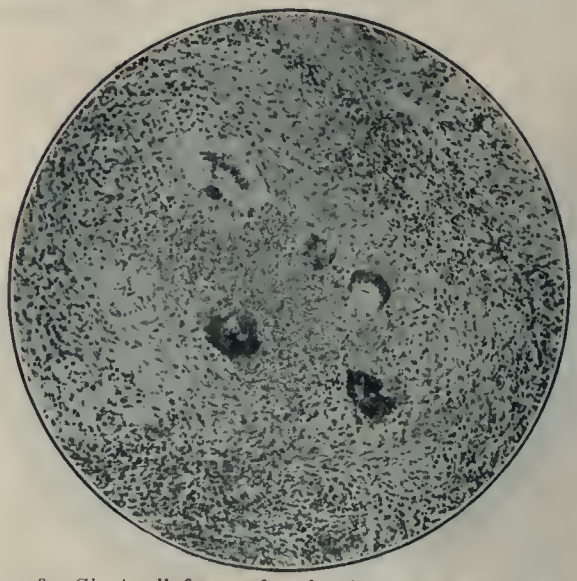

Fig. 8.—Giant-cell focus of a daughter-canalizing vessel in obliterated artery; acute exacerbation in canalizing vessel.

Later, as the giant-cells arrange themselves about the periphery of the focus and penetrate it to a certain extent, the leucocytes disintegrate, and finally a tubercle-like formation (Fig. 11) is the result. The purulent products become absorbed, and the focus becomes converted into connective tissue.

The giant-cells and endothelioid cells are but the expression of abortive attempts on the part of the angioblasts at organizing or healing a focus which is infectious. The true purpose of the vessel-forming cell (angioblast), at times so beautifully illustrated in other parts of the same vessel lumen, is thwarted.

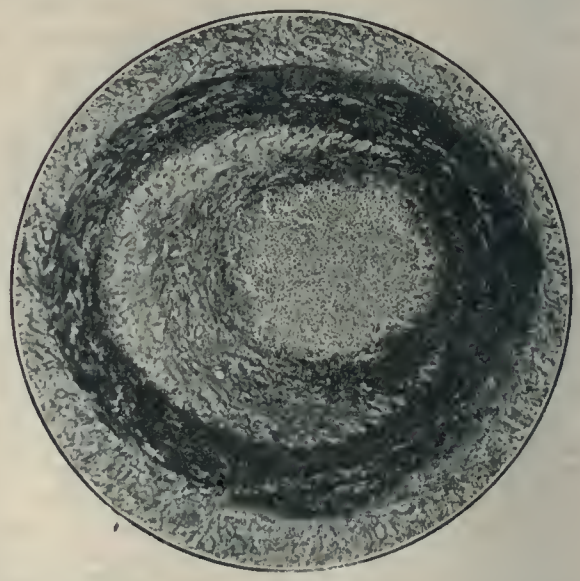

Fig. 9.—Acute lesion in internal saphenous vein; on the right, purulent focus; on the left, remaining crescentic portion of lumen filled with organizing clot.

Later, all vestiges of the acute lesion disappear. The occluding thrombus becomes converted into

vascularized connective tissue. The leucocytes and wandering cells disappear from the media, adventitia, and perivascular connective tissue, an obliterated, canalized, and adherent vessel being left as the final product.

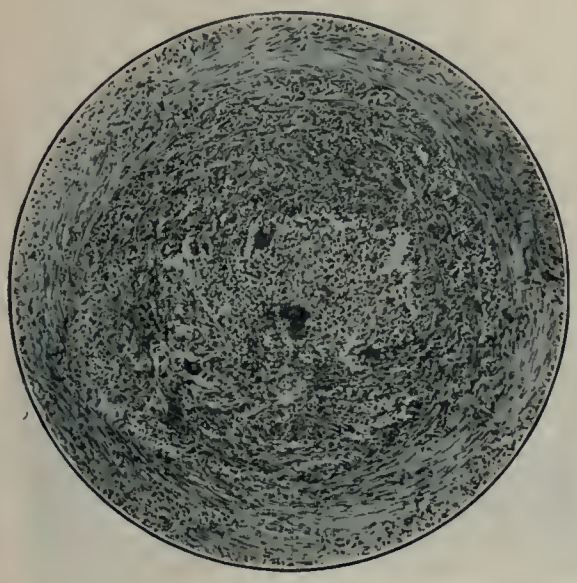

FIG. 10.—Acute lesion in superficial vein; media infiltrated giant-cell focus.

Such, then, are the acute lesions in the veins. They bespeak the presence of a microbial agent that must be sought for in the peculiar characteristic foci previously described. Up to the present time, all our attempts at detecting the causative agent have been futile.

Spirochaetæ, tubercle bacilli, the ordinary pyogenic organisms, have been carefully looked for in cultures, in microscopic sections, and by inoculation methods, without result. However, the search must not be given up, since but relatively little of

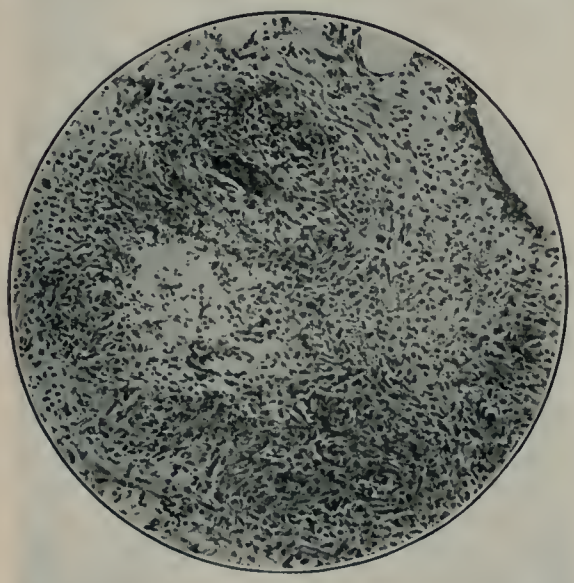

FIG. 11.—Later stage in "acute lesion," simulating miliary tubercle endotheliold cells and giant cells surrounding focus of disintegrating leucocytes.

the "acute" material has as yet been available for study.

Although, in this rapid review of a subject which still presents so many mooted points for investigation, it has been impossible to give all the details which support the theory advanced, it is hoped that a vigorous plea in favor of the correctness of the following points has been made:

First, that thromboangiitis obliterans is a disease in which an acute inflammatory lesion and occlusive thrombosis of arteries and veins are the characteristic lesions.

Second, that from the mechanical point of view and from the standpoint of symptomatology, the thrombotic occlusion is the most important phenomenon.

Third, that the thrombosis is probably preceded, and certainly accompanied by an acute inflammatory or exudative stage.

Fourth, that the lesion involves deep veins in about 40 per cent. and the superficial veins of the upper and lower extremity in 20 per cent., of the cases.

Fifth, that recent investigations of the veins show that the acute lesions in the superficial vessels and the deep vessels are identical.

Sixth, that the histological changes in the veins point to the existence of an infectious process.

Seventh, that we believe that future studies should be directed toward the discovery of the causative agent in specimens cut out from the superficial veins when they are the seat of the acute thrombophlebitis. In this way it is hoped that the etiology of the disease may soon become revealed.

In short, the lesions in thromboangiitis obliterans are in chronological order: (1) an acute inflammatory lesion with occlusive thrombosis, the formation of miliary giant-cell foci; (2) the stage of organization or healing, with the disappearance of the miliary giant-cell foci, the organization and canalization of the clot, the disappearance of the inflammatory products; (3) the development of fibrotic tissue in the adventitia that binds together the artery, vein, and nerves.

1000 PARK AVENUE.

URETERAL KINKS AND THEIR SIGNIFICANCE.

BY F. A. ROBERTS, M.D.

NEWARK, N. J.

MODERATE hydronephrosis is often overlooked. It is usually associated with abnormal mobility of the kidney and consequent kinking or angulation, or, in congenital cases, with the insertion of the ureter at the upper and median border of the kidney, producing a complete or incomplete obstruction to the outflow of urine from the kidney pelvis. In cases where the kinking is in the continuity of the ureter, irritation is produced, with a narrowing, and consequent dilation and back pressure in the kidney pelvis, thereby producing a place of least resistance and invitation to infection with the convertion of a hydronephrosis into a pyonephrosis.

It is a well-known fact that a hydronephrosis may exist a long time before it is recognized. I firmly believe, however, that Nature often holds out her hand, giving us a gentle hint, and we fail to grasp it. Strychnine, belladonna, and arsenic are very poisonous drugs, but before poisoning takes place, symptoms tell us when to stop the administration, and if these symptoms are heeded, fatal poisoning cannot take place. So it is with many

kidney cases; with all the modern urological instruments, functional tests, skiagraphy, and *x*-ray, there should be little chance for mistaken diagnoses. It is true mistakes are made at times, and will continue to be made, but if we use every means at our command, not in a haphazard, but in a systematic way, then we have not committed the sin of omission at least.

Frequency of urination is only a symptom, yet if due to a urethral stricture, I am sure it is not as dangerous as if produced by a tuberculous pyelitis. To tell the patient with frequency of urination that he has a cystitis means nothing—nothing but a haphazard guess by the physician and a dangerous delay for the patient. It is not necessary to give all details in the conditions of frequency—I simply jumped from the penis to the kidney as the two extremes. The intermediate causes are well known to every urologist. Therefore, we must consider frequency in its infancy, if we wish to serve the patient best.

Also, clear urine is no indication that disease is not lurking somewhere in the complex genital apparatus. How many men have been advised to marry (after consulting their physician) on the appearance of a clear and sparkling urine—and with the well-known disastrous consequences? Carefully note all the symptoms, objective and subjective, in every given case. Symptoms are sometimes misleading. Congenital anomalies of the kidney and ureter are more frequent than commonly supposed, as cases illustrated will show.

Lesions in the right lower quadrant of the abdomen sometimes give rise to obscure symptoms, and a differential diagnosis between appendicitis, stone in the ureter, and stricture must be made. An adherent appendix will sometimes cause a ureteritis, and even a pyelitis. A retrocecal appendix with adhesions to the ureter will cause frequency of urination.

Dystopic kidneys are usually congenital and before the use of the shadowgraph-catheter and pyelograph clinical symptoms pointed to some pathological lesions in the abdomen other than the kidney. The shadowgraph-catheter shows an appreciable difference in the length of the ureters. It will also clear up doubtful cases of retroperitoneal conditions. The usual symptoms produced by a misplaced kidney are disturbances of the digestive organs, and during the excursion, the ureter becomes twisted or kinked, severe pain in the kidney due to obstruction (the obstruction in a hydronephrosis may be complete or incomplete), to the flow of urine down the ureter to the bladder and consequent damming of urine in the kidney pelvis, causing a hydronephrosis or, if infection takes place, a pyonephrosis.

Ureteral bends or kinks producing the irregularities of the ureter are a factor in producing not only renal symptoms, but also nephrolithiasis. Hydronephrosis occurs from causes within and without the urogenital apparatus. In early hydronephrosis, cystoscopic examinations do not give a positive diagnosis, nor even suggest one. Pyelography is the only means to that end.

The following are some illustration cases:

Fig. 1.—Skiagraph of ureteral catheter shows a displaced kidney.

Fig. 2.—Showing abnormal attachment of ureter to the renal pelvis.

Case I.—F. A., age 49, single, hotel worker, has complained of pain for 30 years, since an injury to the groin and testicles; the pain is in the right upper and lower quadrant of the abdomen, as well as in the epigastric region; it disappears on eating, and when it is severe this is the only means of relief. He had his appendix

Fig. 3.—Showing a mist in the left ureter.

Fig. 4.—Case III. Ureteral kinks.

removed at a Philadelphia hospital, as he was told he had chronic appendicitis. At time of operation the gall-bladder was examined for gallstones; the lesser and greater curvature of the stomach, as well as the duodenum, for ulcer, with negative results. The operation failed, however, to relieve him of his pain. He now thinks he has a stricture. Added to the above symptoms, he has frequency of urination by day, none at night; the force of the stream is small. Examination shows urine clear, the prostate and vesicles negative, the urethra also negative no residual urine.

Cystoscopy: trigone normal, bladder trabeculated, which made it difficult to find the ureteral openings, the left being no larger than a pin-point. The *x*-ray shows the shadowgraph-catheter deviating from the normal path to the kidney, swerving inward toward the median line, and at the 2d lumbar vertebra takes a right angle turn to the right, then downward. So far, we know we have a dystopic kidney, but the diagnosis is not complete. (See Fig. 1.).

The next picture shows the kidney pelvis injected, giving a clear outline of the kidney pelvis, the major and minor calyces, also the insertion of the ureter at the upper and median border, instead of the normal attachment to the lower and median border. The picture (Fig. 2) shows beginning hydronephrosis.

A double synchronous pyelography was not attempted owing to the fact that the patient stood instrumentation poorly.

Case II.—Mrs. O. B. Pain in bladder since last confinement three years ago. Periodical relief, frequency of urination and attacks of renal colic.

Cystoscopy is negative except for trigonitis. Both ureters catheterized—specimen negative for both the colon bacillus and the tubercle bacillus. The shadowgraph-catheter shows a decided complete twisted left ureter. (See Fig. 3.).

Case III.—J. F., aged 25, single, complains of frequency of urination by day and night. No pain, no blood. Venereal history negative. Prostate and vesicles normal. No stricture. External genitals normal. Prostate and vesicles negative. Urine clear.

Cystoscopy shows the bladder normal except for slight trigonitis; right ureter opening normal; left larger and showing continuous dropping. The ureters were catheterized, but the specimens were negative. The *x*-ray and shadowgraph-catheters shows wrong insertion of the ureters and ureteral kinks. (See Fig. 4.)

30 East Kinney Street.

A NEW METHOD OF PHAGOCYTOSIS TEST, WITH THE BLOOD PLASMA,

A SPECIFIC IMMUNOLOGICAL REACTION

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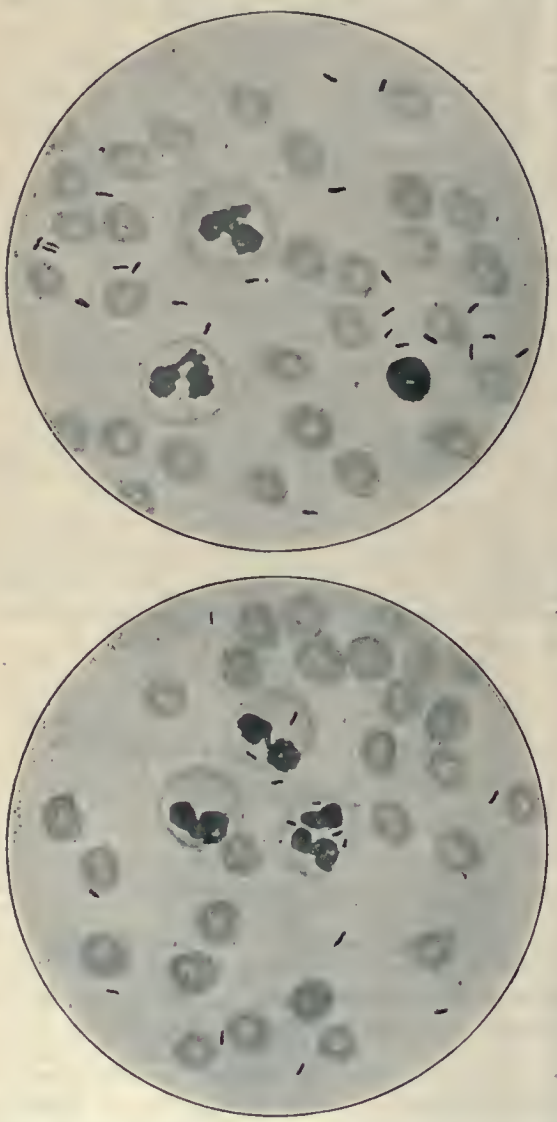
The citrated or oxalated blood plasma of cases infected by a certain species of pathogenic microorganisms has been found to have a remarkably augmented phagocytal power against that particular species of microorganism. This acceleration of phagocytosis may be considered to be one of the immunological reactions, by means of which an early diagnosis of tuberculosis, typhoid fever, and dysentery may be established. The method dealt with herein is by far simpler than Wright's opsonin test. It can be easily applied, therefore, for clinical purposes as well as immunological investigation.

Apparatus and Chemicals.—1. Glassware: Fresh glassware shows an alkaline reaction, which exercises an unfavorable influence on various immunological reactions and it is often the source of an unexpected failure, especially when complements are used. Leucocytes are also influenced by the alkalinity of the glassware; their movements will be considerably impeded by it. All the glassware for the test must, therefore, be thoroughly washed

before use. I wash the glass tubes, of which Wright's capillaries and also his blood collecting tubes are made, by passing the tap-water through them at least for 3 hours. Wright's capillary must not be too thin. It is made most conveniently of a glass tube having a diameter between 5-6 mm. It must be washed with physiological saline immediately before use, and the water must be removed as perfectly as possible, but not necessarily by heating. The blood-collecting tube should be made of a glass tube having a diameter of 4 mm. If it is too fine, the mixing of the blood and the sodium



Phagocytosis after the citrated blood method with the typhoid bacillus. The upper figure shows the result with normal blood (control); the lower figure shows the result with the citrated blood of a typhoid patient.

citrate will not be complete and coagulation of the blood may result. If it is too wide, on the other hand, the measurement of the withdrawn blood becomes very difficult. Finally, a paraffin dish is necessary to mix the materials for the examination in it.

2. Blood Collecting Needle.—The blood collecting needle that is used in our laboratory has a lancet shape. It is covered with a metal sheath and exposed only at the cutting edge. The length of the exposed end can be adjusted by a screw that is attached at the basal end. The edge must be kept sharp. A sharp needle will easily cut open the wall of the capillary blood vessels and facilitate the collection of the blood. If the blood oozes too slowly, coagulation will occur and the material will be unfit for the test. By means of this needle, it is easy to obtain 3.0 c.c. of the blood from the tip of the finger.

3. Hanging Water Bath.—The materials for the test are mixed and then allowed to stand at 37° C., for a certain period of time to allow them to interact. This may be done by putting the vessel in an incubator at 37° C., but a water bath is more suitable for the purpose, as water conveys heat more quickly than air. In my laboratory, a hanging water bath, 1 ft. 2 in. by 4 in. by 5 in. in size, provided with a glass adjuster, is used. But an ordinary water bath may serve the purpose well or even a drinking glass filled with water at 37° C. can be substituted.

4. Sodium Citrate.—The sodium citrate on the market is not pure enough. A preparation having an acid reaction is unfit for the purposes. It can be purified in the following manner: Crystallized citric acid is dissolved in warm distilled water. The solution is neutralized with a 10 per cent. caustic soda solution, and the reaction is tested with litmus paper. Then a small part of the solution is taken, to it is added some phenolphthalein, and it is then boiled a little while. If the solution takes a faint pink color, the neutralization is said to be exact. The neutralized solution is then filtered, put in a porcelain dish, and evaporated on a water bath until crystallization takes place. The solution is then cooled down at room temperature. Absolute alcohol is added in order to facilitate the crystallization. The crystals are then collected on filter paper, washed two or three times with absolute alcohol, and dried in a porcelain dish on a water bath. The crystals of sodium citrate thus purified are pure white, dissolve in water with a neutral reaction, and have a strong power to prevent coagulation of the blood. The container must be kept tightly corked.

Preparation of the Materials for the Test.—1. In the first place the "citrated blood" is prepared. It is a mixture of a 0.1 c.c. of 2 per cent. solution of sodium citrate and 0.2 c.c of the fresh blood. The 2 per cent. solution of sodium citrate is made by dissolving 2.0 gm. of the crystals together with 0.85 gm. of table salt in 100.0 c.c. of distilled water. The solution is divided in test tubes and autoclaved.

To collect the blood, take the blood-collecting tube in the left hand and a 1.0 c.c pipette in the right. Fill the pipette with the citrate solution. Then keep both tubes in a horizontal position while the open ends are kept in contact with each other. 0.3 c.c. of the sodium citrate solution is then made to flow into the tube by elevating a little the open end of the pipette. The level of the sodium citrate solution in the blood-collecting tube is marked with a glass-pencil. Then similarly 0.2 c.c. of the citrate solution in the tube is poured back into the pipette, leaving just 0.1 c.c. behind in the tube.

Then the tip of the finger of the person whose blood is intended to be tested is wiped thoroughly with a piece of cotton soaked with alcohol. The cleansed finger is then pricked by means of the needle above mentioned. If the hand is very cold,

it is better to dip it in warm water before the prick is made in order to get better blood circulation. The oozing blood is sucked up into the blood-collecting tube by means of the capillary attraction from the end, where the citrate solution remains. The blood is sucked up until the contents of the tube just reaches the mark of 0.3 c.c. The collection of the blood must be carried out in as short time as possible, lest coagulation take place during the operation. Squeezing the finger will help the oozing of the blood a great deal. When the required amount of the blood is sucked up, the tube is revolved quickly around its long axis in order to mix thoroughly the blood and the citrate solution. Then the other end of the tube is sealed over the flame. The tube is now cooled as quickly as possible and is shaken just as the thermometer is shaken to get the filament of mercury to settle down. Thus the fluid that has settled down at the sealed end of the tube is completely mixed. Special care should be taken in collecting the blood into the tube, not to allow the citrate solution to get to the opposite end of the tube, for it will interfere with the sucking up of the blood. The tube must, therefore, be held in a nearly horizontal position, but so that the blood-receiving end is somewhat higher than the other. If coagulation occurs in the collecting tube while the blood is being collected, it will be unfit for the test. This is because by coagulation the normal opsonin, which is non-specific, will be set free in the solution, and the results of the test will become unreliable.

2. Blood Plasma.—The blood plasma is obtained from the citrated blood by centrifugalization or simply letting it stand. It can be kept intact in a refrigerator for two weeks.

3. Leucocytes.—In testing the human blood, the above described citrated blood and the leucocytes in it can generally be employed directly as such. But in the test with the plasma against tubercle bacillus or staphylococcus, really normal blood being very difficult to obtain, or in the test for some other special purposes, the leucocytes must be washed in the following method: The blood oozing at the tip of the finger is allowed to drip on the surface of 7.0 c.c. of a 0.7 per cent. sodium citrate solution, which is contained in a centrifugalizing tube. In introducing the blood into the solution, care should be taken not to allow the blood to run down along the wall of the tube, but to fall directly into the solution. The blood and the citrate solution are then well mixed by shaking, the blood corpuscles are separated by centrifugalization, and the supernatant fluid is removed by a capillary pipette. The leucocytes thus obtained are said to be "non-washed leucocytes" for convenience sake. "The washed leucocytes" are obtained by washing them once with physiological saline. These washed leucocytes are employed in the test for opsonin and tropin. The non-washed leucocytes and the washed leucocytes have been found not to be the same in their properties.

4. Bacillary Suspension.—In preparing the bacillary suspension for the test, a strongly virulent strain should be employed. If a less virulent strain of tubercle bacilli, for instance, is used, there will be no difference between the results of phagocytosis in both normal and infected plasma. Again, a weakly virulent strain of typhoid bacilli will be digested by the lecocytes and the counting of the phagocyted bacilli will be made very difficult. With the typhoid group of bacilli, *B. dysenteriæ* and *B. coli*, an 18-hour old agar culture is employed. The strength of the suspension being just 1.0 mgm. of the bacilli suspended in every 1.0 c.c. of a 1.5 per cent. sodium citrate solution prepared with physiological saline.

In the case of tubercle bacilli, the suspension is prepared in the following manner: The bouillon culture of a very strongly virulent strain is employed. The form and the antacid property of the bacilli are first examined. I always employ a strain preserved in our laboratory and known as the Frankfort strain. Smeared preparations are made of its fresh culture and stained with Ziehl's mixture. They are then decolorized with alcohol and hydrochloric acid mixture and restained with a mixture of borax and methylene blue. If there are too many bacilli unstained by this method or if they do not present a good form, they are not good for the purpose. If they are provided with these requirements they are heated at 80° C. for one hour and the bouillon is removed by means of a capillary pipette. To the remaining bacilli, physiological saline is added and the mixture is lightly shaken. The saline solution is again removed by a capillary pipette. The bacilli are then pounded lightly in an agate mortar for ten minutes. Physiological saline is then added and the pounding is continued as before. The ground up mixture is now centrifugalized at 2,000 revolutions per minute for 30 minutes, and the supernatant milky fluid is removed into a test tube with a capillary pipette and diluted with the physiological saline. It is diluted so as to present the same turbidity as the emulsion of *Staphylococcus albus* that is prepared by emulsifying 2.0 mgm. of an 18-hour old culture in 1.0 c.c. of physiological saline. The suspension of tubercle bacilli thus prepared is again diluted with an equal volume of a 3 per cent. sodium citrate solution prepared with physiological saline. The suspension will thus contain 1.0 mgm. of the bacilli in each 1.0 c.c. It contains also 1.5 per cent. sodium citrate and 0.85 per cent. sodium chlorate. The suspension thus prepared is put into a glass tube, hermetically sealed, and heated at 65° C. for 30 minutes. The heating is repeated for 3 succeeding days. It can then be kept intact in a refrigerator for 5 months. The suspension must be tested of its integrity before it is used for the testing of a patient's blood plasma. Before opening the sealed tube, it must be first shaken in order to get a perfectly homogeneous suspension. This can be done most conveniently by quickly rolling the tube between the two palms.

Mixing the Materials for the Test.—I. Citrated Blood Method: For the testing of human blood, this method is most conveniently applied. The materials should be mixed in the following proportions: Citrated blood to be tested, 2 volumes; Bacillary suspension, 1 volume.

To mix these two fluids, take a Wright's capillary and mark a line at a place about 2 cm. distant from the end of the capillary. Fill the capillary with the citrated blood up to the mark, then

allowing a little bubble of air to get into the capillary the same citrated blood is again allowed to rise in the capillary up to the same mark. The end of the capillary is then wiped with a piece of clean gauze and the bacillary suspension is introduced into the capillary up to the same mark. The entire content is now blown out into the paraffin dish, the blowing being made by means of a rubber cap. The fluid is then repeatedly sucked up into the capillary and blown out into the dish to ensure as perfect a mixture as possible. Lastly the entire fluid is sucked up into the capillary, this time the capillary being kept empty up to the mark. Care should be taken in doing this that no air be mingled with the sucked-up fluid. The end of the capillary is then sealed hermetically and put in the water bath at 37° C.

The reason why 2 volumes of the citrated blood is employed in this mixture is that by this the number of leucocytes in the test fluid should be sufficiently great so that the counting of the phagocyted bacilli can be made easier. This method is applicable for the testing of human and horse blood, but not of rabbit and guinea-pig blood. The leucocytes of the latter animals will be destroyed by the treatment. The citrated blood should be mixed with the bacillary emulsion within at least 2 hours after its collection, because the phagocytal power of the leucocytes decreases with standing.

II. Blood-plasma Method.—The blood of a patient having leucopenia, *e. g.* one with typhoid fever, must be tested by this method. It can also be applied when the test is necessarily made after a longer time than the first method requires. Therefore, this method is especially useful for the laboratory test. As is stated above, rabbit's and guinea-pig's blood cannot be tested by the first method, but it can be tested by this method. Moreover, in the former method, the normal leucocytes are necessary for control. Difficulty is met with in carrying out the phagocytal test with the control test, because it would be very difficult to obtain the number, sorts, phagocytal power, etc., of the leucocytes of both the patient and the control under the same conditions. With diluted blood plasma, this method alone is applicable.

With this method, there are two different systems of the test. These differences arise from the use of citrated normal blood and non-washed leucocytes. For convenience sake they are called methods A and B. Method A is applicable when a genuine normal blood is obtainable and when the blood of a typhoid or dysenteric case is to be tested. Method B is employed when a genuine normal blood cannot be obtained and when the blood of a tuberculous case is to be tested. The following shows how these two methods differ from each other:

Method A { Blood plasma to be tested, 1 volume. / Citrated normal blood, 2 volumes. / Bacillary suspension, 1 volume.

Method B { Blood plasma to be tested, 1 volume. / Non-washed leucocytes, 1 volume. / Bacillary suspension, 1 volume.

The control test for each of these two methods is as follows: The blood plasma to be tested is replaced by the same quantity of a 0.7 per cent. sodium citrate solution. The non-washed leucocytes, as they are employed in Method B, may contain some blood plasma, but as it is diluted more than ten times the original concentration and especially as it is diluted less than one half the volume of the suspension, it does not interfere with the results. Indeed, the blood plasma of a tuberculous case has been found to give generally a negative phagocytosis in this dilution. The results of the control examination with Method B have never given more than 10 per cent. of the phagocytal index. When it is sometimes necessary to dilute the blood plasma, this should be with a 0.7 per cent. sodium citrate solution, which is prepared with physiological salt solution. If it is diluted with the physiological saline alone without the citrate, non-specific opsonic action may sometimes be met with.

If we compare the results obtained by the methods I and II, we generally see that the Method I produces more remarkable results than the other. This may be due to the higher concentration of the blood plasma in the material. But it must be owned that sometimes a higher phagocytal index is obtained with Method II than with Method I.

Preparation of the Microscopical Slides.—1. Smearing:—The mixture of the materials to be examined, prepared after the methods described above, is put in the water bath at 37° C. (or in an opsonizer or the like) for a certain period of time. The time varies according to the species of bacteria, for instance, 20 minutes for the tubercle bacillus, 15 minutes for the dysentery bacillus, and 10 minutes for the bacilli of the typhoid group. The last mentioned bacilli are sometimes influenced by the blood plasma and destroyed to a greater or less degree, especially when blood or the blood plasma of a patient is employed. This may be due to the bacteriolysin in it, which is kept active throughout the entire course of the test.

When the capillary has been kept in the water bath for the required length of time, it is taken out and the rubber cap is removed. It is then cut open at the empty end with a file. The contents are emptied into the dish and well mixed and the microscopical slide is prepared. The smear may be prepared on the object glass after Wright's method, but I should prefer the following: Take two cover glasses each held with cover glass pincers. Hold one of the cover glasses with the right hand and put a small drop of the mixed fluid on one corner of it. Then hold the other cover glass with the left hand. Put the right hand cover glass on it, so as to facilitate the distribution of the mixture between these two. Then the right hand cover glass is moved with the pincers. In doing this, both glasses must be kept parallel and no cracking sound should be made, otherwise some of the leucocytes may be destroyed. In order to ensure the even distribution of the leucocytes on the glasses, raise first one then the other glass alternately, at the time burning the glasses so as to ensure a thorough distribution of the fluid on them. By this method, the leucocytes on the glass will be made to stand out separately. This must be done thoroughly, for if there should be an agglomerated mass of the leucocytes on the glass, it would be very difficult to distinguish whether the bacilli are englobed in the leucocytes or not.

2. Fixation and Staining: The fixation and the

staining vary according to the different species of bacilli examined. The following are summarized descriptions of these individual methods:

A. Tubercle Bacillus: The smeared glass is dried in the air and fixed by passing through the flame. It must not, however, be overheated. It is then carefully stained with Ziel's fuchsin and carbolic acid mixture. If during the process of staining the glass is cooled and a precipitate is formed, it must be heated until the fluid becomes again clear. After cooling, the stained fluid is decanted off and the preparation is decolorized. The decanted staining fluid may be conveniently poured over to the next preparation, because it has a stronger staining power than a fresh one. In this way, a series of slides may be stained one after the other and the staining fluid may be economized. For decoloration, absolute alcohol containing a small amount of hydrochloric acid is preferable. This alcoholic decolorizing agent is effective enough to decolorize a thinly smeared preparation and will not destroy the protoplasm of the leucocytes. By this method a beautiful preparation may be made. This decolorizing fluid, by the way, may be also used for the examination of the sputum. It consists of concentrated hydrochloric acid, 2 drops, in absolute alcohol, 100 c.c.

If the smeared preparation is thin enough, it is decolorized in 2 or 3 seconds. If the preparation is allowed to be acted upon too long by this agent, the staining of the protoplasm of the leucocytes will be affected.

Restaining is made with the mixture of methylene blue and borax. The mixture is prepared as follows: Methylene blue, 1.0 gm.; borax, 2.5 gm.; distilled water, 100.0 c.c. The ingredients are thoroughly mixed and dissolved and the mixture is allowed to stand at room temperature for more than 3 months. It will then take on a purplish color, when it is ready for use. Before use, it is diluted 10 to 20 times with distilled water. This fluid may be used in place of Löffler's solution of methylene-blue for bacteriological purposes. For the staining of cells the Löffler solution is even better than the other. Therefore, this may be best employed for the microscopical examination of sputum and pus. It requires only one minute to attain the good result.

B. Dysentery Bacillus: The smear is dried in the air and fixed over the flame. It is then treated with a mixture of absolute alcohol, 10.0 c.c., and 5 per cent. solution of carbolic acid, 90.0 c.c., and heated for several seconds in order to decolorize the hemoglobin. The decolorizing fluid is then decanted off and the alcoholic solution of hydrochloric acid is poured over the preparation. Hemoglobin will be decolorized at once and the smear will become transparent, hardly recognizable to the naked eye. It is then washed with water and stained with the mixture of methylene blue and borax, which is allowed to act for a minute.

If either of the above mentioned decolorizing agents is allowed to act upon the smear too long, the leucocytes and the bacilli will be stained poorly. If properly treated by this method, the erythrocytes are decolorized and the margin of the protoplasm of the leucocytes is clearly shown, so that the calculation will be very easy.

C. Bacilli of the Typhoid Group: These may be stained in the same way as the dysentery bacillus. Owing to the fact, however, that this group of the bacilli is easily affected by the blood plasma and sometimes is hardly stained by the mixture of methylene blue and borax, it would be preferable to employ either Giemsa's or Otani's solution. The fixing is made by immersing the smear for one half-hour in absolute alcohol or for 15 minutes in pure methyl alcohol. It is then put into a well washed Petri dish, which is filled with 15 to 20 c.c. of distilled water containing 15 to 20 drops of Giemsa's solution or Otani's azur-eosin solution. Having been acted upon for 10 minutes, it is taken out of the dish, washed with water, dried, and closed. The optimum staining gives a purplish color to the nuclei of the leucocytes. If this is attained, the protoplasm of the neutral polynuclear leucocytes appears pink, while the bacilli in them take a dark blue color, as appears in the plate. If the staining fluid is allowed to act too long, the granules of the leucocytes will appear clearly, while the bacilli will take a purplish color, and therefore the distinction between the bacilli and the granules will be very difficult. By this method, dysentery bacilli will be shown very beautifully.

V. *Calculation.*—The degree of phagocytosis was formerly determined by calculating the number of the phagocyted bacilli. Further experiments proved that phagocytosis may be estimated more simply and reliably by taking the percentage of the leucocytes that have phagocyted the bacilli than by the previous method of calculation. The calculation is made of the neutrophile leucocytes, large mononuclear leucocytes, and transition cells. When stained by the mixture of methylene blue and borax, the nuclei of the cells take a pale purplish blue color, the protoplasm of the neutrophile leucocytes a pale blue color, and the protoplasm of the eosinophile cells green. In the last-mentioned cells bubble-like granules, which strongly refract light, are often seen. The protoplasm of the lymph cells and mononuclear cells is stained comparatively dark bluish and the bacilli dark blue. Erythrocytes are decolorized by the mixture of alcohol and dilute carbolic acid and by the mixture of hydrochloric acid and alcohol. They are seen as pale white bodies. The staining by Otani's azur-eosin is quite similar to that obtained by the Giemsa solution. It would seem very difficult to ascertain whether the bacilli are really phagocyted by the leucocytes or merely attached to the surface of the leucocytes. In the practical examination, however, no such difficulties will be encountered, as we have repeatedly stated that the blood plasma which has given a negative result with tubercle bacilli, typhoid bacilli, and dysentery bacilli, will always give a negative result, however often we repeat the same test. Sometimes, bacilli are seen to be adherent to the outer surface of the leucocytes, in which case they are excluded from our calculation. In any case, any leucocytes that have been broken up or seem doubtful as to their participation in the phagocytosis should never be taken into calculation. Thus one hundred leucocytes are observed and the phagocytosis is estimated directly by the percentage of the phagocyted leucocytes. The ultimate judgment is given according to the following:

Less than 10 per cent., negative.

More than 11 per cent. and less than 20 per cent., doubtful.

More than 21 per cent. and less than 30 per cent., weakly positive.

More than 31 per cent. and less than 40 per cent., moderately positive.

More than 41 per cent., strongly positive.

Judged by the above standard, phagocytosis of the citrated normal blood plasma will give almost always a negative result with typhoid and dysentery bacilli, and very seldom a doubtful result. On the contrary, the citrated blood plasma of patients having the infection of either of these bacilli, or that of vaccinated persons or of those who have personally suffered from infection with either of these bacilli will give a positive result in the presence of that particular species of bacteria from which they had suffered. Against tubercle bacilli, the citrated normal blood plasma will give sometimes a weakly positive result, in many cases a doubtful result, and in a small number a negative result. These results may be viewed in the light of the fact that there are many apparently healthy persons who have been affected by tubercle bacilli without developing any noteworthy clinical manifestations. Of these apparently healthy persons, those who give a positive von Pirquet reaction show generally a higher degree of phagocytosis. It must be noted, however, that the phagocytosis and von Pirquet tests by no means always run parallel, for those in whom the von Pirquet is weakly positive may show a comparatively negative result in the phagocytosis test. The tuberculous blood plasma gives almost always a moderately or strongly positive phagocytosis and rarely a weakly positive result. On the other hand, the patient who has a negative von Pirquet may give a positive result in the phagocytosis test. Details of the experiments will be dealt with later.

THE CANCER PROBLEM.

A CONTRIBUTION TOWARD ITS SOLUTION.

By ELMER H. KING, M.D.,

PORTLAND, ME.

During many years of pathological work, there has been constantly in my mind a belief that some microorganism would be found to be the cause of cancer.

In 1912, I found an organism not entirely new to me, nor, perhaps, to other observers; but I found it in a new connection. Following this clue, I was able, in the next three years, to observe its complete cycle in the living tissue.

This organism is constantly found in sections of carcinomata, when they are properly prepared; is constantly present in the urine; and, from a lesser number of observations of the blood of cancer patients, appears to be constantly present there. The organism has been recovered from carcinomata in pure culture; has been cultivated upon media in pure culture; and inoculations of this culture into human beings have resulted in tumors, sections of which showed the characteristics of carcinomata. This organism has been recovered in pure culture from the tumors which followed inoculations.

The organism is definitely a fungus, whose morphology, in consequence of its dual sexual-asexual cycle, is extremely varied.

The sexual cycle, observed thus far only in carcinomata, and in the body excreta and blood of those suffering from carcinomata, presents three forms for consideration: First, the sex elements, hereinafter called the gametes; second, the conjugate form, later referred to as zygocyte, resulting from the conjugation of two gametes; and third, the product of development of the zygocyte, the mature segmented spore sac, later called the mother spore.

The gametes are approximately two microns in size. They are nearly spherical and highly refractile. They present a central ruby red pigment spot which, in function, seems to correspond to the nucleus of germ cells. They present also a cytoplasm of green color.

The zygocyte is distinguishable by fusion of the nuclear material of the two gametes within a common cytoplasm, the long axes of the nuclei of the component gametes lying parallel. Later, during the development of the zygocyte there occurs dispersion of the red nuclear material throughout the growing cell.

Segmentation, resulting upon the maturation of the zygocyte yields the mother spore. This cell, before the discharge of the contained gametes, is fairly constant in size. The limits thus far observed are six microns and ten microns. The discharge of the gametes occurs through a trapdoor opening in the enclosing cell membrane of the mother spore. The gametes leave the mother spore under their own power, for they are motile. They lose their motility after conjugation, and very soon, also, if they do not conjugate. Conjugation of gametes within the mother spore sac has not been observed.

The organism, upon media, exhibits purely its asexual cycle. Its growth is accomplished by a process resembling the budding of yeast. There are two forms in this cycle: A spherical body, approximately three microns in size, observed upon media and in carcinomata; and a rod-shaped body approximately one micron by four microns occurring in chains of not more than four individuals, found chiefly in carcinomata.

All forms except the rod-shaped form have been observed intracellular.

763 Congress Street.

Source of African Yellow Fever.—In French West Africa in 1912 cases of yellow fever were imported over the adjacent British frontier, the disease having reappeared in that territory in 1911. The disease spread through Senegal by wagon routes, whereby the offending stegomyias were carried throughout the province. The old view that West Africa is normally infected from the Western Hemisphere was again agitated but not only were there no suspected vessels to accuse but quarantine in the African ports is very strict and leaves nothing to be desired. No passenger landed from an American boat has ever developed the disease at a later period. Dakar, the principal port, was evidently infected from within the colony. The recrudescence of the disease is doubtless due to the fact that immune negro children serve as carriers. In addition these children show morbidity which is in all likelihood due to the yellow fever germ. Negro racial immunity is largely an acquired immunity due to mild infection in childhood.—*Office International d'Hygiène Publique.*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, March 13, 1920.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE NAVY.

WHEN one recalls the marvel of the transport system, by which our fighting forces were landed quickly and safely on allied shores, our wounded brought home with comfort and care never known in the history of the transport of the wounded in war, and our well troops, their work ended, returned to our own shores, one reads with increased pride and interest the statement of the Surgeon General of the United States Navy, in his annual report for the fiscal year 1919, that, "The policy of the bureau has continued to be one of strict attention to its main concern—the health of the Navy and of the several million men of the Army committed to the care of the Navy while on the deep." And in these days of investigations, Congressional and otherwise, when virtually everything and everybody—including the investigators—are being investigated or criticized, it is heartening to read: "Furthermore, this bureau and all its accredited representatives have carefully refrained from any expression of opinion on the performance of duty and the management of affairs outside of its domain where errors of judgment and execution have sometimes led to criticism or comment on matters beyond our control."

The splendid work of the Navy during the turbulent days of demobilization following the armistice is realized when one reads the actual figures involved. The transport service was increased from thirty-eight vessels to approximately one hundred and twenty-nine vessels. Many of these ships were equipped solely for the transportation of healthy troops and were provided with adequate sick bays for that type of personnel, but not infrequently both sick and wounded were received by these troopships. In consequence, the Bureau of Medicine and Surgery found it essential to maintain on board each vessel a medical equipment adequate to meet exceptional demands, so that the total commissioned personnel of the medical corps required for this service was over five hundred men. Their accomplishment is well known by the fact that at the end of the fiscal year, June 30, 1919, 1.235,933 troops had been returned by this service from Europe subsequent to the signing of the armistice. Of this number there were 111,522 transported as sick and wounded of the Army, Navy, and Marine Corps.

In addition to enabling the Navy and the rest of the world to realize just how admirably this department could rise to almost unthinkable emergencies, the war at the same time served in this instance, as in many others, to reveal certain deficiencies. Thus we find an acknowledgment of the fact that the Naval Reserve Force afforded specialists of high attainments in surgery, internal medicine, ophthalmology, otology, and laryngology, and that this served to emphasize the shortage of officers of this type in the Regular Establishment. This commendable frankness should call for the cooperation, on the part of those concerned in an active capacity, in providing the educational program in these specialties which the Surgeon General briefly outlines in his report.

It is impossible here to mention in detail the many interesting phases of the work continued or completed during the period covered by the report, to survey the record of diseases and wounds treated, or to summarize the interesting statistics concerning the individual troopships and their cargoes. The report stands as convincing proof that the Bureau of Medicine and Surgery of the United States Navy continued to give "strict attention to its main concern."

ROCKY MOUNTAIN SPOTTED FEVER.

ROCKY MOUNTAIN spotted fever has probably existed in Idaho and Montana for many years, but it failed to attract much attention until about twenty years ago when Wilson and Chowning decided, after a study of the disease, that it was transmitted by a tick, which was later identified as *Dermacentor venustus*, and found the *"Pyroplasma hominis"* which they believed to be the cause of the disease. Later studies failed to confirm the infection as a pyroplasmosis but Ricketts was able to transmit the disease from man to monkeys and guinea pigs and probably saw the organisms which recently have been thought to have been the exciting cause.

Wolbach has recently published (*Jour. Med. Research*, 1919, xli, 1) the results of an exhaustive study of the condition in all of its phases and his report is a model of thoroughness and care. It is naturally impossible to summarize this report in anything approaching a detailed manner and we can here point out only the most striking features. The virus alternates between the ticks and mammals but hereditary transmission in ticks has been demonstrated. Mammalian carriers have not been demonstrated. The disease may be defined as "An acute specific infectious endangiitis, chiefly of the periphreal blood vessels," and the parasite shows this specificity for the peripheral vessels in all experimental animals. The skin lesions are characteristic and icterus and splenomegaly are constant. The disease is very similar to typhus fever and tsutsugamushi disease or Japanese river fever.

The parasite appears in paired lanceolate, slender rod-shaped or very minute rounded forms depending upon the methods used and the material from which it is obtained. Wolbach thinks it represents a new type of parasite and has named it *Dermacentroxenus rickettsi*. Its extreme susceptibility to physical and chemical agents and its staining reactions seem to indicate that it is not bacterial. It is not a filterable virus. He was not able to cultivate it by any means at his command. His arguments in favor of considering it the causative organism of the disease are as follows: "(1.) The constant occurrence of a microorganism of distinctive size and morphology in the lesions characteristic of the disease in man, monkey, rabbit, and guinea-pig. (2.) The constant presence of an identical microorganism exhibiting undoubted evidences of developmental phases in ticks of proved infectivity, and the absence of similar forms in proved noninfective ticks. (3.) The ability to recognize this specific microorganism in the tissues and eggs of infective ticks in the presence of bacteria occasionally present in abundance in ticks of the species concerned."

Should this work be confirmed it not only must be considered as one of the outstanding scientific achievements of the period but will also have a definite and not small economic value. The presence of this disease and its prevalence in certain localities have been of distinct disadvantage commercially. If a large mammal can be found to be susceptible to the disease it may be hoped to produce an immune serum, for a second attack in one individual is unknown. Furthermore the existence of an entire group of hitherto unrecognized microorganisms, if confirmed, will open the way for the discovery of the cause of other infectious diseases whose causative agent is at present unknown.

ETIOLOGY AND TREATMENT OF INFLUENZA.

THE etiology of influenza is still an unsettled question, that is, it is not now definitely believed, as was the case up to the time of the last pandemic, that Pfeiffer's bacillus is the cause, or rather the sole cause. In the discussions on influenza which took place at the Royal Society of Medicine in 1919 and which are published in the Proceedings of that society for 1919, xii, pp. 78-83, Dr. W. E. Carnegie Dickson remarks that with regard to the occurrence of *Bacillus influenzæ* itself, he had had hitherto little doubt that it was the probable primary infective agent concerned in the production of the recent epidemic in England. At any rate, it is one of the organisms most constantly found, and is certainly itself pathogenic. As a rule, his findings practically coincided with the various published official reports. But on one or two points his results differed slightly. In addition to the hemolytic diplostreptococci, which were most frequent, and pneumococci next so, as organisms of secondary infection following, or in many cases coincident with Gram-negative influenza, like bacilli, Dickson would emphasize the comparative frequency of the presence of staphylococci, especially *Staphylococcus aureus*. He found the latter in the cultures of the washed sputum of rather more than 50 per cent. of the cases with pulmonary complications, and in the lungs and pleuræ in about a quarter of the fatal cases, in addition to the usual strepto- and pneumococci and *Bacillus influenzæ* itself. It was also present in ten pleural fluids removed by chest puncture during life, four times in pure culture. He therefore thinks it should be regarded as one of the important organisms of secondary infection, although it has not been included in the official vaccine. Dickson also thinks that Friedlander's bacillus occurred with sufficient frequency to merit inclusion.

It seems then that Dickson, like so many other bacteriologists, is not as sure as formerly that the primary infection of influenza is caused by the Pfeiffer bacillus, and yet, though somewhat doubtful, he still appears to veer rather strongly to the belief that it is. A little further in the paper he refers to the important question of the carrier of the Pfeiffer bacillus and points out that in the numerous examinations he made, one of the most noticeable features was the frequent occurrence of small Gram-negative influenza-like bacilli in many of the cases of chronic bronchitis in which, clinically, no suspicion of the presence of influenza had arisen. They grow upon blood media and conform culturally and morphologically to Pfeiffer's bacillus, and he is convinced that they constitute the reservoir of infection in the country.

As for the vaccine treatment Dickson seems to have had fair success with it prophylactically, although, of course, the prophylactic effects of a vaccine are difficult to estimate, and had encouraging results therapeutically. The approximate composition of the mixed vaccine, taking the whole as "twenty" was streptococci five parts; staphylococci, five parts; pneumococci, three parts; minute Gram-negative influenza-like bacilli, three parts; Friedlander's bacilli, two parts and other organisms (*Micrococcus catarrhalis*, etc.), two parts. The results of treatment by the vaccine, according to Dickson's clinical colleagues, were beneficial. In most cases the disease was apparently shortened and the occurrence of complications prevented.

With regard to the vaccine treatment of purulent bronchitis, bronchopneumonia, pleurisy, empyema, and so on, Dickson at first advised small doses given at intervals of three to four days, according to the nature and severity of the case. Later on he advised larger doses, and the intervals were cautiously decreased again. While there was not a sufficient number of cases upon which to base a scientific opinion, his clinical colleagues had a considerable amount of success in such cases as were not actually moribund.

From his own experience Dickson speaks well of the prophylactic effects of the vaccine. He has

given the vaccine prophylactically to about 500 persons, and so far as he could ascertain, only two of these developed anything resembling influenza.

Perhaps the most instructive part of Dickson's paper is that which relates to the question of influenza carriers. This point is well worthy of the attention of public health authorities in dealing with the question of preventing epidemics of influenza.

Congenital Absence of the Nails.

Congenital anomalies of the nails are extremely rare. Their complete absence, anonychia, in particular, is of all the ungual malformations the least frequent. Complete and total anonychia of all the fingers or toes is very exceptional. This congenital defect, when it exists, may be the only one presented by the patient, but it is generally associated with other anomalies or defective conformation usually classified under the heading of stigmata of degeneration. This defect, therefore, is itself a physical stigma of degeneration. In some instances anonychia is a familiar malformation; it may be hereditary, or without being hereditary it may occur in several members of the same family. The pathogenesis of this congenital defect, like that of the majority of malformations, is obscure. All that can be said is that it is the result of an arrested development of the nails occurring at about the third or fourth month of gestation. In point of fact it is during the third month of intrauterine life that the primary matrix of the nail becomes constituted in the embryo and it does not become covered by the ungual limbus until a month later. This interpretation well fits the description of cases of anonychia which show that there invariably exists, in the place of the absent nail a normal ungual matrix, usually well developed and distinct in outline. It is likewise in accord with the results derived from pathological examination which show that the cells of the epidermic stratum lining the surface of the ungual matrix have undergone an evolution toward ordinary epidermic keratinization and not toward the ungual type of keratinization. Now, this is a transformation which commences to show itself at the very beginning of the fourth month of intrauterine life. But given the actual state of the question, the cause of this arrest of development is absolutely unknown and the rather incomplete data which we possess on the antecedents of subjects presenting anonychia are not sufficient evidence to show that syphilitic or tuberculous infection or alcoholism was present in the parents.

Symbiotes.

Castellanos in *Vida Nueva* for November, 1919, xi, 11 refers to studies by a Mexican scientist, Herrera, on the minute bodies later termed by Portier symbiotes. Herrera had styled the organism *Micrococcus brownianus*, and regarded it as a biological scavenger and, far from being a friendly parasite, as an enemy to man. The *Micrococcus brownianus* of the Mexican biologist exists in the interior of the body cellules. Its resistance to destructive agencies is incredible. Herrera first published a paper on the subject more than eight years ago and is clearly entitled to priority. The research thus inaugurated in Mexico was later taken up by Villazon, of La Paz, Bolivia, and numerous other Latin Americans, and the *Micrococcus brownianus* seems likely to bring about concerted action by the Spanish-American scientists of the New World with the aim of securing to any pioneer work done by members of this fraternity credit for priority. Some of Herrera's colleagues appear to have regarded his discovery with ridicule until endorsed by men like Portier and Galippe before the French Academy of Sciences. The author seems unaware of the fact that Portier's discovery has in turn been ridiculed by some of his peers, who explain the alleged symbiotes in still another way regarding them as ordinary saprophytes which have interpenetrated the cells from the outer world. Others have gone beyond Portier and have seen in the symbiotes the structural basis of the vitamines. With such numerous and discordant views it seems too early to speak of priority, but the subject is one of much interest and Herrera appears to have been the first to get into print of recent years, although the same bodies were evidently seen by biologists many decades ago.

News of the Week.

Relief of Disabled Ex-Service Men and Women.—The Government's position with reference to treatment for former soldiers, sailors, and marines who are in need of medical attention because of war injuries or disease contracted in the service, is set forth in a pamphlet, "Relief to Disabled Men through the United States Public Health Service," published by the Office of the Assistant to the Secretary of War. Under Public Act 326, the United States Public Health Service will furnish relief to any honorably discharged soldier, sailor, or marine, or Army or Navy nurse (male or female) who was discharged on or after October 6, 1917, and becomes disabled or ill on account of illness or injury incurred previous to discharge from service, and not due to misconduct. Copies of the pamphlet explaining the law may be secured without charge by any physician on application to the Office of the Assistant to the Secretary of War, Service and Information Branch, Council of National Defense Building, Washington, D. C. It has already been distributed to all Army and Navy hospitals, State and city health officers, and United States Public Health Service Stations.

Schick Test in Schools.—Dr. William H. Park, Director of the Bureau of Laboratories of the Health Department, New York City, has announced that the Schick test for diphtheria will soon be extended to one hundred schools in this city. Successful application of the test was made in twenty schools last year.

"Talcum Shops" Whiskey Stores.—"Talcum powder druggists" are under investigation in Chicago. A window display of a few boxes of talcum powder and a store filled with whisky "for medicinal purposes" constitute the stock in trade of these denizens of the Windy City. The investigation followed the arrest of two doctors, one of

whom admitted that he had written from one hundred to two hundred prescriptions for whisky daily, collecting a fee of from one to seven dollars per prescription, depending upon the patients' ability to "cough."

Drug Addicts' Clinic Closed.—The New York City Health Department has closed the Worth Street clinic for drug addicts, which has been maintained since 1910. At first as many as 3000 addicts a day came to the clinic, but the number dropped to about 150 a day. This fall in attendance is said to be due to the fact that physicians have taken up the legitimate treatment of such patients. Those who have been attending the clinic will be treated at the hospital on North Brothers Island. There is now plenty of room in the Riverside Hospital for the treatment of addicts, and Health Commissioner Copeland said yesterday that the city was able to treat all applicants. The department will maintain its bureau for the registration of addicts.

Middle Section of "Trilogical" Society Meets.—The annual meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society was held in Cincinnati, Ohio, February 21.

High Price of Materials Blamed for High Fees.—The news comes that the raise in rates recently announced by members of the West Side Physicians' Business League of Dayton, Ohio, may be charged to the high cost of bandages and other physicians' materials. The Montgomery County Medical Society, it seems, has not sanctioned the new rates, but they have the unanimous approval of the Dayton physicians.

Camp May Get Medical School.—Camp Zachary Taylor, Louisville, Ky., has been proposed as location for the Medical Department Field Service School. If selected, all Medical Department recruits will be sent there before being assigned to their permanent organizations. Camp Taylor, it is stated, meets all the requirements of such an institution.

Shortage of Doctors in Virginia.—Senator Andrews recently offered a joint resolution calling for an investigation of the alleged shortage of doctors in Virginia. According to the resolution the inhabitants of many parts of the State are unable to secure prompt medical aid. The State Board of Medical Examiners is directed to make an investigation and to make recommendations regarding the situation at the next session of the Legislature.

Post-Graduate Drive.—The New York Post-Graduate Medical School and Hospital has announced the intention of launching a campaign to raise $2,000,000 to meet the increased responsibilities placed upon it in consequence of the elimination, by the war, of European medical centers. Registrations for the Post-Graduate seminars this year, according to a statement recently issued by Dr. Frederick E. Sondern, president of the institution, exceeds all records of the school in its thirty-six years of work. The enrollment for 1919-20 is 1692, as compared with 877 for the previous year.

Hospitals for Negroes in the South.—The Interchurch World Movement proposes to build hospitals under church control exclusively for negroes in nine Southern States, at a cost of $3,100,000. Hospitals for negroes in Jacksonville, Fla., Nashville, Tenn., and New Orleans, La., will be supported by the movement, and at least one general hospital is planned for Alabama, Georgia, Kentucky, Mississippi, Missouri, North and South Carolina, Texas and Virginia.

Special Commission to Study Health Insurance Recommended.—In a letter to the New York State Legislature Warren S. Stone, Chairman of the Social Insurance Committee of the National Civic Federation and Grand Chief of the International Brotherhood of Locomotive Engineers, has recommended delay in legislation establishing a State system of health insurance until a special commission can make a study and devise a constructive plan. Similar letters have been sent to the Legislatures of Massachusetts, Rhode Island, New Jersey, and Virginia, in which States legislation of this character is contemplated.

Mt. Sinai Hospital Annexes.—Mt. Sinai Hospital, New York City, is to be enlarged by the erection of two new buildings to cost $3,250,000. One of the buildings, which are to be commenced in the Spring, will be a private pavilion containing 130 rooms. The other will be a children's building, the capacity of which will be 100. An auditorium building also will be erected for use by the hospital, the Department of Health, Columbia and New York Universities, and various medical bodies.

Nursing Drive by Henry Street Settlement.—A campaign to raise $1,000,000 to extend the visiting nurse service of the Henry Street Settlement, New York City, has been planned for March 15 to 22.

Aid for French Hospital.—An endowment of 4,946,000 francs for twenty-four beds in the free wards of the New American Hospital at Neuilly, France, has been made by Mrs. Robert Bacon, widow of Colonel Robert Bacon, formerly American Ambassador to France. The endowment is given in memory of Colonel Bacon. Mrs. Bacon's gift brings the hospital's total yearly revenue from endowments to 344,900 francs. The amount required to operate the hospital is 438,000 francs. The amount necessary for the proposed building is 6,750,000 francs, of which 750,000 francs have been transferred by Henry P. Davison, this being the remainder of one of the war funds of which he was Chairman, 250,000 francs have been given by Mr. and Mrs. George A. Kessler, and 85,000 francs have been subscribed.

Vienna Vital Statistics.—From February 8 to 14 there were 1032 deaths, mostly of children, and eight births in Vienna.

The New York Radium Institute announces the appointment as Associate Director of Dr. Chester Ford Duryea. Dr. Duryea has been associated with Dr. C. Everett Field in laboratory work since 1913 and recently returned from France and England where he had opportunity of observing the methods there advocated in radium therapy.

Verdict Against Medical College.—The Massachusetts Superior Court, according to advices from Boston, has awarded a verdict of $9,000

against the College of Physicians and Surgeons of that city for the "conscious sufferings and death" of a patient treated for tonsillitis. The physician who had prescribed for the patient was fined $501. The suit was brought by the administrator of the estate of the deceased. It was alleged that the patient, a woman, died in 1917, a few days after the treatment; that after death traces of mercurial poisoning were found, and that this resulted from the doses administered by the physician.

League of Red Cross Societies Meets.—The first general council of the League of Red Cross Societies opened in Geneva, Switzerland, March 2. with representatives from twenty-seven nations.

The Western Electro-Therapeutic Association will hold its annual meeting in Kansas City, Mo., May 27-28.

Nurses Strike. — The twenty-three student nurses at Birchmont Hospital, Omaha, Neb., went on strike recently, claiming they were not receiving the full scientific courses guaranteed them on entering the hospital. All patients in the institution at the time were removed to other hospitals.

Women Fellows of the American College of Physicians. — During the recent meeting of the American College of Physicians, held in Chicago in conjunction with the Congress on Internal Medicine, Dr. Anna Weld of Rockford, Ill., and Professor Leila Andrews of the University of Oklahoma, were admitted to membership, the first women to be made fellows of this body. Both physicians have won recognition through work in pediatrics.

Dr. Charles G. Hewitt of Ottawa, Canada, Dominion Entomologist and Consulting Zoologist, died of pneumonia March 1, in his thirty-fifth year. Dr. Hewitt was a frequent contributor to the literature of zoology and entomology. He helped in drafting the treaty between Canada and this country for the protection of migratory birds.

Dr. Hideyo Noguchi, formerly engaged in research work with the Rockefeller Institute, New York City, has recently established laboratories in Yucatan for the purpose of studying yellow fever. He has been made an honorary member of the Mexican Academy of Medicine.

Dr. Daniel S. Dougherty has removed his office to 111 West Eighty-fifth Street, New York City.

Dr. J. G. Pace of Lincoln, Neb., has been appointed to succeed the late Dr. J. L. Rutledge as superintendent of the Modern Woodmen Sanitarium at Colorado Springs, Colo.

Charitable Bequests.—Under the will of the late Miss Elizabeth Dorrance Bugbee of Providence, R. I., the sum of $6,000 is left to the Rhode Island Hospital to establish a free bed in memory of the testator's father and mother, and the residue of her estate is left to the same institution to be used for the sole benefit of the children's ward.

Medical Society Elections. — The WESTERLY (RHODE ISLAND) PHYSICIANS' ASSOCIATION, at its meeting in February, elected the following officers: *President,* Dr. J. Devere Barber; *Vice-President,* Dr. Samuel C. Webster; *Secretary,* William A. Hillard; *Treasurer,* John Champlin; *Censor,* Frank C. Pagan.

Obituary Notes.—Dr. W. W. HORTON of Unionville, Conn., formerly of Bristol, died February 19, at the age of 65. He was graduated from New York University Medical College in 1879.

Dr. CHARLES ZUPPANN of Ballwin, Mo., died on February 15, at the age of 68. He was graduated from Rush Medical College, Chicago, in 1877, and had practised in St. Louis County for thirty-seven years. His death was due to cardiac affection following influenza.

Dr. JOSEPH P. MURPHY of Boston, Mass., died from bronchopneumonia at the Peter Bent Brigham Hospital on February 18, at the age of 58. He was graduated from the Medical School of Harvard University in 1884.

Dr. JOHN VAN DER POEL of New York City died February 22, at the age of 62. He was graduated from the College of Physicians and Surgeons, New York City, in 1881, specializing in urology. He had held various hospital and teaching appointments, and during the war was a member of the staff of the hospital at Château Annel, near Compiègne.

Dr. JOSE M. FERRER of New York City died suddenly February 23, at the age of 63. He was graduated from the College of Physicians and Surgeons in 1879, and was visiting physician to the French and St. Vincent's Hospitals. He was a member of the New York Academy of Medicine, the American Medical Association, and various other bodies.

Dr. FRANK M. BRUNDAGE of Conyngham, Pa., died at the age of 60. He was graduated from Jefferson Medical College in 1874. Dr. Brundage was United States Consul at Aix-la-Chapelle, Germany, for eight years.

Dr. G. A. SENIGAGLIA of Nyack, N. Y., died February 27, at the age of 31. He was graduated from Cornell University Medical College in 1909.

Dr. EDWARD D. HALL of Meriden, Conn., died of pneumonia February 19, at the age of 69. He was graduated from the Medical School of Harvard University in 1873. He was a member of the American Medical Association.

Dr. G. C. RAYNOLDS, pioneer medical missionary in Armenia, died at Berkeley, Cal., recently, at the age of 82. After the Civil War Dr. Raynolds left for Turkey, and for forty-seven years he carried on his missionary work in the city of Van. He and his wife survived numerous Turkish and Kurdish massacres. In 1913 he returned to this country, for the first time since 1869, to get funds to establish a college at Van. On account of the war he could not return until 1915. He remained with the Armenians until the autumn of 1919, when he returned to this country.

Dr. E. D. SEAMAN of Los Angeles, Cal., died February 20. He was born in Ithaca, N. Y., in 1855, and was graduated from the College of Physicians and Surgeons, New York City, in 1884. He had practised in Los Angeles for thirty-five years, and was a member of the American Medical Association and State and local societies.

Dr. LA FAYETTE LEWIS of Wilbur, Wash., died February 21, at the age of 74. He was born in Tennessee in 1845, and had practised in Wilbur and vicinity since 1885.

Dr. PHILIPS COOMBS KNAPP of Boston, Mass., died, after a long illness, February 24, at the age of 62. He was graduated from the Medical School

of Harvard University in 1883, specializing in neuropsychiatry. He had been consulting physician for the Massachusetts State Hospital for the Insane since 1895, and was a trustee of the Boston Insane Hospital from 1897 to 1902. He had held various other hospital appointments, and was a member of the American Neurological Association, the American Medical Association, and various other societies in this country and abroad.

Dr. JOHN C. MCGINNIS of Martins Ferry, W. Va., died in Cincinnati, February 22, at the age of 42. He was graduated from the Cincinnati College of Medicine and Surgery, and served as captain in the Medical Reserve Corps during the war.

Dr. WILLIAM A. SMITH of Springfield, Ohio, died of cardiac disease February 25, at the age of 68. He was graduated from Bellevue Hospital Medical School in 1883. He was a member of the American Medical Association.

Dr. THOMAS AMORY DE BLOIS of Boston, Mass., died February 27. He was born in Columbus, Ga., in 1848, and was graduated from Dartmouth Medical School, in 1878, specializing in otolaryngology. He was a member of the American Laryngological Association.

Dr. EDWARD GERRY TUTTLE of New York City died of pneumonia, February 29, at the age of 69. He was graduated from the New York Homeopathic Medical College and Flower Hospital in 1889, and was professor of gynecology in that institution. He was a Fellow of the American College of Surgeons and of the New York Academy of Pathological Science.

Dr. VER NOOY WAYLAND WEED of Brooklyn, N. Y., died of cerebral hemorrhage in the Neurological Institute, New York City, February 26, in his forty-second year. He was graduated from the College of Physicians and Surgeons in 1900. He was associate surgeon of the Bushwick, Jamaica, and Swedish Hospitals, and a member of the staff of the Consumptives' Home of Brooklyn. Dr. Weed was a member of the American Medical Association, the Medical Society of the County of Kings, the New York Pathological Society, and other organizations.

Dr. MOSES ZELLER of New York City died of encephalitis lethargica at Lincoln Hospital and Home, February 28, at the age of 27. He was graduated from Fordham Medical College in 1918, and was house physician in the Lincoln Hospital and Home at the time of his death. He contracted the disease while attending two patients who were suffering from the sleeping sickness.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, February 20, 1920.

Meeting of the Consultative Council of the Ministry of Health.—The Consultative Council on General Health Questions, the establishment and composition of which under the Ministry of Health Act have been described in previous letters held its first meeting on February 4, 1920. The Minister of Health, Dr. Christopher Addison, who was accompanied by Viscount Astor, Parliamentary Secretary to the Ministry, presided, and asked the Council to put before him a statement of the main defects in existing provisions for safeguarding the health of the people, and to suggest remedies from the standpoint of persons who as members of the general public will be affected by the health service supervised by the Ministry. The members of the Council have been appointed with this special object in view. An interesting feature of the composition of the Council and a significant sign of the times is that women form a majority of the membership. It may be said that women have shown themselves particularly well fitted for public health work, and perhaps the greater number of them who enter the medical profession will take up the work. So far, however, as the Council on General Health Questions is concerned the numerous women members are not of the medical profession, but have been chosen for their knowledge of industrial conditions both urban and rural.

Medical Men and the Insurance Act.—British medical men are not satisfied with the amended Insurance Act, except a few, and have taken recently every opportunity to voice their grievances. A conference covered by the British Federation of Medical and Allied Societies was held a few weeks ago at Steinway Hall to consider the regulations for 1920 which the Minister of Health has proposed to issue with respect to the administration of the National Health Insurance medical benefit. Sir Malcolm Morris who presided said that the present scheme of insurance was not the best that could be done and it was not too late to appoint a committee or Royal Commission to give something better to the public whose interests were those of the medical profession. Dr. Stancombe said that after some years' experience they were in a position whole-heartedly to condemn the national insurance system which has been greatly injured by the want of auxiliary services such as nurses and consultants. The politicians of this country had not yet grasped the value of national health, and something better was expected from the Ministry of Health than the pettifogging regulations they had brought forward. The panel practitioner to-day felt more and more that he was a bureaucratic slave. There should be a coordinated medical service under the Ministry of Health, although the time was not ripe for imposing either on the country or the profession a full-time medical service. The new service should have local autonomy under bodies known as medical guilds or local health authorities. It is the rules and regulations even more perhaps than what they consider the inadequate rate of remuneration that has set a considerable proportion of the profession against the act. It is obvious that rules and regulations are necessary in any public service, but they should be drawn up so as not to interfere with the conscientious work of an honest man. Bureaucratic methods are antagonistic to the instincts and traditions of English-speaking people who are above all an individualistic race in direct contradistinction to the Germans who are the bureaucratic race of the world. Bureaucratic methods destroy individualism and a multitude of rules

and regulations savor too much of Teutonic origin. Panel practitioners should be allowed to discharge their duties toward their patients with as little irksome supervision as possible. It is said that Dr. Addison admits this at the conference referred to above. Dr. G. Dill drew attention to another point in or defect of the insurance act and that was its absolute dependence on the voluntary hospitals. He said that without the aid of the voluntary hospitals the act would be unworkable. The new regulations offered no improvement. There was no provision for bacteriological diagnosis or for *x*-ray examination. The doctor should earn his living by keeping the nation well not by profiting by its infirmities. Let them say to the Prime Minister: "We, the medical profession, will assure the health of the nation, and we will draw up a scheme if we are assured a sufficient premium." The point brought forward by Dr. Dill that the medical provisions of the insurance act would have been unworkable without the help of the voluntary hospitals is one well taken. Not only that but it is partly on account of the extra pressure placed on these institutions by the insurance work that they are in the parlous condition they are at present. There is no doubt that a Ministry of Health was needed in Great Britain and there is also no doubt that it has a "hard road to hoe" and that consequently criticism should be unbiased and fair. After all it is the health of the nation that is the chief concern, and it is true that owing to untoward conditions caused by the war the progress of the Ministry is considerably impeded. The Ministry must be given credit for the best of intentions and should not be hampered by indiscreet objections on the part of the medical profession. At the same time, it must be recognized by the Ministry as doubtless it is recognized that not to treat the profession generously and justly would indeed be unwise policy. Whether panel practice is an advance or a retrograde movement cannot be stated offhand. The only thing that can be said is that experience of it in Great Britain so far has not made it popular with the profession nor, perhaps, does it seem greatly in favor with the general public.

Sanatorium Treatment of Tuberculosis.—The sanatorium treatment of tuberculosis has been subjected during the past few years to a good deal of destructive criticism. In fact, it has been demonstrated that the sanatorium by itself is comparatively useless, and that in order to obtain the best results from treatment, it must be coordinated and combined. Dispensaries, hospitals, sanatoriums and colonies are all factors of importance, if employed in the proper way and in conjunction. That the sanatorium alone is of little avail, some evidence which has come to hand recently appears to prove conclusively. Figures relating to tuberculosis presented to the Essex Insurance Committee at their monthly meeting at the end of January, 1920, disclose the startling facts that of 619 people who came up for sanatorium treatment during 1914, 319 have died since. In 146 cases the patients have improved under treatment, in 111 cases the disease has been arrested, 13 are stationary, 4 are worse and 29 are doubtful. Commenting on these facts, Dr. Butler Harris said the figures pointed to one moral, the sanatorium benefit was not the whole story. Until they tackled the housing and general social problems, and the important question of after care of the patient, they would not get very far toward solving the problem. Two conferences, he said, had been held recently with a view to securing a closer cooperation between the general practitioners and the tuberculosis officers, and it was hoped shortly to bring out a plan which would help the doctors, the tuberculosis patients, and everybody concerned with the work of treatment—and the amelioration of the disease.

The Condition of the Hospitals in Great Britain. Nearly every hospital in this country has been sending out appeals for financial aid during the past few months. In the East End of London, that conglomeration of mean streets and squalid houses, which contain more than 2,000,000 of the poorest, the hospitals are in desperate straits. For example, the Special Appeal Committee of the Queen's Hospital for Children, Hackney, E., points out that the hospital will be compelled to close two wards containing 62 beds within three months unless funds can be obtained to pay off the deficit. The closing of the wards would deprive 800 invalids from the poorest parts of London of medical and surgical treatment. The institution is over £10,000 in debt, and an additional £5,000 per annum is required if the hospital is to be kept at its pre-war standard. At least 40,000 mothers take their children thither in sickness and accident during the year, the attendance in the casualty and out-patients' department numbering over 10,000 and the demands on the 170 beds are always most pressing. This is quoted merely as a typical instance of the condition into which the hospitals of Great Britain have fallen.

The People's League of Health.—The League was launched a short time ago. The founder of the movement and organizer is the well-known actress, Miss Olga Nethersole, and the avowed objects of the League are to inquire into the social problems which necessarily govern the health of the nation and to improve the social and economic conditions of the masses; to disseminate knowledge of health; and by lectures to be delivered by members of the medical profession, to afford information on the contributory causes of moral and physical diseases. A national campaign has been outlined, not to compete with any existing organization, but rather to increase the forces necessary to improve the health of the nation. Among the speakers at the first meeting was Dr. Eric Pritchard who said in part that the falling birth rate was not due to any natural law. It had been supposed that as a nation became more civilized and more intellectual the birth rate naturally declined. But he was informed that the decrease in the birth rate was not due to any great excess of intellectuality on the part of the nation; it was rather due to the fact that a considerable amount of selfishness prevailed amongst those classes who could afford to have larger families than they had. It seemed to him exceedingly disquieting that the recruiting of our man power at the present time came very largely from those sources in which the environment for the up-bringing of children was

the least favorable for having a sound and healthy nation. The man power of the country was now recruited from those industrial centers where the conditions for children were the worst possible. If they wished to improve the physique of the nation as a whole they must improve the physique of the children. They must improve the mothers, the children, the infants and the homes.

Disabled Men's Training.—The Minister of Pensions, will on February 20, formally open the Lancashire Convalescent Center, which has been established by the Ministry of Pensions at Blackpool. In the course of the next few months similar institutions will be opened at Epsom, Birmingham, Plymouth, Edinburgh, Buttrills Camp (Wales) and Gormanstown (Ireland) where buildings are being adapted and the necessary equipment installed. The system may be further extended if the need for more accommodation should arise. These large centers, like the smaller institutions hitherto existing in different parts of the country are designed for the benefit of disabled ex-service men, who, while undergoing medical treatment, will be taught the technique of a variety of occupations.

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 26, 1920, clxxxii, 9.

1. Surgery of the Genitourinary Tract Observed Abroad as Consultant in Urology. Richard F. O'Neil.
2. The Mental Factor in the Chronic Intestinal Invalid. John Bryant.
3. The Specific Diagnosis and Treatment of Acute Lobar Pneumonia. Lesley H. Spooner.

2. The Mental Factor in the Chronic Intestinal Invalid.—John Bryant defines the chronic intestinal invalid as an individual who is usually in rather poor health from an intestinal point of view. Many of these individuals, having very little gastric distress, do not associate their poor health with intestinal abnormalities. Having a daily bowel movement, they do not consider that this movement may be one or more days late in arriving. There is often, on the other hand, a clear history of intestinal trouble dating back to childhood, the influence of heredity frequently seeming to be a factor. The degree of poor health is variable. Excessive fatigue, either mental or physical, almost invariably precipitates a train of symptoms, among which intestinal pain and intermittent diarrhea, or constipation, predominate. Accompanying this more purely gastrointestinal display of symptoms is a condition of bodily exhaustion varying in degree according to the length of time for which the particular patient has been under strain. The chronic intestinal invalid is usually "high-strung and excitable"; this mentality is usually heralded by a long, thin, often emaciated and carnivorous type of body. The skin is usually pallid or sallow, and may be so discolored as to suggest Addison's disease. The individual often presents the text-book picture of drop-heart and all the other classic features of visceroptosis. Two case histories are presented, illustrating two distinct types of mental commotion often encountered in the treatment of the chronic intestinal invalid. In one case the mental commotion was due to a summation of general causes; in the other case the mental commotion was due to two specific factors. In both cases relief of the mental commotion proved a very important factor in the recovery of the patient.

New York Medical Journal.

February 14, 1920, cxi, 7.

1. Fluctuations of Thyrosuprarenal Activity in General Diseases. Charles E. de M. Sajous.
2. The Pineal Body: Its Structure, Function, and Disease. Smith Ely Jelliffe.
3. Endocrine Tropisms. D. M. Kaplan.
4. Thyroidal Constipation. Spencer G. Strauss.
5. Hyperthyroidism. A. B. Webster.
6. Modern Methods in the Treatment of Goitre. H. L. Foss.
7. Endocrinologist and Internist: The Rôle of Endocrinology. W. W. Herrick.
8. Toxic Goiter in Relation to the Glands of Internal Secretion. J. Christopher O'Day.
9. The Treatment of Early Hyperthyroidism. Florence L. Meredith.

4. Thyroidal Constipation. — Spencer G. Strauss states that thyroid therapy for the cure of various states of constipation appears to have been employed in a purely empirical way, with the resulting disastrous effect that the busy practitioner is now likely to use this latest addition to his therapeutic armament as harmfully as he formerly did the common garden variety of cathartic pill. Thyroid extract, the writer holds, however given, is not, nor will it ever be, a constipation remedy; nor can it ever become a cure for constipation as such unless in its administration it corrects a constitutional defect which predisposes the individual to an abnormal metabolic state, which in its manifestations includes a deficient bowel evacuation constipation. One must have regard for the rest of the picture, however, and prescribe thyroid extract only when one feels justified, after a careful physical analysis, that the patient presents a condition of thyroid disbalance. In this connection Strauss calls attention to the theory that the thyroid gland in the human physiology seems to act, not alone by virtue of its own inherent qualities, but by its peculiar ability to activate and coordinate the functions of the other glands of internal secretion, and in this way one may obtain happy results from thyroid therapy. Thyroid extract should be employed only when the thyroid regulation is essentially to blame, as established by careful search for evidence warranting its condemnation. Clinical study shows that various qualitative and quantitative marks are characteristic of thyroid disbalance *per se*. They cannot be proved as yet in the laboratory, but they are valuable nevertheless. The writer indicates the more usual thyroidal marks which, when combined with the so-called constipation, call for thyroid therapy.

Journal of the American Medical Association.

February 28, 1920, lxxiv, 9.

1. Protein Diets and Undernutrition in Treatment of Diabetes. Frederick M. Allen.
2. The Feeding of Normal Infants During the Second Year. John Lovett Morse.
3. The Diagnosis of Heart Disease in Young People. Paul D. White.
4. Ruptured Ectopic Pregnancy in Uterine Cornu after Salpingectomy for Previous Tubal Pregnancy. John Douglas.
5. Acute Respiratory Disease Carriers. Lesley H. Spooner.
6. Electrical Stimulation of Peripheral Nerves Exposed at Operation; Surgical Value. Walter M. Kraus and Samuel D. Ingham.
7. Restoration of Loss of Bone, Including an Analysis of the First Hundred Cases of Fracture Treated by Bone Graft at U. S. Army General Hospital No. 3, Colonia, N. J. Fred H. Albee, Assisted by Elmer P. Weigel.
8. Diagnosis and Surgical Treatment of Intrathoracic Goiter: Palliative Tracheotomy; Tracheostenosis. Gustav Schwyzer.

3. The Diagnosis of Heart Disease in Young People.—Paul D. White considers that one of the most important lessons that the civilian physician learns from his army experiences is the need of more accurate diagnosis of heart conditions in young people. Since his return to civil life he has noticed a group of cases, particularly in young women, which had been diagnosed as heart disease, sometimes for years, not infrequently as mitral stenosis, which he feels were no more heart disease than were cases of effort syndrome encountered in soldiers during the war. The importance of this matter is obvious. Other conditions besides effort syndrome which, because of the symptomatology, may simulate heart disease are hypothyroidism and infectious diseases. The writer holds that positive evidence of heart disease on physical examination includes any of the following: 1. Definite cardiac enlargement, to be determined, if in doubt, by teleroentgenology, or orthodiography. 2. The presence of diastolic murmur. 3. A systolic murmur at the apex, if very loud, and especially if it masks the first sound, usually means evidence of actual involvement of the mitral valve.

A very loud systolic murmur at the base, with thrill, indicates the presence of stenosis of the pumonary valve or of the aortic valve. 4. The presence of serious arrhythmia, that is, heart-block, or auricular fibrillation, if not the result of digitalis. 5. Congestion of the veins of the neck. 6. Enlargement of the liver. Edema of the feet and legs, or, if a patient is in bed, of the sacral region; ascites and hydrothorax, and edema of the lungs. 7. Cyanosis. The presence of very severe anginal pain is in favor of organic heart disease. The presence of extreme nervousness, tremor, sweating, and other vasomotor phenomena favors the diagnosis of effort syndrome. Occasionally one finds a combination of the two conditions which may give rise to a good deal of difficulty in diagnosis. The writer emphasizes the point that even when the heart is damaged and a diagnosis of slight involvement can be made accurately, the life of the individual should not be too closely restricted, or the patient too much alarmed over the abnormal heart finding. The writer cites a case illustrative of the differential diagnosis between heart disease and effort syndrome.

5. Acute Respiratory Disease Carriers.—Lesley H. Spooner made a study of this subject with regard to the four most important organisms that are etiologic factors of acute respiratory infection, namely, the pneumococcus, *Bacillus diphtheriæ*, the meningococcus, and the streptococcus. From this study the writer holds that the transient healthy carrier is more common than should be expected from the incidence of the specific disease. This transient quality is shown by the disappearance of the organism without treatment. The chronic healthy carrier is rare, except in the case of the "saprophytic pneumococcus" of Cole, in which many of the organisms may be nonpathogenic, and with *Streptococcus hemolyticus*, in which a similar condition may well exist. The potent factors in the spread of these diseases rest in this small group of chronic healthy carriers and the diseased carrier. The latter, during the prodromal stages of disease and convalescence, is of by far the greatest importance. They respond to attempts at disinfection even less satisfactorily than do the chronic healthy carriers.

The Lancet.

February 7, 1920, cxcviii, 6.

1. Some Remarks on "Bone Setting": The Practice and Results of Forced Movement. James B. Mennell.
2. Dental Sepsis in Children; Its Consequences and Treatment. F. St. J. Steadman.
3. Pauchet's Method of Gastrectomy. Ian MacDonald.
4. A Case of Hydatid Infestation of Bone, with Multilocular Hydatid Disease. C. E. Corlette.
5. War Oedema in Turkish Prisoners of War. J. I. Enright.
6. Acute Glanders in Man. T. Hunter.
7. The Fees of Our Ancestors. Sir D'Arcy Power.

2. Dental Sepsis in Children: Its Consequences and Treatment.—F. St. J. Steadman considers the effects of dental sepsis in children under two main headings, general and local. The general effects manifest themselves in retardation of growth, pale-faced, and anemic condition, lack of normal luster of the eyes, and a tired and sleepy look. A common result of oral sepsis in children is disorder of the gastrointestinal tract, as evidenced by gastric and abdominal pain, diarrhea of an offensive character, with much undigested food in the motions, marked wasting, fretfulness, night-terrors, loss of appetite, sleeplessness, and pallor of the face. Under local effects the writer includes the adjacent parts to which infection spreads by continuity of tissue. Pharyngitis, tonsilitis, otitis media, and—much more rarely—meningitis and such-like troubles. Infection may pass down the lymphatics to the submaxillary and cervical glands. Steadman takes issue with the view that enlargement of these glands is so common that it is not worth while even examining for them. He holds that normally the submaxillary and cervical glands are not palpable in children, and that if they are, there is sepsis somewhere. Carious teeth frequently produce enlarged glands, as proved by the fact that these glands disappear after the removal of the teeth. Of course, enlarged cervical glands occur at times in children with perfectly clean mouths. In the treatment of dental sepsis in children the writer advocates the extraction of all deciduous teeth in which the decay is sufficiently advanced to infect the pulp. He generally extracts their antagonists also. He fills teeth only when he is sure that the pulp is not affected. This condemns at once the majority of decayed deciduous teeth, because the pulps of these are relatively larger than the permanent teeth, so that a comparatively small cavity is sufficient to infect the pulp. He treats the permanent molar teeth in the same way as the deciduous teeth if the roots are incomplete at the time of the pulp infection. He knows of no way of dealing with infected pulp in children which he regards as sound. He deprecates the practice of sterilizing and capping the pulp. The arguments for and against the extraction of permanent molars are given. Experience shows that the child regains its normal weight and health after extraction of all septic molars.

British Medical Journal.

February 7, 1920, i, 3084.

1. An Address on Flail Joints and Their Treatment. Sir Robert Jones.
2. The Lettsomian Lectures on Tumours Complicating Pregnancy, Labour, and the Puerperium. Lecture I. Herbert R. Spencer.
3. Penetrating Wound of Chest: Thoracotomy: Suture of Pericardium. J. B. Haycraft.
4. Acute Intestinal Obstruction Due to Pregnancy in a Bicornate Uterus. C. E. S. Jackson.

2. Tumors Complicating Pregnancy, Labor, and the Puerperium—Lecture I.—Herbert R. Spencer presented notes of thirty-seven cases, illustrating the following points: In a large number of cases of small tumors patients pass through pregnancy and labor without difficulty. Even in the case of large tumors—some as large as an adult's head—no difficulty may arise, illustrated by eight cases. The danger of pedunculated reniform tumors becoming rotated and causing inflammation is illustrated by one case. Retroversion and retroflexion of the pregnant uterus produced fibroids, one of acute anteflexion, and two of inversion of the uterus. In seven cases submucous tumors were removed after childbirth or miscarriage by enucleation through the os uteri. In these cases, although sepsis occurred, hysterectomy was not necessary. Three fatal cases were described, one from nipping of the ileum between two pedunculated subperitoneal fibroids; the second from twisted infected subperitoneal reniform tumor; the third was infected with *Bacillus welchii*, and died of acute sepsis after cesarean section. The after histories were given in many cases, extending in some instances for periods as long as twenty-five years. With regard to treatment, the great majority of cases require only careful supervision during pregnancy, periodical examination of the urine, and rest, mild aperients, and anodynes if the tumors become painful. Induction of abortion, and premature labor and forcible delivery past obstructing tumors are contraindicated. Forceps may be required for inertia, but should never be used to overcome resistance caused by tumors. Craniotomy and embryotomy are called for only in cases in which the fetus is dead and the mother not infected. Polypi and pedunculated subperitoneal tumors should be removed.

American Journal of the Medical Sciences.

February, 1920, clix, 2.

1. On the Epidemic Acute and Subacute Non-Suppurative Inflammations of the Nervous System Prevalent in the United States in 1918-1919: Encephalitis; Encephalomyelitis; Polyneuritis and Meningo-Encephalo-Myelineuritis. Lewellys F. Barker, Ernest S. Cross and Stewart V. Irwin.
2. Concerning Spinal Cord Tumors and Their Surgical Treatment. Charles A. Elsberg.
3. Brachial Birth Palsy: A Pseudoparalysis of Shoulder-Joint Origin. T. Turner Thomas.
4. Sixth Nerve Paralysis of Otitic Origin: Gradinego's Syndrome. E. Hamilton White.
5. A Clinical Pathological Study of an Unusual Syphilitic Manifestation Resembling Juxta-Articular Nodules. Herman Goodman and William Jackson Young.
6. Congenital Absence of One Lung. Charles S. Levy.
7. Secondary Meningitis Treated by Intraspinous Administration of Autogenous Serum. Report of a Case. Theodore M. Sanders.
8. Observations on the Colloidal Gold Reaction with Cerebrospinal Fluid. Ellis Kellert.

9. The Preparation of a Stable Vitamine Product and Its Value in Nutrition. H. E. Dubin and M. J. Lewi.

2. Concerning Spinal Cord Tumors and Their Surgical Treatment.—Charles A. Elsberg found that of 67 spinal tumors operated upon by him, 49, or almost three-fourths, were extramedullary, while 18, or one-fourth, were intramedullary. In 42, or 62 per cent., of the cases the new growth occurred inside of the dura mater. Of this series of 67 cases, in 27 the tumor lay somewhere between the fifth cervical and the third dorsal, and in 21 between the ninth dorsal and first lumbar segments; in 11 between the lower end of the spinal cord and the roots of the cauda equina. The extramedullary growths occurred with about equal frequency at the cervicodorsal and dorsilumbar levels, while intramedullary tumors were met with twice as often in the cervicodorsal as in the lower levels of the cord. Tumors are most frequently met with on the posterior aspect of the spinal cord. Of the 31 extramedullary (intradural) tumors in the series above the level of the cauda equina, 24, or 77 per cent., lay either on the posterior surface of the cord or posterolaterally, and 14 of the 18 cases of intramedullary tumor seemed to occupy more especially the posterior parts of the spinal cord. In seven patients with extramedullary tumors (33 per cent.) the growth was found either anterior or anterolateral to the cord. Of the sixty-seven patients in the series the diagnosis of tumor was made or suspected sixty times; in the seven other patients a tumor was considered one of the possibilities. In the majority of instances the tumor was found at or near the suspected level. In 48 of the 67 cases the level diagnosis was correct; in sixteen it was too low; in three it was too high. In all but three of the patients the tumor was found either at the suspected level or no more than three segments higher or lower than had been diagnosticated. In all of these patients the growth was exposed after the removal of several additional vertebral arches. In one patient the level symptoms point to a lesion at the sixth dorsal segment, but the tumor was found at a second operation at the twelfth dorsal segment. In two other patients the diagnosis of a tumor at the level of the twelfth dorsal segment was made. The operation failed to expose the growth. A year or more later, in each patient, there were clear level symptoms in the cervical region, and in both instances the tumor was removed from the lower cervical region at the second operation. Of the sixty-seven patients seven, or 10.4 per cent., died after the operative interference; in the operations for extramedullary tumors there was a mortality of 6 per cent. In some of his earlier cases the writer is convinced, from a study of the fatalities, that operative interference should have been refused. If the cases are properly selected, the fatalities after laminectomy for the removal of spinal cord tumors should be no larger than 6 per cent.

5. A Clinical Pathological Study of an Unusual Syphilitic Manifestation Resembling Juxta-Articular Nodules.—Goodman and Young report in detail a case of multiple and symmetrical gummata of the tendons which clinically closely resembled the tumors of juxta-articular nodules. The microscopic picture was very different, however, and hence the two conditions could not be confused. Unfortunately, they were not able to observe the effect of antisyphilitic treatment, but the suggestive history, positive Wassermann, and histology of one of the lesions, convinced the writers of the correctness of the diagnosis of multiple syphilitic gummata of the tendons.

9. The Preparation of a Stable Vitamine Product and Its Value in Nutrition.—H. E. Dubin and M. J. Lewi, proceeding upon the premises that vitamines, as they occur in natural fresh foodstuffs, are of vital importance to satisfactory maintenance and growth; that malnutrition depends not upon insufficient food but upon improperly prepared foods or upon an improper combination of foods; that the thing to recognize is that absence of vitamines leads to poor nutrition; and that if sufficient vitamines are not obtained in the usual diet then the deficiency must be supplied in some other way, thought it desirable to try to prepare a stable vitamine product that would prove effective therapeutically in increasing body growth whenever the nutritive powers of the individual were below par. They succeeded, after extended investigation, in preparing an active vitamine product which they designate as vitamine preparation "V." This is prepared from corn, autolyzed yeast, and orange-juice, thereby assuring the presence of anti-neuritic, antirachitic, and antiscorbutic vitamines. Analysis of this stable vitamine product shows its chief constituents to be calcium, expressed as calcium oxide, 10 per cent.; phosphorus, 15 per cent.; nitrogen, 3.5 per cent.; fat, 2.5 per cent.; iron, 0.3 per cent.; silicates, 5.6 per cent.; moisture, 10 per cent. The remainder goes to make up the rest of the phytin molecule—the main constituent of the product—which is a double calcium and magnesium compound of inosite phosphoric acid. It was found, in their experiments with pigeons, that one gram of this vitamine product given every other day, in addition to polished rice, was sufficient (*a*) to prevent the onset of polyneuritis, (*b*) to cure polyneuritis, and (*c*) to maintain and increase body weight. Encouraged by these results, they decided to determine the effect of feeding the vitamine preparation to children exhibiting a condition that could be attributed to a lack of vitamines in the diet. The cases available for study included children showing evidences of malnutrition, marasmus, and rickets. Two groups of four and ten children respectively were studied. The babies selected were placed in separate cubicles under the constant supervision of day and night nurses; all food was carefully weighed or measured, so that the exact amount eaten was known; the weights of the babies were recorded every other day; and a nitrogen, phosphorus, and calcium balance was run, in the hope of noting any deviation from the normal as a result of added vitamine ingestion. A third set of five babies, receiving their usual diet only, served as a basis of comparison. At the conclusion of the experiment with the first group, all four children showed definite improvement, as a result of the addition of vitamines to their diet, two of the group showing such marked improvement as to bring them up to normal in all respects. In the second group, likewise, the children who received daily doses of the vitamine product gained in weight much more rapidly than did those to whom vitamines were not given. At the end of the experiment it was found that the general condition of the children who had received the vitamine product was somewhat better than that of the children of the control group.

Western Medical Times.

February, 1920, xxxix, 8.

1. Edgar Serum Treatment of Diabetes Mellitus. Thomas W. Edgar.
2. Points in the Treatment of Syphilis. Beverley Robinson.
3. Dietotherapy in Diseases of the Pelvic Bowel. Charles J. Drueck.
4. The Biological Treatment of Influenza and Its Complicating Pneumonia in Private Practice. S. A. van Hoefen.
5. The Extinguishing of the Old American Stock. J. G. B. Bullock.
6. The Value of the "No Good"—The Protection of Vaccination Wounds. Douglas H. Stewart.
7. Stammering and the General Practitioner. Ernest Tompkins.
8. Pruritis Ani. W. Josia Fairchild.

6. The Protection of Vaccination Wounds.—Douglas H. Stewart, in one of his "The Value of the 'No Good'" series of contributions, gives a simple and practical dressing for vaccination wounds, applicable at any stage of their progress. It is made from two pieces of a wooden tongue depressor, placed side by side, and trimmed a little on their narrower edges, so that when laid upon their broader surfaces a V-shaped opening with its apex at the dividing line may appear between them. These pieces, when placed so that the vaccination wound comes within the V-shaped opening made by trimming the ends, will shelter the wound. A couple of strips of adhesive plaster will hold the apparatus firmly in place. The wooden pieces have a tendency to indent and bury themselves in the skin and thus fix themselves in the position in which they are first applied. When such pieces are properly placed the bandage may be applied in the usual way; they may be changed frequently or seldom, neither contact, adhesion nor friction need be considered. Antiseptics may be used ad libitum, once the virus has been allowed a headway or lead of eight days or more. In erysipaloid conditions lead wash or other washes or polyvalent

bacterins may be used locally as desired. All of this may be carried out without disturbing or moving the little wooden protectors. Thus may the fungoids, or the holes or the craters in the skin be avoided.

Schweizerische Medizinische Wochenschrift.

January 20, 1920, l, 4.

Grippe and Puerperality.—Beuttner and Vulliéty continue earlier reports on this subject from the Geneva Obstetrical Clinic. No less than 13 categories of data are given as follows: (1) The gravida recovered, pregnancy taking its normal course with delivery at term, taking the healthy infant home with her (7 cases); (2) The gravida died of influenza without labor supervening (one case only); (3) The gravida aborted and recovered (one case only); (4) The gravida aborted and died of influenza (2 cases); (5) The gravida gave birth prematurely to a living child, the mother recovering (one case); (6) The gravida gave birth prematurely and recovered but the child did not survive (2 cases); (7) The gravida gave birth prematurely and succumbed to influenza, the child surviving (one case); (8) The gravida gave birth prematurely, died of the disease, child also lost (2 cases); (9) The gravida was delivered at term in the midst of the grippe, the infant surviving (10 cases); (10) The gravida was delivered at term in the midst of the grippe, the child being lost (2 cases); (11) The gravida was delivered at term in the midst of the grippe, dying in the puerperium, child surviving (2 cases); (12) The gravida was delivered at term, developing grippe in the puerperium and recovering, child survived (8 cases); (13) Same as preceding with fatal exit of mother, child recovering (one case). An analysis of the material fails to bring out any decisive laws about puerperality and grippe, but the material was small—less than 50 cases.

Norsk Magazin for Laegevidenskaben.

January, 1920, lxxxi, 1.

Dietetic Treatment of Renal Insufficiency.—Motzfelt after a digest of this subject based on the recent literature and personal experience, states that the most striking effect of the salt-free diet was seen in the case of a young man with acute nephritis, who in 22 days lost all his edema and 27 kilos of weight, his chlorine output exceeding the intake by 250 gms. While certain flat failures are cited, there were some remarkable results from low protein diet in chronic nephritis. Thus one woman who was admitted with uremic symptoms recovered to such an extent that she was discharged with relative cure. In another case the male patient was in the last stage of chronic nephritis with beginning uremia. During three months of low protein diet the azotemia was reduced from 2.45 to 0.32 grams of urea per 1000 c.c. of blood. Phthalein output increased from 20 to 60 while the blood pressure came down from 240 to 170. He left the hospital able to resume work. The author finds that in certain cases low protein has a remarkable influence over nitrogen retention, the headache, nausea, vomiting, and asthenia disappearing. The phthalein test is the measure of renal improvement. Milk diet is not suited for carrying out either salt-free or low protein diet but each individual must be studied on the basis of his own responses to diet.

Cesarean Section, 1906–1918.—Brandt and Smith during a period of 13 years and 6 months have performed 62 classical and 40 vaginal cesarean sections in the Gynecological Clinic at Christiania. The classical sections were performed for the following indications: narrow pelvis, 27; eclampsia, 17; premature detachment of normally seated placenta, 5; placenta previa, 5, and the balance scattering. Of the 61 cases tabulated 11 ended fatally for the mother, the operation, however, not contributing to the deaths in at least 3, so that the net mortality was 8, chiefly from peritonitis. In detail the mortality was peritonitis 5, septicopyemia 1, pneumonia 1 and secondary hemorrhage 1. Deaths from the original disease were 2 from eclampsia and 1 from uremia. Of the 40 women submitted to vaginal cesarean section 9 died. In 35 the indication was eclampsia and the other 5 sections were placental cases, with 3 premature separations and 2 previas.

Le Presse Médicale.

January 17, 1920, xxxviii, 5.

Dextrocardia and Dextroversion.—Vaquez and Donzelot state that our knowledge of these conditions is still incomplete. By "dextroversion" they refer to acquired dextrocardia. The incompleteness of our information is bound up partly with the fact that the *x*-ray and electrocardiagraph have only been applied to the study of these conditions in comparatively recent days. Two cases are first outlined in which the patients consulted for cardiac disorders and the beat was found on the right side. In the first there was an extreme thoracic deformity and asymmetry, the want of development of the left chest being responsible for the displacement of the organ to the right. History negative as to pleural or pneumonic affections. Despite palpitations the heart was functionally normal and the electrocardiograms were normal. The radiograms showed that the apex was well to the right. The second case agreed closely with the first, the pulse being somewhat faster than normal—80. No deformity of the thorax is mentioned in this case, and the patient was unaware of his abnormity. A history of pleurisy or pneumonia was not obtained. The condition in both cases was, strictly speaking, inversion of the major axis of the heart from left to right. Our knowledge of these affections is as follows: there is a dextrocardia associated with transposition of viscera and there is an uncomplicated congenital form in which other viscera have the normal position. Closely resembling the latter from the clinical and even genetic side is the acquired dextroversion, the causes of which show much variation. Between the congenital and acquired form of uncomplicated right heart it is by no means always easy to differentiate. Reference works which make of acquired dextroversion a mere consequence of empyema, etc., do not begin to visualize the true state of affairs, for in the author's second case, as in many others, absolutely no idea of the genesis of the case is possible. In theory there may be cases in which the cavities of the heart are also inverted, but the authors know of none.

Archives mensuelles d'obstetrique et de gynécologie.

December, 1919, viii, 12.

Radium in Cancer of the Cervix.—Recasens believes that radium is the indication of choice, some of the results obtained being superior to those by any other method. The type of cancer which yields best to radium is the one with the greatest energy of growth, the dosage and filtrage varying with the variety of cancer. In the papillary forms filtrage may be reduced to 1 mm. and even less if the fungosities are completely enveloped in tubes. In ulcerous forms the filtrage should be stronger and dosage higher. In superficial forms the technic should be similar to that for cancer of the integument, using plates rather than tubes. Infiltrated and nodular forms require strong filtrage and high dosage. Marked leucopenia (hypoleucemia) is a contraindication to the use of radium, as is also the stage of cachexia when advanced. Medium doses of eight or ten days intervals are preferred, other things being equal. By radium therapy the author always means the association of the *x*-rays with radium.

Action of X-Rays on Microbian Flora.—Lequex and Chomé sum up their account of this subject as follows: the action of radium salts on cultures varies with the salt and the culture. The organisms most readily influenced by the salts are the gonococcus and streptococcus, while the salts are inert on the coli group, typhoid and paratyphoid B bacilli. The insoluble salts exert no action unless in immediate contact with the culture. The *alpha* and *beta* rays both appear to possess bactericidal properties at a short distance, while the *gamma* rays appear to be devoid of such properties. Further experience with salts might show that certain compounds exert a specific action on certain germs. In positive cases the radium seems to arrest the growth of culture and suppress pigment-formation and agglutination; but a true bactericidal action, save in the case of the gonococcus and perhaps also the streptococcus, has not yet been seen.

Book Reviews.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. A New and Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, etc., with the Pronunciation, Derivatives, and Definitions, Including much Collateral Information of an Encyclopedic Character. By W. A. NEWMAN DORLAND, A.M., M.D., F.A.C.S., Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; Editor of the American Pocket Medical Dictionary. Together with New and Elaborate Tables of Arteries, Muscles, Nerves, Veins, etc.; of Bacilli, Bacteria, Diplococci, Micrococci, Streptococci, Ptomaines and Leukomaines, Weights and Measures, Eponymic Tables of Diseases, Operations, Signs and Symptoms, Stains, Tests, Methods of Treatment, etc. Tenth Edition, Revised and Enlarged. Philadelphia and London: W. B. Saunders Company, 1920.

THIS is a reprint of the tenth edition of this well known dictionary, issued in the fall of 1919, containing, the preface tells us, definitions of several hundred new terms, while many definitions and description of terms in previous editions have been considerably amplified. The general features of the recent editions have been preserved in this—the good as well as the bad ones, among the latter being the wretched pronunciation of the French words, the barbarous use of *k* instead of *c* in leukocyte and similar words—a fault copied from Gould's dictionary, and the cutting off of the final *e* from the names of alkaloids, in contravention to the authority of the U. S. Pharmacopœia and opposed to the usage of the best writers on chemistry. Some of the good features are the clearness of the printing, the handy size of the volume, many extensive tables, and a table of the Greek alphabet by means of which one without a knowledge of Greek may be enabled to work out the etymology of the different words.

THE STUDENT'S TEXTBOOK OF SURGERY. By H. NORMAN BARNETT, F.R.C.S. Major, and Officer Commanding 32d South-Western Mounted Brigade Field Ambulance; Surgeon, Bath Ear, Nose and Throat Hospital; Surgeon for Ear, Nose and Throat, Bath War Hospital; Consulting Surgeon for Diseases of the Ear, Nose and Throat, Officers' Convalescent Home, Bath: and Bath Educational Authority; Lately Surgical Registrar and Surgical Tutor, Royal Victoria Hospital, Belfast; Surgeon, Cripples' Institutes for Ireland; Surgical Assistant, Belfast Hospital for Sick Children, and Ulster Hospital for Diseases of the Eye, Ear, Nose and Throat. Author of "Accidental Injuries to Workmen with Reference to Workmen's Compensation Act," Etc. With 79 plates and 143 illustrations. St. Louis: C. V. Mosby Company, 1919.

ACCORDING to the preface, the requirements of the student were chiefly thought of when writing this book, but "the oft-quoted busy general practitioner will find in it all that he is likely to require to help him in the surgical part of his practice." If this statement were entirely borne out by the facts the book would be something of a paragon; but, unfortunately, it falls considerably short of the mark. The book has many good points but certainly the "busy general practitioner" will find it but a slender reed to lean upon in many of the surgical problems that crop up. Barnett has written the major portion of the book but there are also chapters contributed by William Calwell, M.A., M.D.; R. C. Elmslie, M.S., F.R.C.S.; Victor G. L. Fielden, M.D., M.B., B.Ch.; Alexander Fleming, M.B., B.S., F.R.C.S.; R. J. Johnston, B.A., M.B., B.Ch., F.R.C.S.; E. M. Pilcher, D.S.O., B.A., M.B., F.R.C.S.; A. Howard Pirie, M.D., B.Sc.; The Late Cecil E. Shaw, M.A., M.Ch., M.D.; Revised by Marmaduke S. Mayou, F.R.C.S.; and P. Watson-Williams, M.D.; Llewellyn Jones Llewellyn, M.B., M.R.C.S.; W. James Wilson, M.D., B.Ch., D.Ph.; and J. H. Whitaker, M.D., B.Ch., D.Ph.

The arrangement of topics is peculiar to say the least. For instance, it seems strange to plunge the student at once into a 30-page discussion of the uses and technique of application of the *x*-ray in surgery (pp. 32-62) when, presumably, he knows practically nothing about fractures and dislocations, tumors, or other surgical conditions, discussed later in the book, in which the *x*-ray is used as a diagnostic or therapeutic agent. Erroneous or misleading statements occur not infrequently in many parts of the book. For example, Hodgkin's disease is said to be "an uncommon condition met with in youth." From this the student would naturally get the very erroneous impression that the disease does not occur in middle and later life. The general discussion of tumors is covered (?) in the space of twenty pages; though it is only fair to state that tumors are again considered by regions and organs. Considering the fact that this work appeared five years after England entered the war, the section on gunshot wounds is astonishingly poor. For the good of the patient it is to be hoped that the student will supplement his knowledge of acute osteomyelitis elsewhere before he meets with a case in private practice. Evidently the author has not kept fully abreast of the development of American surgery; for while, as a rule, the book may correctly reflect current British methods, the treatment recommended often does not conform to American standards. Among the conditions in which the treatment suggested is antiquated are: stenosis of the pylorus in infancy, where we find "gastro-enterostomy for preference," an operation with high mortality and rarely done now, being superseded by the Rammstedt operation which is not mentioned in this work; burns, no mention whatever of the newer methods; gallbladder disease, cholecystostomy recommended as routine, when cholecystectomy is now generally considered preferable; for hydatid cyst of the liver, aspiration and injection or sewing the cyst to the parietes, incising and packing are recommended as the best treatment, when enucleation is by far the method of choice. On the other hand, certain sections of the work are excellent, as, for example, that on deformities by Elmslie: while the symptomatology and diagnosis of surgical diseases are generally covered concisely and well. In our opinion if one already has a fairly good knowledge of surgery, so that he can pick the good and disregard the bad, he will find much of interest and profit in this work; but we can hardly recommend it to the student, who is not yet able to discriminate.

EXAMENS DE LABORATOIRE DU MÉDECIN PRATICIEN. Par le Dr. GUY LAROCHE. Préface du Pr. CHAUFFARD. Avec 111 Figures dans le Texte et hors Texte. Paris: Masson et Cie., 1919.

AS Prof. Chauffard remarks in his preface to this remarkably practical handbook, there is nothing more difficult than to write a laboratory manual in simple and precise terms, elementary enough to be of service to the general medical public yet at the same time sufficiently comprehensive to embrace everything of practical utility. The author of such a work must be at one and the same time a practising physician and a skilled laboratory worker, and such evidently is the writer of this book. It is of course impossible to give within the covers of any one volume a full description of the technique of every laboratory operation, whether of bacteriological research, of analysis of the various fluids of the body, or of the constantly increasing number of seric reactions, and consequently the author of a laboratory manual of this sort must be gifted with discriminating judgment to enable him to select the simplest as well as the most reliable tests. His office is that of guide and to be congratulated are those whom he leads not astray.

The first chapter of this work treats of the laboratory and its essential furniture and apparatus, and then follow chapters on the use of the microscope, sterilization, culture media, the starting of cultures, stains and staining, smears from the throat and mouth; examinations of serous fluids and serous effusions, of the cerebrospinal fluid, of sputum; blood counts, search for pathogenic agents in the blood; serodiagnosis and complement fixation reactions; examination of the urine, of the gastric contents, of the stool; diseases of the skin; conjunctivitis, otitis, rhinitis, pus studies; determination of renal, hepatic, and pancreatic insufficiency; the ultramicroscope; germ carriers.

The book is of handy size, of clear print, and the illustrations, many of them on insert plates, are well executed and add greatly to the practical worth of the book. The physician with a working knowledge of French can use this manual with much satisfaction.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held December 4, 1919.

THE FIRST VICE-PRESIDENT, DR. REGINALD H. SAYRE, IN THE CHAIR.

Election of Officers.—The following officers were elected: *Vice-President*, to serve three years, Dr. Rufus I. Cole; *Trustee to serve five years*, Dr. W. Gilman Thompson; *Member of Committee on Admission*, to serve five years, Dr. Sidney Rogers Burnap; *Member of Committee on Library*, to serve five years, Dr. Carl Vogel.

The Etiology of Thromboangiitis Obliterans.—Dr. WILLY MEYER read this paper. (See page 425.)

The Blood Chemistry of Thromboangiitis Obliterans.—Dr. ADOLPH BERNHARD presented this phase of the subject. (See page 430.)

The Pathology of Thromboangiitis Obliterans.—Dr. LEO BUERGER discussed this subject, illustrating his talk with lantern slides. (See page 431.)

Dr. CHARLES GOODMAN said these papers had interested him very much. His experience with thromboangiitis obliterans covered a period of 25 years. During this time, we have studied this disease from all viewpoints. He was not, however, wholly in accord with the views as stated this evening. In 1912 he visited Kuettner's clinic in Breslau. While there, two of the assistants informed him of the frequency of their observation of gangrene, occurring among the soldiers during the Bulgarian campaign. It was his theory in 1912 that there must be a casual relationship between the frequent occurrence of gangrene and the prevalence of typhus. Similar observations had more recently been reported to him by Dr. Zinsser of New York and Dr. Shattuck of Boston, both of whom had been in Serbia during the war. In 1916 he reported three positive serological reactions in a series of 21 cases of thromboangiitis obliterans tested accordng to the methods described by Plotz, Olitsky, and Baehr. The small number of positive reactions in these tests was explained by Dr. Libman in this way: In typhus fever, patients might lose their serological reactions within a period of five months, and one was dealing with the end results of a previous inflammatory disease of the arteries and veins, with the exception of one case. That patient presented acute manifestations of thromboangiitis, and that patient's blood gave the best serological reaction. Emil Wiener, from his post mortems on typhus subjects, stated that the most characteristic pathological evidence of typhus was the extreme fragility of the vessel walls. This might entail thrombotic formation in the vessels of the *lower extremities* and elsewhere. Fränkel concluded that the areas of necrosis shown in the walls of the arteries after typhus must be considered pathognomonic of the disease. Wolff wrote in 1916 that gangrene of the extremities was among the frequent clinical manifestations of typhus and quoted Brauer, who ascribes the development of gangrene to the specific inflammation of the arterial intima. These assertions were furthermore confirmed by other observers, including Jochman, Fisher, and Estlander. In view of the recent interesting developments of the knowledge of the pathology of typhus, he undertook, in 1917, the study of the pathological lesions of typhus especially as regards its predilection for the vessels of the extremities. Through the courtesy of Dr. Libman of Mt. Sinai and the cooperation of the Hygienic Laboratories at Washington and Dr. Park's laboratories here, several guinea pigs inoculated with blood from typhus were sent to him. These animals were observed for various lengths of time and then killed under anesthesis and the specimens removed for histological study. This work was delayed somewhat because it was found that the anatomy of the blood vessels of the extremities of the guinea pig differed in detail from that of the distribution of the vessels in the human being and as there was no published description of the anatomy of the vascular system of the guinea pig at their command, he had to make a personal observation of the anatomy of the vascular distribution in the extremities of the pig. This he was able to do through the courtesy of Prof. Senior of the New York University Laboratories. His work was then interrupted for two years because of his absence in France. Since his return he had taken up these studies again, and as far as he had gone in the observations of the sections of the blood vessels of the guinea pigs inoculated with blood from typhus patients, he had at least two specimens which showed lesions of definite changes not unlike those found in the vessels of human beings suffering from thromboangiitis obliterans. The histological picture was strongly indicative of the presence of an infectious process in the walls of the blood vessels. Further sections would be examined and as soon as more observations had been concluded the findings would be reported.

Dr. GEDIDE A. FRIEDMAN said that from the observations that he had made in presenile gangrene, he would have to disagree with Dr. Meyer that the disease named by Dr. Buerger thromboangiitis was limited to the Jewish race. Dr. Friedman said he had seen the disease in Esthonians and Russians as well as in Hebrews. He had observed thromboangiitis in this country almost exclusively among the latter, because few Esthonians or Russians had immigrated to the United States. No matter what deduction one might make from end pathology in regard to the etiology of the disease, the most prominent factor must be nicotine, as the disease rarely occurred among women, for the reason that the majority of women did not smoke and the few that did, did not smoke to the same excess as men. Experimentally, it was of interest that if one injected nicotine intravenously into a rabbit, vasoconstriction of the rabbit's ear, foot, or mesentery would be observed, while injection into a dog, caused vasodilatation of the lip to be noticed. He mentioned this in regard to Dr. Buerger's question why nicotine should affect only certain perpheral vessels. It might affect the latter for the same unknown reason that wood alcohol mainly affects the optic nerve. Many, as Dr. Meyer, had thought that thromboangiitis was possibly due to excessive smoking. He agreed with Dr. Meyer, but really believed that so far he is not on the right track. He emphasized that thromboangiitis was due to smoking tobacco of a low grade. In Russia, "machorka," the lowest grade of tobacco, was frequently used by the poor and it was among this class that thromboangiitis occurred. If the disease would have been due to cigarettes of a better quality, the disease would probably be a common one and would not spare the rich. In regard to typhus fever as an etiological factor in thromboangiitis, Dr. Friedman recalled from his experience that presenile gangrene occurred in some cases of typhus, but he absolutely disagreed with Dr. Goodman that typhus fever was the chief etiological factor. If thromboangiitis were due to typhus we should find the disease as frequently in women from Russia as in men, because typhus fever afflicted both. Thromboangiitis was not liable to occur after typhus than after typhoid or any other infectious disease. It might be that in smokers of low grade tobacco, infection is an additional cause, lowering the resistance of the vessels; but the chief agent must be tobacco of a low grade. It would be worth while repeatedly to inject nicotine or extracts of low grade tobacco into animals in order to find out if it was possible to obtain experimentally the picture of a condition of which the pathology was so well worked out by Dr. Buerger.

Dr. H. P. DE FOREST said that he had lived and practised in Brooklyn from 1890 to 1902, where he was in charge of the pathological laboratory of the Methodist Episcopal Hospital. One of the first patients he saw in the beginning of his practice was a Russian Jew, a dealer in art illustrations, lithographs, and other reproductions in colors, who was a smoker and drank considerable beer. He complained of trouble with a hand and a foot. Little by little his condition became more and more painful and more and more severe. He was seen in consultation by a half dozen of physicians, friends of the speaker, without any of them arriving at a diagnosis. Finally he was seen by Dr. Browning who suggested that the man had Raynaud's disease. The circulatory disease progressed, gangrene began, and one foot was amputated. The man was put on a

suitable diet, the alcohol and tobacco stopped and arsenic and iron administered. He had written up a report of the case and had the galley proof of the article when the man died, and at autopsy in dissecting the vessels he found the same picture that Dr. Buerger has presented. His pictures might have been taken from their sections. The picture did not tally with that of Raynaud's disease described in the article, so the galley was never sent back and they came to the conclusion that the man was suffering from the disease described this evening. Following this he had another case and one quite recently which had given him a better knowledge of the condition, and a different conception of the etiology than that expressed this evening. The three men he saw suffering from this condition were all engaged in occupations which brought them into contact with finely powdered metal, particularly bronze, and, while alcohol and tobacco might be a factor in lowering the vitality, it seemed possible that there might be a definite specific neuritis due to the copper, just as we had a specific neuritis due to lead and arsenic. It seemed possible that copper might be operative in producing this disease because not only did the blood vessels show thrombotic changes but sections of the spinal cord and sciatic nerve showed degenerated bands of fibrous tissue. While still open to conviction he felt that copper might be the specific cause of this condition.

Dr. Otto Hensel stated that he had performed certain experiments, injecting metals into dogs, and they never got the lesions of thromboangiitis obliterans. The changes were very much like those produced by adrenalin and were chiefly in the media of the blood vessels.

Dr. Fenton B. Turck stated that he was very much impressed with the observations made in the course of a study of some cases of thromboangiitis obliterans at the Hospital for Deformities and Joint Diseases with the idea in mind that this disease was associated with the products of autolyzed tissue. There was reason to believe that these individuals were incapable of forming antibodies against their own autolyzed tissue and they showed a lack of immunity to their own autolyzed tissue. This idea seemed to be borne out by the fact that in the normal individual the injection of a 0.5 c.c. of chloroform caused no great reaction, but if one injected 0.05 c.c. of chloroform into one of these patients a considerable reaction ensued. We were all producing autolyzed tissue poison and the antibodies against it, and in the normal individual there was an equilibrium between the products of the autolyzed tissue and the antibodies, but in these people with thromboangiitis obliterans there was evidence of a specific lack of immunity to their own autolyzed tissue. One of the results of this devitalization of the tissues was a backing up of the blood in the small arteries and venules which resulted in coagulation of the blood in these small vessels as a consequence of adsorption phenomena. Working on this theory they had injected some of these patients suffering with thromboangiitis obliterans with the antitoxins of autolyzed tissue, and this treatment seemed to produce symptomatic results at once, hence he believed that it was in this direction that they should seek the solution of the problem. Whether any race showed a lack of antibodies as a racial characteristic was a question to be investigated, but it seemed very certain that the individuals suffering from this disease had this deficiency.

Dr. Henry W. Frauenthal stated that he had seen nearly 900 cases of thromboangiitis; 20 per cent. of these cases claimed they never smoked and some had taken up smoking for its anodyne effects so as to relieve their pain; about 35 per cent. of these cases resulted in amputation of the toes or other portions of the leg. He had seen a number of patients who had the disease between the ages of 17 and 30 and he did not consider that they had smoked long enough to become saturated with nicotine. If, as Dr. Meyer stated, nicotine was the real factor in the disease, it should be very common in natives of this country, many of whom smoked as many as 100 cigarettes daily. Ninety per cent. of the cases he has seen were Russian, Polish, and Austrian Galicians, and it therefore seems that the disease was characteristic of a location. During the recent meeting of the American College of Surgeons, he showed a number of these cases to Sir Robert Jones of Liverpool who said that in his large experience he had never come across any of these cases. Inasmuch as the English were great smokers, he should find some cases among them. It was odd that this disease should never occur in women, although women had obliterating endarteritis from diabetes and other causes. Ninety per cent. of these cases in men came from the restricted district of Galicia. A percentage of these cases occurred in the American born whose parents were born in Galicia. He had seen quite a few cases in native-born Americans, and in one case the parents and grandparents were born in this city and the great-grandparents came from a city along the Rhine. One of the cases referred to by him by the Rockefeller Institute, Mr. H., who was of Scotch descent, was a farmer in Florida. Another interesting case, that of an active practising physician in New York, who had one leg amputated at the Presbyterian Hospital and whose other leg he had succeeded in saving by treatment with white light; the patient was born in Ireland. So we undoubtedly had sporadic cases among all nations.

Dr. Willy Meyer, in closing, emphasized the fact that he had in his paper attempted to discuss only the etiology of thromboangiitis obliterans. He said he had the highest appreciation of Dr. Buerger's work but as he was not a pathologist he would not attempt to go into the details. However, he thought Dr. Buerger's observations referred particularly to the end results, because when a patient developed gangrene he no longer had the earlier stage but the end result of the disease. There were many varieties of gangrene and there was one variety, Raynaud's, which had to be kept in mind. It seemed significant that they should have found at the Lenox Hill Hospital in every instance in which they examined the blood for sugar a hyperglycemia. Further search showed that in quite a number of other troubles there was a hyperglycemia; therefore they set it aside as characteristic of this disease. However, it seemed to point to the fact that they had produced by various causes a disturbance in the glands of internal secretion. Of the patients he had seen every single one smoked for many years. If a patient having typical thromboangiitis told him he had not smoked, he thought either that the patient did not tell the truth or else he had another type of gangrene and not the variety designated as thromboangiitis obliterans. Surely many people smoked an enormous number of cigarettes and smoking was very prevalent in many countries where they did not get thromboangiitis obliterans. In the type of people who got thromboangiitis obliterans there was additional nervous trouble due to hypofunction of the sympathetic nervous system. Personally he had found the disease only among Hebrew immigrants. He thought in one instance that he had found it in an Irish boy, but closer inquiry revealed the fact that the boy's father had come from Russian Poland and had married an Irish woman. Why the Esthonians had the disease he could not explain. Dr. Ochsner reported having found it among the Scandinavians and it is said to have been found among the Japanese, but whether the disease was the same as that which we call thromboangiitis obliterans he did not know. Dr. Goodman's statements were entitled to careful consideration. He had, since reading his remarks on the possible relationship of typhus fever to thromboangiitis obliterans, asked every patient whether he had had typhus fever and in every instance the reply was in the negative, and he had always believed that typhus fever had nothing to do with this type of gangrene. No one had ever been able to explain why men were affected and not women. He had tried to blame it on the genital sphere and had even thought of tying the spermatic cord to see what effect that procedure would have on the disease but had desisted. He believed that every symptom of the disease could be explained by the continuous poisoning of the system with the many poisons contained in tobacco, and so far we did not find inveterate smokers among the female sex. He acknowledged that what he had brought this evening were theories and hypotheses; but if the paper stimulated to further discussion and further investigation he was satisfied.

Dr. Buerger, in closing, said he wished merely to

add a word concerning the influence of tobacco. Erb, many years ago, in writing of the influence of tobacco on vascular diseases, called attention to the lesions of the intima of the popliteal and other arteries of the lower extremity and attributed the alterations to tobacco, and Dr. Buerger said he believed there was a great deal of truth in this theory. If many of these cases of thromboangiitis obliterans were followed it would be found that in the majority of instances the patients did smoke. However, when one encountered patients who deny absolutely that they had used tobacco one could scarcely feel as had been suggested by Dr. Meyer that the patient was not telling the truth. Another point that should be borne in mind was that the disease did occur occasionally in women, and, of course, in such instances the objection might be raised that the disease was not true thromboangiitis obliterans. His idea was that although tobacco might play a rôle in the production of arterial disease (no matter what the variety of the thrombosis), it certainly did not produce the typical picture characteristic of thromboangiitis, and furthermore if tobacco was the cause why should it produce that characteristic picture in some cases and not in others?

SECTION ON MEDICINE.

Stated Meeting, Held October 21, 1919.

DR. EDMUND P. SHELBY IN THE CHAIR.

Manifestations of Influenza During the Earlier Periods of Its Appearance in France.—Dr. HANS ZINSSER made this presentation which he prefaced by stating that there was not much to be said on the subject because the epidemic remained in its early stage for a short time only. When influenza began to enter the army and to attack the civilian population the Pfeiffer bacillus was supposed to be the cause. A number of observers in France expressed themselves as being doubtful as to whether this organism was in reality the cause of the epidemic, and there is still much uncertainty on this point. However, there was now some evidence which gave a better basis for an opinion than we had last winter. There was a confused mass of data which many investigators had attempted to analyze. Dr. Park and his associates had come to the conclusion that the Pfeiffer bacillus was the most likely cause of the disease, though actual proof was still lacking. They had been accustomed to think of influenza as a respiratory disease. As a matter of fact many of the early cases did not have any of the characteristics of a respiratory disease though he believed it was the same disease that they saw later. In the Spring of 1918, the disease appeared in Italy, Southern France, and Spain. Dr. Ward MacNeal, working in the Division of Laboratories under Colonel Siler, had compiled the history of the disease in the American Expeditionary Forces from available records. According to his study the first outbreak among American troops occurred at rest camp No. 4 near Bordeaux, in the latter part of April and early part of May. Another outbreak occurred among the men in a company of marines stationed as headquarter's guard at Chaumont. When this outbreak occurred Dr. MacNeal was sent there with a mobile laboratory and the speaker joined him later and together they made investigations. It was impossible to state accurately the number of cases that occurred because cases were so mild that many did not even report at sick call. There were certainly over 300 cases that could be traced and probably a great many more, because occurring at headquarters there were many casuals, transportation outfits, and scattered units of troops, field clerks, etc. The clinical character of these cases was extremely uniform. Base Hospital No. 15 was situated at this place, the director of the medical service at this time being Doctor Vaughan. The severe cases were hospitalized and laboratory studies made. The onset of the disease was uniformly sudden; a very few cases had a preliminary coryza. There was a remarkable uniformity in the history of the cases, examples of which were as follows: a man would go to bed perfectly well, would wake up during the night with headache, would try to get up, and would find that he was dizzy, nauseated, and sick. There were no focal symptoms and no catarrh. A few men had sore throats and a very few had coughs and slight bronchitis. The time of onset could be definitely ascertained to the hour. The temperature ranged from slightly above 99° F., to 101.5°, 102°, or even to 104° F. in some instances. The general picture was one of very severe systemic fever. There was pain in the head, eyeballs, muscles of the back and legs, and these symptoms were practically uniform. There were no enlarged spleens, no rashes, and in fact absolutely nothing definite. One could usually make the diagnosis from the above mentioned symptoms which were largely subjective. The blood counts were very irregular; some showed a leucocytosis of perhaps 1,250; most of them showed slight leucopenia; there was a relative lymphocytosis in most cases. The possibility of pappataci or sand fly fever and of dengue was considered, and insects were studied without their being able to show any relationship between prevalent insects and the sick. As a matter of fact there were practically no mosquitos or other insects at this time in or around the barracks, flies had not been a serious pest, and living at headquarters the men were not lousy. The striking thing about this epidemic was the mode in which it attacked units. In many cases it hit a unit almost in a day, so that it must have been due to some factor that struck many men at the same time. When such a thing occurred the most natural thing was to look into the food supply. A consignment of bad meat had come to them just at this time and complicated the question, but as the disease appeared at about the same time among French troops where there was no possibility of its being ascribed to the food, this factor as a cause of the epidemic was also ruled out. It soon became evident that they were dealing with a disease that could unquestionably be transmitted directly from person to person. Every member of the attending physicians' office who examined the men with this disease and looked down their throats got it, sooner or later. Both throat cultures and blood cultures taken at that time were entirely negative. Doctor Zinsser quoted from a report written at the time in which they had made the statement that they were not at all certain that they were dealing with "grippe," and thought that it might be a disease due to a filterable virus. While making such investigations as were practicable they definitely made up their minds that experiments on human beings on a large scale were out of place at this time for research purposes, owing to tactical conditions. The speaker was next ordered to the 42d Division, where they were beginning to have the disease, and where, at Baccarat, it was occurring in battalions that were doing trench duty. Large numbers of men came down with the disease, but many did not even report at sick call. Most of the men who did report were set at light duty or quarters, and in a few days returned to their regular duties. Here again the striking feature was the way in which the disease attacked almost entire battalions in a day. In one company sixty men came down with the disease in one day. About this time the symptoms began to include sore throat and mild bronchitis, and there were a few bronchopneumonias. In smears taken from the throats they began to find the influenza bacillus. In many instances also, there was a Gram-negative micrococcus which was extremely minute when brought under partially anaerobic conditions in ascitic fluid. It was impossible to say anything definite about the bacteriology at that time. There was again evidence of person to person transmission in the scattered cases. He felt that the disease as it appeared was unquestionably influenza, since many cases that were much more severe had the same basic character with a superadded respiratory infection which was different in different places, the hemolytic streptococcus and other varieties of streptococci predominating in some places and the pneumococci in others. His impression was that influenza in its pure, uncomplicated form was a very mild disease which was not accompanied by respiratory symptoms and from which the patient recovered in a few days, and had it not been for secondary infections it would have caused neither any serious military problems nor any considerable death rate. In spite of the sudden seizure of many men of a single unit on one and the same day, he believed that food and water were not causative factors of the disease. The only clue to help explain this form of

sudden occurrence within a short period in one and the same group, was the fact that in the 42d Division the outbreak was preceded by marches in the dust. In this connection it is interesting to note that the British had observed that the incidence of dysentery seemed to be increased in relation to dust. Desiccation did not always kill bacteria, as was shown by Stillman's recent experiments in respect to the pneumococci and the same was true of poliomyelitis. On leaving the Baccarat region Doctor Zinsser returned for a brief period to Dijon for report to Colonel Siler, and on arrival found fourteen cases in the very early stages of the same disease in a Motor Transport Unit living in barracks two miles outside of the city. With Doctor MacNeal early throat cultures were taken on special media from fourteen of these cases, and in all of them influenza bacilli were found by the speaker and by Doctor MacNeal, either morphologically or in culture. As to the etiology it seemed that we must take the ground that we had thus far no definite etiological findings. Several British investigators had been inclined to believe a filterable virus was the cause of the disease, but later evidence seemed to discount this. Blake found that by a pure influenza bacillus he was able to transmit influenza to monkeys. Richard Taylor by taking smears from the large bronchi found influenza bacilli more numerous in proportion as they were taken nearer the pulmonary alveoli. A definitely filterable toxin which passed a Berkefeld filter had been found by Mrs. Parker in the laboratory at the College of Physicians and Surgeons, and while it had not the potency of diphtheria and tetanus toxin, 2 c.c. would kill a rabbit. Study on this toxin was still in progress at the above named laboratory by the worker mentioned, and the discovery of a potent poison of this kind would explain the systemic infection and somatic muscle pains even in cases where perhaps there was only a relatively slight infection of the throat. It was the opinion of the speaker that while the etiology of influenza was not definitely determined, the above facts would seem to place the influenza bacillus in the most important place among the suspected organisms. Other organisms, like pneumococci, streptococci, etc., could be definitely regarded as purely secondary infectors to which the disease seemed to predispose to a high degree. The great frequency with which very small Gram-negative micrococci were found in the throats must be borne in mind when bacteriological investigations were made on the throats of early cases. The discovery of the virus must, of course, not be considered impossible, and this subject was being accurately investigated in many laboratories in the United States at the present time. The chief points of the above remarks were the fact that influenza without complications must be thought of as a systemic infection without any respiratory complications, and the entire disease could run its course, if a certain mild one, with nothing more than slight reddening of the pharynx. It was by the study of such early epidemics in their pure state that eventual etiological certainty would be obtained.

Dr. HARLOW BROOKS suggested that the rapid spread of the disease in the camps might have been due to infected mess kits. Certain predisposing factors might also play a part in the dissemination of the disease. It was interesting to note that Zenker's degeneration was observed not only in the recti muscles but also in the psoas muscles in some cases of influenza.

The Argonne Influenza Epidemic.—Dr. HARLOW BROOKS and Dr. CURTENIUS GILLETTE based this report upon cases observed in the field and evacuation hospitals of the first Army, then operating in the forest of the Argonne, during the months of September and October, 1918. There could be no question as to the highly contagious character of the infection in the army area, as evidenced by numerous examples of direct contact transmission among the troops and especially among the overworked officers and enlisted men in charge of the cases. The predisposing factors, however, concerned in the spread of the infection at the front were more obvious than was apparent in the troops and hospitals, or in the camps at home. Reports from civil and military physicians then in charge at home confirmed the opinion that the type of the infection in the United States and on the transports was much more virulent than that seen in the area of the first Army. Exposure was the first and most important of the predisposing factors. The second factor in grade of importance was apparently that of exhaustion. The third factor of great importance in predisposition undoubtedly was to be found in the inadequate and irregular feeding of the troops. A fourth predisposing factor, for cases which occurred on the fighting line, was gassing. Overcrowding in billet, dugout, and bivouac, and direct transference of infection from case to case, was apparently not an important factor at the actual front. In the field hospitals, also, this was believed to have been a relatively unimportant matter, since, except perhaps under conditions of very great military urgency, the field hospitals definitely attempted to isolate these cases from others, and particularly from the wounded or gassed, nor were cases of influenza usually evacuated from the well conducted field hospitals in the same ambulances or trucks as those conveying cases suffering from traumatisms. In certain of the larger evacuation hospitals further back these precautions were not taken, and overcrowding and direct personal transmission of the infection was favored by slack and indifferent methods of triaging and of warding patients. Infection from the improper cleansing of mess kits in overcrowded dugouts at the front was doubtless a real factor in many cases. The transporting of patients with influenza and pneumonia in crowded ambulances and hospital trains together with the wounded and gassed patients, contributed largely to the spread of the infection. Some of these errors were overcome later. The three classical types of the infection were clearly distinguishable—the catarrhal, the gastrointestinal, and the meningeal. By far the greater number of cases belonged to the first class; indeed, all the cases showed to a greater or less degree the symptoms of catarrh of the respiratory tract. The manner of onset was practically identical in all cases. As a rule the immediate onset of the disease was preceded by several days of indisposition, malaise, and depression, generally attributed by the patient to the natural exhaustion consequent upon his military exertions and the conditions of life. The observers believed this to have been usually a receptive condition rather than an incubation period. In some cases, chiefly those in which the disease was contracted by the direct transference of the infection, the onset was sudden and was introduced by a chill or by fever. As a rule there were two or three days, though sometimes but a few hours, of nasal catarrh, of sneezing, of coughing, and of conjunctival injection. Physical and mental depression of a very marked degree was almost invariably present. In the catarrhal or respiratory type of the disease, further progress was practically through an extension or accentuation of these symptoms. The temperature, which was often introduced by a chill, would rise rapidly to the level of 102° or even 106° F. by rectum. The pulse rate was not proportionately quickened but it was usually accelerated to a considerable degree. The respiratory rate was increased, even in patients who as yet showed no demonstrable pulmonary lesion. It was notable in this epidemic that symptoms of pneumonia usually preceded considerably the appearance of signs justifying the diagnosis. The leucocyte count was not usually increased, and a leucopenia might be present while the differential count showed a relative increase of the mononuclear elements, or no change whatever. The urine was entirely negative, except in patients with very high fever, when a febrile albuminuria appeared; and though heavy sweats were frequently seen together with marked thirst, the amount of urine was frequently notably diminished and the acidity so increased that patients themselves remarked its acid and irritating character. Physical examination was largely negative except as to the respiratory tract. The mucosæ of the pharynx, nose, and eyes were hyperemic, and the soft palate was sometimes suffused to the point of induration, and was of a dusky red color. There was a marked increase of nasal discharge of a clear watery character, and the lacrymal secretion was much increased. Many autopsy records showed involvement of the accessory sinuses. In the lungs, particularly over the bases, fine crackling râles were found. Pain was complained of under deep respiration, and râles were usually most abundant over the bases posteriorly. The

percussion note in most instances was even thus early hyperresonant especially latterally and over the bases. The patient's complaints were, first of depression, exhaustion, pains all over the body but particularly in the loins and in all the muscles of the calves. Irritating cough and "stuffed up nose" were also complained of. Appetite was slight, the bowels usually loose. The "sick all over" complaint was frequently made. Most patients who, at this period of the infection, were provided with warmth, rest, and a light, hot diet, recovered within a very short time. The average length of time in the hospital for these patients was three and a half to four days, though they were much depressed and weak. Under favorable conditions one might confidently expect as high as seventy per cent. of the men to be returned to duty within a week. Complications, particularly bronchitis and pneumonia, were apt to arise at any time in the course of the disease, but especially in those prolonged though mild manifestations which would hang on for weeks in patients who were unable to secure the necessary attention in the way of rest, warmth, dryness, and proper feeding. Diffuse bronchitis was probably present in all patients. In those cases in which the disease went on to the development of clinical pneumonia, as a rule the process was distinctly a progressive one and could be traced either with the fluoroscope or by the ordinary methods of physical examination. Cutaneous emphysema was not an uncommon occurrence. The mortality rate in cases of pneumonia was high when the process became compact or widespread. A few of them terminated with a typical crisis, but most of those of favorable outcome convalesced by a slow return of the temperature by a lysis, usually of long duration. None of the patients except those with but slight pulmonary involvement recovered or convalesced rapidly. Pleurisy was practically constant in those patients in whom the pneumonia was compact and when it reached to the surface. The gastrointestinal cases were second in occurrence to those of the catarrhal type, the chief difference which marked these from the catarrhal cases being the predominant symptom of diarrhea. The stools were very frequent, were watery, and contained a good deal of mucus, but seldom blood. The meningeal type of influenza was not frequent. The dominant symptoms were those of a very severe prostration, excruciating and very persistent headache, slight stiffness of the neck muscles, occasionally some accentuation or irregularity of the knee jerks and an occasional and transient pseudo-Babinski reaction. Occasionally a slight and inconstant Kernig reflex was found. Lumbar tap showed no apparent microscopic change in the cerebrospinal fluid, which was sterile, but in the patients showing symptoms of cerebral irritation pneumonia was likely to develop and with it an early delirium of particularly active character. In several of these patients true streptococcus or pneumococcus meningitis was found, but the so-called influenza bacillus was never isolated from the meningeal exudate. Other complications than pulmonary and intestinal were very rare in this epidemic. In the way of management it was pointed out that the two most essential factors in the treatment of all forms of the epidemic were rest and warmth. These alone, in most early cases, predisposed to recovery.

Dr. Warfield T. Longcope said that the subject had been so well discussed by both men that there remained little to add. However, there were two matters of which it might be worth while to speak, though they might be considered as sequelæ rather than as a part of the disease. He had been interested in November and December of 1918 in the cases of bronchitis, as well as in other varieties of respiratory infections, including occasional lobar pneumonia from which type pneumococci were recovered, that prevailed in France after the epidemic of influenza. The picture, however, was quite different from the complicating pneumonias of influenza. It seemed very probable that we were dealing with what might be called a hang-over infection from the epidemic. It would be remembered that the early outbreaks were spoken of as a three-day fever and the cases were rarely complicated by respiratory infection. Later the complicating respiratory infections, caused by the streptococci and other organisms which acted as secondary invaders, rendered the originally mild influenza a very fatal disease. In November of 1918 these secondary infections reached their height and caused a terrific mortality. Later it seemed as though the influenza had subsided but the secondary invaders, their virulence and invasive power being much enhanced, spread from one to another normal individual as they would not have done under ordinary circumstances, and gave rise to the multiplicity of respiratory infections following the actual epidemic. The other piont was in regard to the actual complicating pneumonias in influenza patients. Inasmuch as in many of the base hospitals there were cases in which the signs of irregular consolidation persisted sometimes for weeks, with cough and actual hemorrhages together with fever, the condition was often considered to be tuberculosis. However, no tubercle bacilli were found and the patients eventually recovered. The *x*-ray in these cases showed some dilatation of the bronchial tree and it was probable that the subacute infection of the lung had produced bronchiectasis. In view of these facts it might be supposed that during the winter we should see many cases of bronchiectasis. As a matter of fact, the speaker had seen quite a number of cases of bronchiectasis from which the influenza bacilli were cultivated in practically pure culture.

Dr. Haven Emerson quoted statistics of the incidence of influenza in December, 1917, and January, 1918, and for December, 1918, and January, 1919, which showed that there was practically no difference in the incidence of the disease in these two periods, and stated that it seemed quite possible that the incidence of influenza was equally as serious during the winter preceding as when it was recognized among the two million men in our army. Other statistics of interest were that among 220,000 cases, the death rate from influenza not complicated by pneumonia was 1.2 per cent. The death rate among cases in which pneumonia was recognized was 4.37 per cent. It was of interest also as a matter of comparison that the death rate from influenza and pneumonia, as a whole, in our army was 6.196; in the British Army among 104,000 men the death rate was 6.75 and in the French Army, among 131,000 men, it was 7.21 per cent. As to the comparative value of these statistics, one could not be quite sure as it was doubtful if we could claim equal or comparative methods of reporting the incidence of disease. In the American Army the epidemic reached its height in the week of Sept. 22 to Oct. 1; in the French Army, the disease reached its height during the week from Oct. 12 to Oct. 20, and in the British Army during the week of Oct. 27 to Nov. 2. It therefore swept from the American to the French, to the British armies.

Dr. George Dow Scott said that while he did not see as many cases of influenza in adults as he saw in infants and children, he had nevertheless been impressed by the fact that the disease presented many curious phases. He related that Professor Dunbar, an American, who was head of the Hygiene Institute in Hamburg was sent by the German Government to Manchuria to investigate the plague that was raging there in 1915. Later Professor Dunbar prophesied that within three years the Manchurian plague would have spread all over the world, and within a period of three years we had this tremendous epidemic. It was not a true epidemic of influenza, Dr. Scott believed, but the Manchuria plague, a typical influenza, if one wished to call it so, modified according to conditions in different localities. He mentioned the Manchurian plague because it had always been a question in his mind whether this epidemic was one of true influenza.

Dr. Maurice Fishberg stated that the points brought out in reference to the incidence and etiology of influenza in France could be correlated with facts observed among the civil population in New York City during the fall and winter, 1918-1919. Here it was observed that mainly the previously strong and healthy were most likely to succumb to influenza and its complications. Those affected with chronic diseases, especially of the respiratory tract, as chronic bronchitis, bronchiectasis, asthma, pulmonary emphysema, tuberculosis, and the like, stood influenza well; nearly all recovered. The young, the robust, and the strong, were more likely to develop bronchopneumonia and to succumb to it than the weaklings, the chronically sick, and the decrepit. Observations made at Framingham,

where the Community Health Service had had detailed statistics of the general health of the population, were to the same effect: Those suffering from pulmonary tuberculosis, active or quiescent, suffered less from influenza and its complication than the previously healthy. Dr. Fishberg thought that gassing had very little to do with the course of, and mortality from, influenza among the soldiers of the A. E. F. in France. As to the observation made by Dr. Brooks that some patients developed cutaneous emphysema, Dr. Fishberg stated that similar cases were observed in this city. In most cases the emphysema was but a complication of pneumothorax which preceded it and was probably due to rupture of some air cells caused by cough, or by loss of continuity in the visceral pleura owing to the pathological process in the lung. Dr. Fishberg had not been convinced that rigid rest immediately instituted was a sure preventive of complicating bronchopneumonia. He had had patients who refused to go to bed, but kept on working despite symptoms and signs of influenza, yet they did not develop bronchopneumonia. It appeared that those destined to develop pneumonia did so irrespective of the treatment instituted, and signs of lung complications could be elicited within twenty-four hours after the onset of the disease. These patients were unable to be active or to work even if they wanted to do so; the acute fever and debility were pronounced. It was curious that our preconceived notions about the sequelæ of influenza had been somewhat shattered since the recent epidemic. Many patients had pulmonary hemorrhages during the course of influenza, and some had hemoptysis after the acute symptoms had subsided, but he had not seen a single case of pulmonary tuberculosis which developed after influenza. Most of the pulmonary lesions after influenza consisted in bronchitis, bronchiectasis, or pleurisy. In only two cases admitted under his care to the Montefiore Hospital did it appear as if the tuberculous lung lesion followed an attack of influenza, but careful study revealed that in one case the tuberculous nature of the lesion was rather doubtful, while in the other the history showed clearly that the patient had had tuberculosis before the symptoms of epidemic influenza made their appearance.

Dr. Gedide A. Friedman spoke more particularly of the gastrointestinal type of influenza. He said there were cases in which it was doubtful if one could consider them as a purely gastrointestinal type, since slight nervous and respiratory disturbances were also present, but he felt sure there were really cases of gastrointestinal variety. He would not emphasize the existence of such a type had he not observed these cases in families in which typical cases of influenza existed. One member of a family would have the respiratory type of the disease and another member of the same family would come down with diarrhea, colic, or vomiting. There was no doubt in his mind but that there was a gastrointestinal type of influenza and if there was such a type it made very doubtful the theory that the primary seat of the disease was the respiratory tract. He had had cases in which the only symptoms were fever without cough, throughout the febrile period. In other words, one could not conceal the fact that the disease, influenza, was a general infection. Dr. Zinsser had referred to the infection of masses of people simultaneously. That was not alone characteristic of influenza, but was also true of typhus fever. In a week or sometimes within a few days many would be affected with typhus fever in prisons. A question that came to his mind was whether any experimental work had been done in reference to the transmission of influenza by insects, just as in typhus or Texas fever or other infectious diseases. Thus far there was nothing on this phase of the subject in the literature.

Dr. Zinsser, in closing, said that he had not intended to imply that a sudden onset occurred only in influenza because, as they all knew, this occurred in a number of other conditions, especially such as those conveyed by ingestion with infected food. The disease could not be attributed to lice because the marines were living under particularly good sanitary conditions, they were not troubled with vermin, and were in a condition of exceptional fitness. There were no mosquitos and no sand flies in the region, and in fact no insect to which the infection could be attributed. In regard to the question asked about influenza prophylaxis, nothing specifically could be said. The general prophylaxis was that used for respiratory diseases in general, the prevention of the transmission of sputum as in spitting, coughing, etc., by wearing of masks. But since the hour was late it might be best not to enter upon the subject of our specific influenza prophylaxis, and it was premature to say anything more about vaccination.

Dr. Brooks expressed the opinion that Dr. Fishberg's comparison was scarcely a fair one, when he compared groups of men of the same age and same condition under military discipline with the civil population as a whole which was made up of people of all ages under very variable conditions. As to the frequency of bronchiectasis, they were finding a large number of cases at the present time. He had seen more cases of bronchiectasis this autumn than during ten years before.

Typhoid and Paratyphoid Incidence and Deaths in the A. E. F.—Dr. Haven Emerson read this paper in which he stated that from July 1, 1917, to May 31, 1919, there were 1,242 cases of typhoid fever in the A. E. F. with 155 deaths, or a case mortality of 13.2. During this same period there were 169 cases of paratyphoid fever with four deaths, one from paratyphoid A and three from paratyphoid B. Including the cases of both typhoid and paratyphoid the case mortality was 11.25. For the French Army during the same period the combined death rate from typhoid and paratyphoid fevers was 9.76. In addition to typhoid and paratyphoid fever there was a considerable number of benign enteritides among the troops of the A. E. F. Conditions were such that a thorough study of these cases in respect to the organisms concerned and a diagnosis on the basis of the laboratory findings as well as the clinical symptoms was impractical. At one convalescent camp, during December, 1918, and January, 1919, a considerable number of patients came who had been treated for influenza eight weeks earlier. The attitude of the medical officers throughout the A. E. F. was such that they did not like to report typhoid or paratyphoid fever. The intestinal type of influenza served to obscure the diagnosis of subacute enteritides, dysenteries, etc. The medical officers seemed to have an idea that, owing to protective inoculation, they would not find typhoid or paratyphoid fever. They were seemingly deaf and blind to the evidences of these diseases. Dr. Emerson related the history of three very definite epidemics of typhoid fever occurring in the A. E. F. one occurring in the Argonne region and including the personnel of a hospital there, a second in a traction company in Marseilles. In both instances the application of well known sanitary procedures served to check the epidemic. In certain regions of France typhoid fever was endemic and it was probably only because of prophylactic inoculation that severe epidemics were prevented, as it might be recalled that there was an epidemic of typhoid fever in the French Army early in the war before it was possible to inoculate the soldiers against typhoid and paratyphoid. The third epidemic of typhoid fever which the speaker described was that occurring in the Camp Cody replacement company of 250 men of whom 99 came down with the disease. These men had all been vaccinated in different camps in the United States and by different medical officers. It seemed that this outbreak could be explained only by what might be called a massive hand to mouth infection. It seemed that the source of the infection was a water barrel attached to a kitchen car at Camp Cody. The Marseilles epidemic was due to failure to recognize large spleens, abundant roseola, and, at autopsy, Peyer's patches and even intestinal perforations. Failure to recognize early cases and exposure to massive doses of infection appeared to be the reason the protective power of prophylactic vaccination was overcome. There was no reason to believe that vaccination did not afford the greatest protection against typhoid and paratyphoid fevers. It was of the greatest value in our forces who were exposed to infection at countless points. In closing, Dr. Emerson urged the need of recording the weekly change in population in connection with the rates of incidence and mortality of disease.

Dr. Harlow Brooks stated that he had seen forty-seven cases of typhoid fever in France and some of them were held for three weeks before a diagnosis could

be made. One of the best articles in the *Bulletin* published for the medical officers in France was on the subject of the anomalous symptoms presented by these patients. In one case ten blood cultures and ten stool cultures were made before it was possible to arrive at a diagnosis. The symptoms were different from those of a typical case of typhoid fever; especially in respect to the typhoid spots and the size of the spleen. He therefore felt there was some excuse for the failure to recognize the condition.

Dr. EMERSON suggested the possibility that the symptoms of typhoid fever had been modified in these atypical cases by vaccination. He knew of several instances in which cases of typhoid fever were not diagnosed because of the unwillingness to accept typhoid fever as a probability in view of the indefinite symptoms present. However, there were a great many records in hospital reports in which the history on review seemed to be typical of typhoid fever. The pathologists were the first to discover the epidemics and this served as an illustration of the possibility of using the results of pathological examination as a warning of the presence of epidemic disease.

SECTION ON MEDICINE.

Stated Meeting, Held December 16, 1919.

DR. CARY EGGLESTON IN THE CHAIR.

Absorbability of Certain Digitalis Principles.—Dr. ROBERT A. HATCHER made this presentation, in which he said that the work was started with the idea of finding a nonproprietary preparation of digitalis suitable for intravenous injection, and in the course of his studies he had become interested in this problem of absorbability of the digitalis bodies. No one appreciated the difficulties encountered in a study of the chemistry of digitalis unless he had actually undertaken such work. Water practically exhausted digitalis, and when the infusion was shaken with chloroform the latter removed certain of the digitalis principles. If the concentrated infusion was mixed with an excess of alcohol a large part of the inert matter was precipitated while all of the active principles remained in the alcoholic solution; if this were evaporated the residue was quite soluble in water, from which a part of the active principles might be removed by shaking with chloroform. The chloroformic extract was soluble in water and the solution appeared to be stable. A saturated solution of this active principle in alcohol was nearly five hundred times as active as the official tincture, and several times as active as a saturated alcoholic solution of digitoxin. The absorbability of the chloroform soluble, and that of the chloroform insoluble fractions from the gastronintestinal tract of the cat was compared roughly by observing the length of time required for emesis to be induced, as vomiting after digitalis was a certain indication of its having been absorbed. There was a difference in digitalis preparations due to a difference in their absorbability. If vomiting occurred after the administration of a preparation of digitalis it furnished pretty good evidence of the absorbability of that preparation. Vomiting occurred more quickly after the administration of the "chloroform soluble" fraction than after the chloroform insoluble preparations. The chloroform soluble fraction of digitalis was so bitter that a 1/1,000,000 dilution with water still retained its bitter taste. He believed this preparation was absorbed more nearly uniformly than preparations made from digitalis derived from widely different sources. The evidence went to show that specimens of digitalis leaves differed widely under different methods of cultivation and different climatic conditions. One got more uniform results from a preparation made from one specimen than from one made from leaves derived from widely different sources. The point to be emphasized was that there was a chloroform soluble fraction of digitalis leaves which was easily absorbed and long acting, and there was a chloroform insoluble fraction briefly acting and rapidly eliminated. He had examined a great many specimens of digitalis, among them one prepared from fluid extract thirty-eight years ago, and used clinically at Bellevue Hospital as recently as eight years ago, at which time it was still active. This went to show that an active preparation of digitalis retained its power for a long time. There was a great difference in the rate of elimination of different digitalis preparations, some being eliminated within a few hours and some continuing to act for two or three weeks. A recent investigator stated that digitoxin was not therapeutically active, and that digitalis grown in the shade contained no digitoxin. It was possible that some of the specimens which were found to contain little of the chloroform soluble fraction might have been grown under such conditions.

Notes on Digitalis Medication: Absorption; Variable Susceptibility; Rate of Disappearance.—Dr. HAROLD E. B. PARDEE read this paper. He stated that certain changes were brought about in the electrographic tracings by the administration of digitalis; one of these changes was in the "T" wave. He had studied these changes in auricular fibrillation, and sinus arrhythmia. Observations were made at varying periods of time after the administration of 10 minims of digitalis. After the end of two hours there was no perceptible effect upon the "T" wave. At the end of four hours there was a slight diminution in the "T" wave; at the end of six hours there was a still further diminution. The maximum effect seemed to be reached about this time. After twenty-four hours the effect was still perceptible. The patients upon whom these observations were made all had sinus arrhythmia except one. In this, a case of auricular fibrillation, they took records at the end of ten minutes and then at the end of every hour, and found that the rate came down from 124 to 109. This rate of absorption seemed to be the same, no matter what disease the patient had, and also when he was normal. It had been shown to be the same in endocarditis, cerebrospinal lues, and nephritis. There seemed to be no difference in the rate of absorption between cardiac and noncardiac cases. A study of the rate of disappearance of digitalis from the body was made in 22 cases. In these subjects the intitial dose was given so that the toxic symptoms appeared in from six to eight days, usually starting with doses of 39 minims of the tincture every four hours, and continuing with 15 or 20 minims every four hours. The second course was usually given in the same way, starting with a large dose and continuing with 20, 15, or even 10 minims, every four hours, three times a day. The second course was completed in an average of six days. The details and results of these observations were tabulated and showed that the average rate of disappearance of the drug from the body was 22 minims of the tincture per day. In half the cases the figure was below this, and in half above it. The rate of disappearance seemed to be independent of the amount of digitalis present in the body at the time, for it did not vary with the number of days elapsing between the first and the second points of toxicity. Nor was any relation noted between variations in the rate of disappearance and either the weight of the patient, the size of the doses of the tincture at the time vomiting occurred, the rapidity of the rate of administration of the total dosage, or the degree of heart failure shown by the patient at the time of the test. Susceptibility of the patients to the drug did not seem to influence the result, either, for the rate of disappearance of the drug bore no relation to the quantity of digitalis per pound which was required to produce the toxic symptoms in the patient's first course. It was evident from the results of these observations that the average figure of 22 minims per day would afford a fairly satisfactory basis for long continued digitalis medication. These results had two important bearings upon the administration of digitalis over long periods of time. They demonstrated the approximate efficacy of the dosage of ten minims of tincture of digitalis twice daily and also a new phase of the variability from one individual to another, in the action of digitalis, a variability in the rate of disappearance from the body. Investigations were also carried out to determine the therapeutic dose of tincture of digitalis, among the results of which three things seemed to demand special mention, namely, the importance of the period of administration was very great, for each day some of the drug was destroyed or excreted from the body; the average amount of the tincture required to produce a full therapeutic or early

toxic effect was found to be in agreement with Eggleston's figures, being 3.3 minims, and the variations from one individual to another were of the same considerable magnitude that he found. The variability of the dose of digitalis for different individuals was of great importance in therapeutics. Taking into consideration that a variability had also been found in the rate of disappearance of the drug from the body it was evident how complicated the problem of digitalis medication must be. Two things, however, were quite plain: when the patient had received enough digitalis for his own special organism he would show one of the early toxic effects, usually nausea or vomiting. If after this he continued nauseated while the drug was being given, it meant that he was receiving too much, that was, an excess over his average daily rate of disappearance. When a patient did not react to a usual dose of digitalis it did not necessarily mean that the digitalis was weak. It was possible that the patient might have a high susceptibility, and might require perhaps 4 or 5 minims per pound body weight instead of the usual 2 or 3 minims. On the other hand the patient might not be able to tolerate the average dose of 3 minims.

Clinical Observations of the Absorption of Digitalis.—Dr. CARY EGGLESTON made a preliminary report upon the clinical investigations of the purified preparations of digitalis which Dr. Hatcher had discussed. He stated that up to the present his investigations had been limited to the determination of the dose of the "absorbable fraction" for man when administered orally, to preliminary observations on the rate and uniformity with which the preparation was absorbed, and to the determination in two instances of the persistence of the action of the drug. The method employed for determining the dose for man was the same as described in detail in the author's earlier paper (*Archives of Int. Med.*, July, 1915). Briefly stated, it consisted of the selection of such cases of heart failure as had not received digitalis in any form for at least two weeks preceding the observations. The patients were kept in bed during the period of observation and were given a diet which remained fairly constant throughout the period of study. In patients with edema the fluid intake was limited to 1000 to 1500 c.c. daily, the actual amount taken daily being measured and recorded. The twenty-four hour quantity of urine was recorded daily. The patient's weight in pounds was taken before the drug was administered and was recorded at intervals thereafter, the lowest reached being used for the final calculations of the amount of digitalis actually required, since this represented the weight without edema. Where possible the effects of rest in bed were determined for several days before the digitalis was administered. When the study of each patient was completed the results were analyzed to determine the following points: 1. The total amount of digitalis required to produce the first demonstrable evidence of action. 2. The total amount of digitalis required to produce full therapeutic effects. 3. The total amount taken up to the time when nausea and emesis appeared. From these data the amount of digitalis required to produce each of these effects was calculated in terms of fractions of a cat unit for each pound of the patient's body weight, the lowest weight reached being used. A cat unit was defined as that weight of the dry drug, expressed in milligrams, which was required to kill one kilogram of cat when injected slowly intravenously. The results of this investigation were shown in tables which were analyzed in detail. In summing up the results of this analysis Dr. Eggleston said that these studies were as yet too few to warrant the drawing of any conclusions, so he merely suggested a few deductions which might probably prove valid. These were: 1. The purified tincture of digitalis did not owe its activity to pure crystalline digitoxin. 2. The dose for man by oral administration was essentially the same as that of high grade galenical preparations of digitalis, when measured in terms of activity on the cat. 3. The purified tincture was probably absorbed more uniformly from the human alimentary canal than were different specimens of the galenical preparations. 4. The persistence of action of the purified tincture was not less than that of pure digitoxin or of the best samples of digitalis. He was now in a position to begin studies on the applicability of this preparation for intravenous administration and hoped to be able to report his results before very long. He also planned to make comparative studies on the oral administration of galenical tinctures, purified tinctures, and the poorly absorbed fraction, all obtained from the same specimens of digitalis leaf.

Dr. GEORGE B. WALLACE congratulated the chairman of the section on having a program of such unusual excellence, and said that Dr. Hatcher's paper had particularly interested him. The fact brought out by Dr. Hatcher that preparations of digitalis which met the pharmacopeial requirement of biological assay might be practically inactive therapeutically because of failure of absorption in the intestines was of great importance. In other words, the guarantee of a preparation standardized according to the pharmacopeial method might be no guarantee at all. The obtaining of an active water soluble, easily absorbable preparation of digitalis was not only of great help in the ordinary form of administration, but enlarged the field of intravenous medication.

Dr. BERNARD S. OPPENHEIMER said he did not feel competent to discuss such a complex subject as digitalis, as he had never done any work with the substance. The determination by Dr. Hatcher of the chloroform soluble, *i.e.* the more readily absorbable, fraction was of great practical interest, as it had explained the recent failure to get the expected therapeutic results with a certain digitalis preparation used at the hospital. This preparation was chosen by the hospital pharmacist as the best fluid extract he could purchase, and, as Dr. Wallace had suggested, it met the biological tests. In private practice he had not had this difficulty with partially inactive preparations, but he was accustomed to prescribing a freshly prepared infusion made by one druggist, or special foreign preparations too expensive for hospital use. He rather disliked doing this, so he hoped that the investigators who are working in this field intensively would give the clinicians information, beginning with the plant, so that active standardized inexpensive preparations of digitalis would be available for hospital use.

Dr. HATCHER, in closing, said it was hardly necessary to emphasize that this purified preparation gave more uniform absorption than when one was using the ordinary preparations. He wished also to say that there was nothing wrong with the manufacturers. The conditions incident to the manufacture of commercial digitalis were such that a poorly absorbable product might result without anybody being to blame. He had used many ways of extracting the digitalis, and it was possible to take the chloroform soluble factor out by immersing the digitalis in water over chloroform for some days. The procedure did not change the digitalis bodies in any way.

Dr. PARDEE, in closing, said he was glad Dr. Eggleston had found so much of interest in these studies. One point he had not emphasized as he should have done and that was that there was a variation in the individual rate of elimination. There was a considerable variation just as in the individual suceptibility and that must be borne in mind in administering digitalis to a patient over a long period of time; if he eliminated rapidly one must give him more than if he eliminated slowly.

Dr. EGGLESTON, in closing, said that the differences in his figures and those of Dr. Pardee were due to the fact that entirely different criteria were employed. The two studies harmonized very perfectly. One point in Dr. Pardee's presentation was particularly interesting to him, and that was that in the table showing the first effects of digitalis these first effects were exceedingly slight at the end of four hours, and reached the maximum in six hours from single doses. With the criteria Dr. Pardee was using he was unquestionably obtaining the whole course of action of that single dose, and he found the average time for the maximum effect to be six hours; that meant the time required for the digitalis to be absorbed and exert its full action on the heart. In Dr. Eggleston's experience he had come to adopt the six-hour interval between doses, and he had reached that interval through entirely different lines. He had come to the conclusion that every dose of digitalis reached its maximum absorption within six hours.

Another point was with reference to the average dose. In the series of experimental cases which Dr. Pardee presented he found the average dose of digitalis to be about 3 minims per pound of body weight. Dr. Eggleston wished to emphasize that that figure happened to be the average in this particular series of cases, and for the particular preparation of digitalis used, and he wished to emphasize the danger of using the full average dose in any patient. While he had published average therapeutic doses he never administered such an average therapeutic dose all at once to a patient. The average dose could usually be given, however, provided it was administered in two, three, or four fractional doses at six-hour intervals. One could then observe the patient at the end of each six-hour interval and see how the patient was reacting to it. That had been his practice, and in the vast majority of cases he found that it took only from ten to sixteen hours to get the average therapeutic effects. It was advisable to start with not more than 50 per cent. of the full calculated dose, even if one was sure the patient had not had any digitalis before, and then one could give the remainder at intervals of six hours. Still another point was that Dr. Pardee had confirmed and amplified his belief that it did not make any difference whether the subject had a cardiac condition or not, he would require approximately the average dose in order to produce a given effect on the heart.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Held Wednesday, January 14, 1920.

THE PRESIDENT, DR. J. FRANKLIN STAHL, IN THE CHAIR.

Dental Infection in the Production of Nervous and Mental Diseases.—Dr. CHARLES K. MILLS thought it fortunate that the mind of the profession seemed to be trending toward a very healthy discussion of the probable fallacies of dental infection in its relation to various important diseases, and of many other correlated and zealously exploited views. While advancing years might have their drawbacks, they also had their compensations, enabling one through experience to measure the value of many theories of causation and treatment. He referred to the fact that shortly after the death of Colonel Roosevelt a newspaper article appeared which illustrated one of the most dangerous forms of medical propaganda. In this article it was stated that one of Colonel Roosevelt's teeth was the indirect cause of his death. The wholesale statement was further made that thousands of persons died or were incapacitated yearly from maladies arising from infected teeth. The cases of a rescued backward boy whose brain was clouded to the point where he could not master the rudiments of knowledge, and a youth assailed with a lethargy at the age of fifteen, who afterwards became one of the most brilliant of practising lawyers of the Middle West were in this article included in a series of cases supposedly illustrative of the marvelous results of the removal of infected teeth. Dr. Mills said he had but little doubt that literally bushels of teeth of excellent quality had been sacrificed throughout the land as the result of this atrocious article about Colonel Roosevelt. In studying *x*-ray pictures Dr. Mills had been skeptical as to what were called abscesses at the roots of teeth. It had always seemed to him that these pictures represented absorptive lacunæ or artefacts of some other description rather than true abscesses. The roentgen ray enabled one to discriminate between areas of differing density. In a strict sense an abscess could not be demonstrated by a roentgenological investigation. A score or more of cases had come to his knowledge in which important mental and nervous diseases had been attributed to dental infection and in which the teeth had been removed with results in some instances so harmful as to impress one with the almost criminality of the procedure. A few such cases were cited. Dr. Cotton, one of the leading psychiatrists of the country, had attributed many and divers forms of insanity to dental infection. The late Dr. August Hoch in a critical review of one of Dr. Cotton's articles clearly pointed out the logical defects in the presentation. Under the influence of the propaganda of focal infection, Dr. Mills said, to use the expression of his facetious, but learned friend, Dr. Peterson, the colons of epileptics bade fair to be reduced to semicolons by operation. The appendix would soon be no longer left as a vestigial illustration, and the tonsil, protrusive and submerged, was sharing the fate in recent years of the ovary in the early experience of the profession. A nose and throat specialist not long ago had gravely informed Dr. Mills that he thought of preparing a statute to be presented to the state legislature making compulsory the extirpation of the tonsils of children after reaching a certain age on the theory that prevention was better than cure. Why on the same principle might the exodontist friends not be called in for their exterminating activities and free the rising generation of teeth which in the process of time might have their roots infected and abscessed? Dr. Mills would fain protest against the too free use of the therapeutics of organic mutilation. If the craze for violent removal proceeded it would come to pass that there would result a gutless, glandless, toothless, and, he was not sure, thanks to psychology and surgery, a witless race.

Dental Therapeutics Based on Clinical and Roentgen Ray Investigations.—Dr. WILLIAM MIDDLETON FINE expressed his conviction that too many teeth were extracted in the expectation that their removal would cure systemic disturbance. Because it was possible to demonstrate the same microorganisms in pulpless teeth and in arthritic joints it did not necessarily follow that the teeth were invariably the primary cause of the infection. The extraction of badly decayed teeth upon whose roots were abscesses, or their restoration to health and usefulness, removed one of the contributing factors in the cause and development of many diseases. He did not share the belief, however, that all non-vital teeth should be removed. The bodily protective processes prevented well treated teeth without living pulps being the direct cause of disease. Medical literature indicated that arthritis was produced by a constipative diet. Cases with teeth loose in the gums accompanied with bleeding gums and pus had cleared up when the pathological conditions in the intestinal tract were removed. The statements of Talbot would lead one to believe that not all the shadows seen on radiographs of dead teeth were abscesses and contained pus, and therefore that these teeth should not be ruthlessly extracted. Particularly did he wish to emphasize the fact of his entire accord with those of the profession who advised the extraction of dead and diseased teeth after a thorough attempt to cure had failed, or was in doubt. It was more than likely that seventy-five per cent. of the shadows in the radiographs at the apical ends of teeth had been caused by irritation from the mechanical treatment and drugs in dental operations and that the teeth were unjustifiably removed. He had seen teeth that under the *x*-ray examination produced shadows, indicating what some were pleased to call abscesses, remain for fifteen years or longer without pus or any symptom of disease. It seemed to him that about 80 per cent. of the bodily ills arose from the improper functioning of stomach, intestines, liver, and kidneys. He believed there was once a time when all the bodily ills were fastened upon the appendix. Nowadays the statement was made: "Let's call it the teeth and practise exodontistry." Since starting to write this paper he had had three cards from men announcing that they were giving up general dental practice to go into the extraction of teeth. Three new extractors every week, in his opinion, were not needed. The examination of a patient for an obscure cause of systemic disturbance should be made by physician, radiographer, bacteriologist, and dentist.

The Present Status of Oral Sepsis in Relation to Systemic Disease.—Dr. JAMES M. ANDERS said that the importance of the relation of tooth-root infection to systemic diseases could not be overstressed from the viewpoint of study and investigation. Present knowledge of the flora of the mouth as related to special affections was still imperfect. A closer cooperation between dentist and physician along bacteriological lines was urgently needed to intelligently deal with affections of the teeth and alveolar processes and to correct

the haphazard sacrifice of the masticating apparatus. The writer recalled a case of epilepsy in a young woman of 19 in which upon the advice of a physician all the teeth, though in good condition, were extracted, without, of course, any effect upon the epilepsy. It behooved medical and dental bodies to oppose the appalling present rate of removal of dental organs. It has been shown that after the fortieth year of life disseminated infections leading to constitutional disturbances are more frequent and of more serious character than in younger subjects. That many morbid medical conditions might be of oral origin was shown in their cure following the removal of the foci of oral infection. Among such medical conditions were arthritis, endocarditis, pericarditis, myocarditis, gastritis, myocardial degeneration, chronic nephritis, exophthalmic goiter, and many others. Gingival and dental conditions, however, were rarely the sole cause of the morbid states for which they might be held responsible. Before teeth were condemned it was a matter of vital importance to determine that other than oral infectious foci were not present. Treatment based upon *x*-ray studies alone was unwise, since the deeper dental lesions might be simulated by other local conditions, and an abscess which actually existed might not be shown. The local and clinical features were to be carefully studied, and extreme caution should be observed in ascribing a systemic infection to the mouth condition. Bacteriological study in oral infections was regarded as essential. The prevention of tooth-root disease should be preeminent in the minds of all interested in the welfare of the race. Fones was quoted as saying, "We know of no one movement from the health standpoint that would be more beneficial to the nation at large than a serious educational campaign to eliminate dental caries so far as would be possible. Sanitary oral cavities are potent factors in limiting the incidence and spread of communicable diseases."

Roentgen Ray Studies of Dental Defects. — Dr. HENRY K. PANCOAST showed Roentgen ray slides of dental conditions and spoke of the value of this means of study of the oral cavity, believing that when properly carried out it offered the best method in a large number of cases. The roentgenologist, however, was not able to judge of the direct connection between dental conditions and their supposedly resultant systemic conditions. This was the work of the internist. He was perfectly frank to say that not all "clear areas" were due to abscesses at the roots of teeth. Some might be due to infections of the past, others to chemical irritants. If properly read, however, most of these "clear areas" indicated the presence of active abscesses. He was absolutely opposed to the wholesale extraction of teeth. In many instances it was possible to treat abscessed teeth successfully and have good service from these teeth afterwards. He referred to one instance in which an abscess at the root of a tooth did not show in the film, but such occurrences, he said, were rare. Experience in the interpretation of the films was more important than the technique, and such interpretation was best carried out by the dentist and the roentgenologist in conjunction.

Physiological Action of Extract of Tonsil.—Farmachidis has found in experiment an analogy between the actions of pancreatic and tonsillar extracts.—*La Presse Médicale.*

A Special Strain of Spirochete the Cause of Paresis.—Marie and Levaditi inoculated rabbits with chancre virus in one region and blood of general paresis in another, and watched the incubation, etc. The impression was that two different strains of treponema were involved.—*Le Progrès Médical.*

Rupture of the Aorta.—Devic and Lamy report the case of a man of 53 without suggestion of syphilis who complained of violent abdominal and lumbar pains. His vascular apparatus seemed quite intact and there were no evidences of tabes. Lumbar puncture showed that the cerebrospinal fluid was present under high pressure with a lymphocytosis. The severe pains were present off and on for three weeks, when death took place suddenly in the night. Autopsy showed rupture of the abdominal aorta which was also the seat of numerous atheromatous placques.—*La Presse Médicale.*

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. The 74th Annual Meeting. 397 pages. Published by American Medico-Psychological Association, Chicago, Ill.

THERAPIE DER HAUT UND VENERISCHEN KRANKHEITIN. Prof. Dr. J. SCHAFFER. 485 pages, with 87 illustrations. Published by Urban & Schwarzenberg, Berlin.

THE NARCOTIC DRUG PROBLEM. By ERNEST S. BISHOP. 158 pages. Published by the Macmillan Co., New York.

INTRODUCTION TO GENERAL PHYSIOLOGY. By Dr. W. M. BAYLISS. 237 pages. Published by Longmans, Green & Co., New York.

MODERN SURGERY. By Dr. JOHN CHALMERS DACOSTA. 1697 pages with 1177 illustrations. Published by W. B. Saunders Co., Philadelphia.

ORTHOPEDIC AND RECONSTRUCTION SURGERY. By FRED H. ALBEE, M.D. 1138 pages with 804 illustrations. Published by W. B. Saunders Co., Philadelphia.

INDUSTRIAL MEDICINE AND SURGERY. By Dr. HARRY E. MOCK. 846 pages with 210 illustrations. Published by W. B. Saunders Co., Philadelphia.

DIE EXPERIMENTELLE BAKTERIOLOGIE. By Drs. W. KOLLE and H. HETSCH. 1361 pages, with illustrations. Published by Urban & Schwarzenberg, Berlin.

PIONEERS OF BIRTH CONTROL. By VICTOR ROBINSON. 107 pages. Published by Voluntary Parenthood League, New York.

ANNUAL REPORT U. S. PUBLIC HEALTH SERVICE FOR 1919. 345 pages. Published by the Government Printing Office, Washington.

LE FERITE DEL RETTO. By L. CAPELLI. 56 pages. Published by Rocca S. Casciano, Bologna.

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH OF THE CITY OF LOS ANGELES, CAL. 112 pages. Published by L. M. Powers, M.D., Health Commissioner.

SOME PERSONAL RECOLLECTIONS AND PRIVATE CORRESPONDENCE OF DR. CRAWFORD W. LONG. By JOS. JACOBS, Phar.D. 47 pages. Published at Atlanta, Ga.

DISEASES OF NUTRITION AND INFANT FEEDING. By Drs. JOHN L. MORSE and FRITS B. TALBOT. 384 pages. Published by The Macmillan Company, New York.

THE FAMILY AND THE NEW DEMOCRACY. By. Dr. ANNA M. GAILBRAITH. 388 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

THE OXFORD MEDICINE, ADVANCE PAGES. Edited by HENRY A. CHRISTIAN and Sir JAMES MACKENZIE. 635 pages. Published by the Oxford University Press, American Branch, New York.

THE NOSE, PARANASAL SINUSES, NASOLACRIMAL PASSAGE-WAYS AND OLFACTORY ORGAN IN MAN. By Dr. J. PARSONS SCHAEFFER. 370 pages with 204 illustrations. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

A TEXT-BOOK OF PHYSIOLOGY. By Dr. RUSSELL BURTON-OPITZ. 1,185 pages, illustrated. Published by W. B. Saunders Co., Philadelphia, Pa.

SYPHILIS, A TREATISE ON ETIOLOGY, PATHOLOGY, DIAGNOSIS, PROPHYLAXIS, AND TREATMENT. By Dr. HENRY H. HAZEN. 647 pages with 160 illustrations. Published by C. V. Mosby Co., St. Louis, Mo.

ANAPHYLAXIS AND ANTI-ANAPHYLAXIS AND THEIR EXPERIMENTAL FOUNDATIONS. By Dr. A. BESREDKA. 143 pages. Published by C. V. Mosby Co., St. Louis, Mo.

SYSTEMATIC DEVELOPMENT OF *X*-RAY PLATES AND FILMS. By Dr. L. WENDELL. 75 pages with illustrations. Published by C. V. Mosby Co., St. Louis, Mo.

THE PRACTITIONER'S MANUAL OF VENEREAL DISEASES. By Dr. A. C. MAGIAN. 215 pages with illustrations. Published by C. V. Mosby Co., St. Louis, Mo.

THE MEDICAL ASPECTS OF MUSTARD GAS POISONING. By Drs. A. S. WARTHIN and C. V. WELLER. 267 pages, 156 illustrations. Published by C. V. Mosby Co., St. Louis, Mo.

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Original Articles.

THE MEASURES OF INTELLIGENCE DIAGNOSTICALLY REMEASURED.

BY J. VICTOR HABERMAN, A.B., M.D., M.S.D.,

NEW YORK.

IN this Fourth Report[1, 2, 3] of our studies on examining the mind of the child or adolescent, we shall take up the individual tests employed as measures of intelligence, following the sequence of our own arrangement of the tests chosen from Binet, Bobertag, De Sanctis, Ebbinghaus, Meumann, Ranschburg, Rossolimo, Terman, Yerkes, Ziehen, etc., to be applied in a detail-inspection of intelligence which should prove a differentiating or *diagnostic examination method.* Our grounds and discussion for, and insistence on, such a diagnostic procedure, as well as an extended criticism of the present examining methods, especially the Binet "averaging of the general intelligence" (and its revisions), will be found in our second report.[2] An exposition of the *intelligence problem* as a whole will also be found there, the issue between intelligence factors and psychopathy drawn, and finally the evolvement of this diagnostic examining method explained.

In order to follow our "faculty" divisions, our group arrangement of tests, and make this procedure clear, let me again define the *process* or series of phenomena involved in what we term *intelligence.* This process is inaugurated by the *attention,* which initials all conscious notation, for attention must hold strong and steadily enough if anything is to be cortically infixed and retained (remembered). We may attend cursorily or concentratedly, with intent of infixing for the moment only (immediate recall), or for a longer period (deferred recall), or for permanence (permanent recall—i.e., *knowledge*), intention expressing itself in the degree and intensity of attention. The infixing is accompanied by, or rather accomplished through, *association.* That is, in the act of registering the new incoming impressions, things are matched up, associated and differentiated in mind—like things being added to things (concepts) of like kind already there. Never does anything come isolated, or remain detached, within the mind; always is the incoming matter added to something—in reality, to accumulations of earlier memory depositions. In this way the new or unfamiliar encountered in our mental life is gone over, sifted, arranged, compiled and tagged. And once posited—remembered—it forms part of our knowledge: that is, the sum total or aggregate of these memory-depositions comprises our *knowledge.*

But how do we accomplish the sifting, arranging, tagging? We do this with the knowledge already possessed—the old "apperception mass" (better the modern "association play")—with which we analyze, collate, compare and contrast. In a simple way this mental process already takes place in the young child. As it grows older, however, the child no longer compares and contrasts grossly, it distinguishes elemental parts from a whole—as whiteness, sweetness, hardness, etc., from the concept sugar; whiteness, coldness, softness, etc., from the concept snow—compares these, analyses and synthesizes, and hence differentiates both, knows both. Or again, it spies out similarities in series of varied objects—the little sparrow, the larger goose and duck, the stately peacock, all differing in size, color, actions, but all having beaks and wings and able to fly: hence, birds—and so generalizes and abstracts. This procedure, all in all, we term *comprehension.* Knowledge, therefore, on the one hand aids in comprehension and understanding; on the other, through analysis, through differentiation and remembering differences, our knowledge grows.

Lastly—and this is the highest of all mental functions, maturing late in the child—we possess the ability to combine our "knowledge elements," our concepts or part-concepts, or, of first unloosing or severing associations already registered in mind and recombining them—or indeed, of seeking rare, as yet un-knowledged elements and forging new association chains, begetting entities comparatively singular, unique. This faculty we term *combination.* Through such ability we can apply a fitting completion when but a part is given in a train of thought, or span gaps where links are missing. Thus we orient ourselves in time and place, adequately meet new situations, bring about logical synthesis in our thinking, discern meaning and motive in the composite of picture, story or action, sift cause and effect, exercise critique, judge, plan, reason, presage—imagine, conceive and create.

In this *intelligence process,* attention and memory are essential primary functions without which there could be little comprehension or combination. It is through them that the normal mind accumulates, retains and recalls—the poor mind, the average mind, the exceptionally endowed. Though part and parcel of the total activity we term intelligence, they may nevertheless be segmented from the functions of *comprehension* and *combination* and accounted fundamentals, the latter being superstructures, especial or qualitative faculties, if we may put it so, the one the comparative, the other the superlative of mind. It might be well to remember this, as in the literature confusion is often invited

by one author including the entire sequence of phenomena in his conception of intelligence, another having only the higher faculties in view. It is on this point that definitions of intelligence go astray. In reality, the fundamentals vie equally in importance with the higher faculties, and *all* must be probed in a rational examination of intelligence. In other words, when we speak of intelligence, we should imply all functions mentioned, *attention, memory, comprehension,* and *combination.* However, it is true that that something which gives one individual mental superiority over another, which makes us designate one individual as *more intelligent,* more intellectual, than another, that something, though occasionally due to exceptional powers of memory and attention, occasionally to sharper comprehension, that something is for the most part based upon superior combinational ability. One might speak of the "intelligence process" and the "intelligence endowment" or just of "intelligence" versus "endowment" (Begabung). At all events, one must signify the particular conception one means to imply.

To investigate, quantitatively and qualitatively, this intelligence process, we have listed the functions or faculties just outlined under a series of captions on our test sheet, namely: 1. Attention. 2. *Memory.* 3. Knowledge. 4. *Comprehension.* 5. *Combination.* 6. Feeling.

Strictly speaking, *attention* is really not a factor of intelligence parallelable to memory, comprehension, and combination; nevertheless, it is so closely involved in the intelligence process as to be inseparable from it. As we have said, it is the inaugurating and likewise the stabilizing phenomenon, and one that must be normal if the examination results of 2, 3, 4, and 5 are to be taken on their face value. If found abnormal, then the examination results must be interpreted, for the deviations and shortcomings *may* then be due to psychopathy (incurring abnormal attention) and not necessarily to intelligence defect. That is, you may find poor or abnormal attention in the psychopathic with sound intelligence, as well as in the defective or feebleminded.

As to *knowledge,* it is a matter of memory, *i.e.,* permanent memories. Its examination, however, entails a mechanism and problem differing somewhat from the examination of immediate and mediate memory. It is, therefore, rubriced separately on our sheet. The convenience and *rational* of this will be more evident when we come to discuss knowledge.

Feeling, which we have added as a sixth caption, does not belong among the intelligence functions, and its abnormalities fall entirely in the sphere of psychopathy. It has a strong effect upon the association process, however, and may, therefore, decidedly influence ideation and invalidate our intelligence examination. As in the matter of attention, it must be found normal if the examination results are to be taken on their face value. A brief investigation of feeling should therefore be undertaken with every intelligence examination. And indeed but a few questions are often sufficient to bring out the normal or abnormal affectivity of an individual, or show up the possible or potential presence of psychopathy.*

To test out these functions, series of tests have been assembled under each rubric, tests selected from various sources as the most valuable for the purpose.

A special "Intelligence-test-sheet" has been drawn up, the group-arrangement being according to "faculties" (the above captions) instead of age headings, as in the case of the Binet and Terman methods. Age-norm indices, however, are supplied to the right of the tests and the tests arranged in gradations of difficulty. Standardization wherever possible is insisted on, only our norms will be found more elastic, our study of the individual tests showing clearly that the sharp demarcations of the Binet and revised Binet methods are exaggerations often verging on fallacy.

In our earliest presentation,[4, 5] the tests for all the years were placed on one sheet. It has been found more advantageous (and a less cumbersome procedure) to have the tests for three or four consecutive years on a single sheet, thus the tests for the 3d, 4th, and 5th, the 6th, 7th, and 8th, and the 9th, 10th, and 12th years separately. However, this arrangement in no way alters the method.

The results of the examination of the six facultative groups are not to be averaged in an I. Q., as such, remembering the asymmetries of endowment and the disproportionalities in mental deficiency or defect, we believe is a misnomer, no real averaging of the mental faculties being possible, at least, not when accurate insight or diagnostic introspection is at stake. Instead, the results will be schematically presented as a *curve* or psychograph, somewhat, though not precisely, similar to the "profile" of Rossolimo[6], or a "reading" in the manner of the electrocardiogram. Here the complete examination may be viewed and comprehended as an aggregate, as well as surveyed in terms of its individual details. That this may also be computed in figures is, of course, not impossible.*

The individual tests which are now to be taken up will be studied from the viewpoints of their value as tests of the function to be tested, of their special applicability to chronological periods (*i.e.* their age-standardization), and particularly their diagnostic value, that is, whether they are to be deemed *intelligence-diagnostic* when passed (no defective being able to pass such a test), *defect-diagnostic* where failed in (no really intelligent child failing in such a test). From the fashion of averaging Binet and Terman tests, one might assume that all such tests were of equal valence. Yet nothing comes less near the truth. Some tests mean little or nothing when passed, some little or nothing where flunked. Some again have decided value *only* if passed, others *only* if not passed. Some are qualitative, rather than quantitative tests. Finally, some tests have characteristic value in differentiating higher and lower endowment (within normality), others in differentiating various grades of defect, a few in giving demarcations between the poorest (lowest) grades of normality and the mild-

*Too much importance cannot be placed upon this search in all examinations of the child's mind, whether for the testing of intelligence or the diagnosis of functional neuroses, character abnormalities, or outspoken psychopathy. To this purpose a special anamnestic sheet has been prepared so devised as to bring out the possible (*and pertinent*) abnormalities in the heredity, during parturition, in the child's infancy, in childhood, and adolescence. The data gathered through this anamnestic inquiry should always be compared with the results of the examination of Feeling. These anamnestic blanks, together with our intelligence sheets, are procurable from the Fetzer Press, 62 Reade Street, New York City.

*Rossolimo himself attempts this.

est grade of defect. All this will presently be made evident.*

Our last Report† having been on Memory, we shall stray somewhat from the arranged order and begin our study with *the tests of memory.*

NAME..... DIAGNOSIS (CLINICAL).....
ADDRESS..... DIAGNOSIS (PSYCHOLOGICAL).....
AGE.....SCHOOL GRADE..... MENTAL AGE.....
DATE.....EXAMINER..... TEACHER'S RATING.....

(*Tests at 6-7-8 Years of Age*)

1. KNOWLEDGE:
(a) Things in a room: chair, table, sofa, bed, pictures. At 6
(b) Table things: spoon, fork, knife, plate, cup. 6
*(c) Things on the street: horse, store, wagon, auto, car, policeman, solder, train, trees, flowers. (At 6-7).
(d) Winter, Spring, Summer, Fall, Christmas. 6-7
("When does one go sleighing? the grass grow? leaves fall?" etc.)
(e) Colors: *names* R. B. G. Y. 5-6-7
Recognizes R. B. G. Y. W. Blk. (at 4-6), Br. Gr. V. P. Or. (At 5-6).
*Knows colors: of grass, milk, blood, sky, coal, leaves, butter, strawberry. (At 5-6).
*(f) Forms: of wheel, box, top, stamp, penny, door, ball. (At 5-6).
(Use cardboard with silhouettes.)
(g) Money: names nickle, penny, quarter, dime. 6-7
Names six coins (dollar, half-dollar). 7-8
(h) Days of the week (beginning with Tuesday). 7-8
(i) Reads and writes (elementary)

2. MEMORY:
I. Send child on make-believe errand for 3 purchases @ 5c, 15c & 8c.
(a) II. Repeats 4 digits (at 4; but no more than 4 at 6) 6
Repeats 5 digits (53926-71852-94638) (1 out of 3 series). 7
(b) III. *Recalls* purchases.
*(c) Paired-associates 5.10.15. *R.t.*: Deferred 24 h. *R.t.*:
(d) Repeats sentences of 14-18 syl. (at 6), 16-18 or 20 syl. (at 7). Etc. 6-7
I. Span: syl. II. Sensible and senseless errors:
(e) Repeats story No. 1.
(f) Carries out commissions. (3 at 5)
(g) Copies a triangle (with autocriticism). Expose 15", cover 15". 6-
Copies a diamond. 6-7-
*(h) Learning test: repetitions. Relearning: repetitions. Saving: %

(i) Reliability of memory: (Qualitative test).
I. Story No. 1: II. Picture No. 1: III. Exposure test:
IV. Suggestibility:

3. COMPREHENSION:
(a) Numbers: counts 13 pennies or marbles. 6
*Adds 3+1, 3+2, 3+5 pennies. (At 8.)
(b) Defines in terms of use: 5-6
Defines per description or class name: 8-9
(fork, chair, hammer, cake, doll, wagon, horse, soldier, penny, rose).
Spontaneously: Per example:
(c) Relations: I larger-smaller, nearest-most distant. 6-7
II. Divides a line of 2 cm. into longer and shorter parts; into half. 6-7
(d) Directions: right-left (at 6-7); front-back; above-below. 6
*(e) Forms: flat (at 4); solid (ball, cube, pyramid, prisms) (At 5-6.)
(f) Weights: I. arranges (2 at 5.....5 at 9 or 10)
*II. balance test (at 7 and after)
(g) Pictures: describes (picture No. 1) 6-7
(h) I. Differentiates and II. gives similarities:
fly-butterfly; wood-glass; paper-cloth. 7-8
glass-ice; streetcar-train; sun-moon. 8-9

(i) Ethical ideas: "Which is worse, a mistake or a lie? to borrow or steal? (Then give 3 examples and ask whether mistake or lie.) 7-8

The Tests for Memory Examination

In this group of tests we keep in mind the memory phenomena already alluded to.† Our tests cover the examination of *immediate recall* [of digits, test (a)*; of associates, test (c); of syllables (sentences), test (d); of context of story, test (e); of commissions, test (f)], and *mediate* or *deferred recall* [of purchases, test (b); of associates, test (c); of copying designs, test (g); of retelling story and also re-describing picture, test (i)]. The tests for *permanent recall* will be taken up under Knowledge.

PHYSICAL STATUS..... UNDERSTANDING:
Fatigue?
MENTAL ATTITUDE (AND EASE)..... AGILITY, DEXTERITY.....
Inhibited?
SENSES: S.H.T. SM..... MECHANICAL SENSE.....
SPEECH.....LANGUAGE ABILITY.....

4. COMBINATION:
(a) Orientation: time (morning or afternoon, season). At 6

*(b) Part-picture recognition. (At 6.)
(c) Picture lacking eyes, nose, etc. 6-7
*(d) Grasps situation of elementary pictures. (At 6.)
I. Boy caught in the rain. II. Boy's hat being blown away.
III. Tumbling from sled.
(Ask in each case, "What should he have done?")
(e) Grasps point of pictures: 1, 2, 3, 4 (with the aid of questions). 8-9
(f) Grasps point of simple story, No. 1 at 7. 7
(I. Ask "Why did she get all this money?" II. "Why is the story told?")
(g) Problems in judgment: 8
I. "If you were going away and missed your train, what would you do?"
II. "What ought you to do if you broke something belonging to someone else?"
III. "What would you do if you found, when on your way to school, that you were late?"
*(h) Judgment through observation: (At 8-9.)
I. "Do large things weigh more or less than small ones?"
II. "How is it that a small thing sometimes weighs more than a larger?"
III. "Do distant things appear larger or smaller than near ones?"
IV. "Do distant things only look smaller, or are they smaller?"

*(i) Two words into logical sentence (*oral*). Qualitative test (*give example*). Snow-melts; teacher-pleased; tree-leaves.

5. ATTENTION:
(a) Attention paid to things shown in the room; to the pictures shown; to the tests given.
(b) Repeats in reversed order: 385; 724; 691. [4 digits at 9.] 7
Gives days of week in reversed order. 8
(c) Counts from 20 to 1. 8
*(d) Assortment test (of 100 seeds—ten varieties of 10 each). Time.
(e) Note outcome of test 2. (a), digits test, and (d), sentence span.

6. FEELING:
(a) Aesthetic choosing, 1, 2, 3. 5-6
(b) "What good deed have you ever done?" 6-7
(c) "A sparrow had a nest....." 6-7
(d) Give examples of cruelty, joy, want, and ask if sad, joyous, etc.
(e) Note from history if cruel to animals or playmates; if affectionate at home; if pleased with music, perfume, sweets.

Test (a)—digits test: After being told to listen carefully—this to get its attention—the child is given a set of digits and asked to repeat them one after the other. The digits are given without rhythm, and given but once. First try 4, then 5, etc. (5392 6—7185 2—9463 8).† At *six* years 4 digits should be retained; at *seven* years, 5—the test being standardized for one correct series out of three to pass.

Binet originally required 2 digits at *three*, 3 digits at *four*, and 5 digits at *seven*. In the 1911 revision the 5 digits test was placed in the *eighth* year. In these tests but one correct answer out of three series was required to pass. The test was not given at *six*. Terman‡ requires 3 digits at *three*, 4 at *four* (which test was passed by about three-fourths of his four-year-olds), 5 at *seven* (one correct of three series) and 6 at *ten* (one correct of two series). Bobertag‡‡ in his tryout found that 4

*Though not yet especially indicated on our present *test-sheet*, it will be quite feasible through the use of "reference marks" to use our test series for various purposes, thus (1) for the *diagnostic intelligence examination*, in which all the groups are tested out (this always indicated in mental examinations, in examinations to ascertain the presence or possible presence of deficiency or defect, in cases where the mentality in general is to be analyzed, for pedagogical analyses, etc.); (2) for the examination of *special endowment*, in which case only a series of specially marked tests—chiefly comprehension and combinational tests—are applied. This type of test will be sufficient for the *rating* of superior children, or to sort out the superior from the average in groups of normal intelligent children; (3) for special examination, such as quality types among the intelligent (the poetic, fantasy type, the practical, etc.), or in examining delinquents (tests of report, of ethical sense, etc.), etc.

†For a detailed study of the memory phenomena see our Third Report.[3]

*This likewise is a test of attention, *i.e.*, attention-span (note later comment under Attention).

†Bobertag uses the following: 51942, 64853, 93718; Terman uses 4739, 2854, 7261, 31759, 42385, 98176. Our own digits have been carefully selected. In the six digits test Terman uses 374859 and 521746; Bobertag, 250841, 573916, 095827.

‡Bobertag points out that care should be taken not to disconcert the child by looking at him while he answers.

digits were correctly given at *five* in 85 per cent. of his cases—a little too easy, therefore, for the *fifth* year—5 digits by 42 per cent. at *six*, and by 77 per cent. at *seven*. (At *eight* 92 per cent. gave 5 digits, and 53 per cent. gave 6. At *nine* only 54 per cent. passed 6, but 82 per cent. at *ten*. Hence, 6 digits is too difficult a test for even the ninth year and belongs in the *tenth*.) Goddard keeps the tests as in the Binet revision.

Considering these statistics, we would require to pass (*one correct series out of three*):

(1) 3 to 4 digits at *four*
(2) 4 digits at *five*
(3) 4 digits at *six*
(4) 5 digits at *seven*
(5) 5 digits at *eight*
(6) 5 digits at *nine*
(7) 6 digits at *ten*

But according to Bobertag's study

(2) 4 digits at *five* is passed by 85%
5 digits at *six* is passed by 42%
(4) 5 digits at *seven* is passed by 77%
(5) 5 digits at *eight* is passed by 92%
6 digits at *eight* is passed by 53%*
(7) 6 digits at *ten* is passed by 82%

Hence, (2), (4), (5), and (7) are too easy, while almost half gave 5 digits at *six* and more than half gave 6 at *eight*.

What, one might ask, would the statistics be if *two* out of three series (rather than one out of two) were demanded to pass instead of one out of three? Bearing the above figures in mind, could one probably correctly demand

4 digits at *five*
5 digits at *seven*, surely at *eight*
6 digits at *ten*

requiring two correct series out of three?‡

Norms given above the tenth year are:

7 digits, one of three trials, at 15 (Binet†)
7 digits, one of three trials, at 12 (Goddard)
7 digits, one of two trials, at 14 (Terman)
8 digits, one of three trials, superior adult (Terman)
6-9 digits, ? of ? trials, at 12 (Meumann)
6-10 digits, ? of ? trials, at 14 (Meumann)

Bobertag's suggestion of asking the child for a criticism of its performance is a rather good one. He asks, "Did you repeat the numbers correctly?" Of course, some children will say "Yes" without being sure; but Bobertag believes it a good sign if a child is not so certain it has given a correct answer. Quite the contrary is the case when the child who has done poorly maintains it has done well.

What is the importance of this test? It is a test of *memory-span* and of immediate recall. It depends on age rather than upon intelligence; that is, an older child has a better memory-span for immediate recall than a younger child, and the span-ability grows from year to year.** However, there is a correlation with average intelligence. (See comment in test of sentences; Cf., also the article on Memory¶.)

*Jacobs, however, got 6.6 digits as his average for the *eighth* year (but the numbers tested were very few), 6.7 at *nine*, 6.8 at *ten*. (Cited by Whipple, p. 538).

†Terman, in his first alternative test at ten, asks for 6 digits, requiring one correct of two series.

‡This brings up the point as to how many correct answers shall be required out of a series of trials to pass a test. Occasionally one finds 1 out of 3 required, elsewhere 1 of 2, again 2 of 3. Terman, for instance, requires 1 correct of 3 series in the digits test at three, four and seven, but 1 correct of two trials at ten and fourteen. It would appear that a 1 out of 2 trials test hazards the element of chance, and that 2 of 3 trials ought really *always* be required, while 3 of 5 would be even safer. If we were to rate a child throughout on its *highest possible* attainment, we would no doubt get a different estimate than when examining for its *general average* attainment in all tests. The latter is the method upon which the teacher's (school) rating is based—and it seems no more than sound that this should be the method in intelligence examinations. Possibly one might note both the maximum and the average accomplishment, and get some interesting data in this way.

Binet originally required 7 digits in the twelfth year, later placing the test in the fifteenth. Terman found the test too easy for the fourteenth year, if three series are given, and therefore (as an alternative test in the fourteenth year) exacts 1 correct of 2 series (2183439, 9728475). Bobertag found that but a fourth of his children at 12 could give 7 digits and states that the test is much too difficult, and that without previous practice many adults are not capable of passing it. Goddard, however, keeps the test at 12. Bobertag's 7 digits series are 9640518, 7384261, 5928037.

**According to Bourdon, up to the fourteenth year. According to Ebbinghaus, up to about fifteen (full physical development), after which it remains constant for some twenty years. Cf. No. 22, p. 464.

¶His memory for *deferred* recall was also phenomenal. At the end of an hour's performance, as well as on the following day, he could repeat all the mathematical operations gone through, even though some three hundred digits had been employed.

A different method of giving the digits test is described by Vieregge (Prüfüng der Merkfähigkeit Gesunder und Geisteskranke mit einfachen Zahlen," Alg. *Zeit., f. Psych.*, 1908 Bd. lxv). A series of digits was (acoustically) given, thus 6.9.3.5., the test person having to combine the numbers into a whole, *i.e.* "six thousand nine hundred and thirty-five." V. first offered 12 numbers to the test person, and, if this was not grasped, then eleven, and so on, until the span was not too large to be retained. (This is the opposite procedure from that in which the digits test is usually given.) Two correct series had to be answered, preferably two following each other, out of a series of 5 to 10. The immediate recall (A) was tested, then (B) deferred recall after one minute without diverting the attention, then (C) with diversion of attention, *i.e.* the test person counting from 99 backwards to 1. The average number of digits recalled in this fashion testing with normal *adults* was:

	A.	B.	C.
Educated normals	7.0	7.3	4.4
Uneducated normals	5.8	5.5	2.3

This considerable difference between C and A must be borne in mind.

Occasionally, or rather, rarely, one comes upon phenomenal *number* memories. Thus Inaudi, who gave public performances of his skill, was able to repeat 42 digits correctly! (the limit for normal adults probably does not exceed 13.)¶ He could not, however, repeat more than 6 or 7 disconnected letters, nor more than a few words of a poem. His memory for colors, forms, and musical compositions was below average. He was quite illiterate up to 14, yet at 7 was able to multiply mentally two numbers of 5 figures each. His memory was of the auditory type, really auditory-motor, differing in this from most mathematical geniuses and phenomenal calculators, who are usually distinctly visual in type, and can clearly *see* the numbers before them. (See Binet's "Psychologie des grands calculateurs et joueurs d'echecs," Paris, 1894, also Moebius' "Uber die Anlage zur Mathematik," Leipzig, Bart, 1900.) Many such stage "calculators" have shown distinct signs of feeble-mindedness. This does not mean, however, that men with great number memories or mathematicians are all one-sided in their endowment or need be feeble-minded. It is an interesting fact, however, that the

feeble-minded can show up phenomenal memories for immediate recall, and also automatic combination ability for numbers, or at times permanent infixing ability for masses of verbatim material (songs, prayers, Bible passages, etc.), of which they understood not a word. Platezek tells of a legal case in which the evidence offered by a girl was challenged, the school principal and the girl's teacher proclaiming her feebleminded. This girl, when tested with a picture containing 76 details, was able to recall 74 of them, showing an amazing hypernormal infixing ability. (Zur forensischen Bedeutung des Merkfähigkeitsgrades, *Monat f. Kriminalpsychol.*, 1909—Reprint).

Test (b)—Ziehen's test of deferred recall: Previous to giving test (a) one tells the child one is going to send it, *in make believe fashion*, to the store to get certain things—"a loaf of bread for 5 cents, a half pound of butter for 15 cents, and some cheese for 8 cents." This is told just once, and the child instructed, "Now remember what you are to buy."* The problem is to be fixed in mind, the *recall* to be deferred while the attention is diverted to another test—namely, test (a). One then gives test (a) and at the conclusion of it asks the child to *recall* the purchases to be made at the store. (Cf. Vieregge's test C).

This test has not been standardized for separate ages, so that one cannot precisely say how many purchases a child should be able to carry in mind. But this is really not necessary, for the test is not of *how much* a child can carry for deferred recall, but merely whether memory depositions will last for a time despite distraction, attention being meanwhile intensely engaged. However, judging from the usual Binet test of commissions (3 at *five*) and our own experience with this test, three purchases should not be too difficult to carry at the age of six. At least two of the purchases should be recalled at *six* (and all three at *seven*).

The importance of this test lies in the fact that some individuals may have an invalidated memory even though making a good showing with immediate recall tests. Or, in other words, the usual infixing tests give no evidence as to the durability of the impression made. Thus Ziehen pointed out[10] that certain mental patients may carry a series of digits correctly—the infixing process being often quite excellent (a Korsakoff patient, for instance, repeating 6 or even 7 digits)—but who cannot hold a problem for even a few seconds if attention is diverted. In feebleminded or even debile children the same has been noticed. Here we sometimes come upon automatic memories, the child being able to repeat anything in parrot-like fashion—without comprehension, of course—but who cannot defer recall for even the briefest time. It should, however, be remembered that even in normal individuals there may be marked difference in the infixing and retention powers.†

Should there be any doubt whatsoever as to the ability to defer recall, the test is given again—making use of other purchases. (Cf., also test C: paired-associates, deferred 24 hours.)

Test (c)—paired associates: This test belongs to the less definite of our series and is therefore preceded by an asterisk. It has value not so much in its applicability in testing the normal child as in differentiating the meagerly endowed yet normal child from the one mildly defective. This differentiation is often very difficult indeed and this test may therefore prove extremely useful.

Pairs of associated words—in series of five, ten or fifteen—are given (pronounced but once*), the test-person repeating each pair as heard. Then one again starts from the beginning, giving only the first word of each pair, the test-person supplying the associate. One computes the percentage of correct hits and also the *reaction time* (the time taken to supply the associate). Here infixing for immediate recall is tested. One may go through the same series on the following day (24 hours after), again giving merely the first word of each pair. In the latter procedure *deferred recall* is tested, and its average reaction time has been found of more importance than that computed with immediate recall.

The following series of substantives and adjectives is suggested by Ziehen[11] (the arrangement here, however, being slightly altered).

Garden—large	Dress—clean
Tree—green	Table—round
House—small	Flower—red
Bed—warm	River—deep
Room—high	Picture—pretty

This list may be lengthened by an additional five pairs—these being also a little more difficult:

Glass—water
Kitchen—dishes
Steam—kettle
Wood—fire
Steps—cellar

Ranschburg[12], who introduced the reaction-time element, undertook a most elaborate study of this test.† On the results of his examinations of 110 normal children between the ages of 6 to 19, and 37 abnormal ones between the ages of 7 to 16, he concludes the following:

Concerning correct hits: In the normal child one will expect 75 per cent. of correct hits, or over. In the pathologically deficient, however (i.e. the milder grade of defective), immediate recall need by no means be poor—the average result being in fact but 20 per cent. smaller than in the normals. Results under 50 per cent. from the school age up argue against good endowment. Results under 25 per cent. argue with great probability for pathological deficiency. The test, then, for correct hits and these immediately recalled is of no particular importance.

The test being applied for 24 hours *deferred recall* proved more valuable. Here results under 50 per cent. at ages between 6 and 11 spoke probably

*This is to get the child's attention and *will to remember*. Ziehen himself applies the test somewhat differently. He gives one or two easy multiplication examples, instead of the purchase commissions, without telling the child to remember them, or that he will later ask for them. In children distraction of attention is so liable that it seems safer to follow in our above manner.

†In the Binet tests, as well as in the Terman and Yerkes series, tests of deferred memory are conspicuous by their absence.

*In testing defectives and psychopathic children one may have to give the series twice or even thrice if not retained on one presentation. (On this point see No. 3, part 3.)

†Strange to say, R. does not give the lists of paired associates which he used for his studies. One such list, however (p. 135), is as follows: Coffin—body; number—digits; load—bother; tone—voice; ball—mask; act—drama; ice—glacier; thing—matter.

from 14:1 against normality and with probability of 8.5:1 for pathological deficiency.

Concerning reaction time in general, slow reproduction argued against an averagingly good endowment.* The reverse, however, was not true, rapid reproduction did not point to especially good endowment.

In normals between 6 and 11 the average reaction time was 2 seconds (fluctuating between 1.2-3.1, never longer than 2.3 in the best endowed, nor than 3.1 in the poorest endowed, yet normal). Between the ages of 12-19 the average computed on 40 normals was 1.4 seconds, fluctuating between 1.2 and 1.8.

Thus R. concludes that *between the ages of* 6 *and* 12 *one may assume the average of* 3.2 *seconds* [in those from 12-19, 1.8, at most 2 seconds] *the lower boundary line of normality for immediate recall.* For 24 hours' *deferred recall* the average time for the same ages was 2.6 for the best endowed and 3.3 for the poorest endowed, yet normal. At the age of 12-19, 3.4 was the poorest average. *Averages, therefore, greater than* 3.5 *seconds argued with great probability*—in the ages from 6 to 19—*against intellectual normality and for pathological inhibition or deficiency.*†

Here, then, this test proves of considerable value —seeing that we have so few of this type—in being *defect-diagnostic,* or vice versa, in cases where there is difficulty in drawing the mark between normality at its lower boundary line and moronity at its upper level. It is true that the number of children tested is small and that these are foreigners as well (children of Budapest); however, Ranschburg being one of our foremost authorities on memory and a most careful worker, his results may be at least tentatively considered.

Test (d)—repeating of sentences: This test is one for immediate recall, *i.e.* the infixing of a number of syllables for momentary retention. Like test (a) it measures the memory-span, only the memory-span for sentences is much greater. In fact, the memory-span differs for different elements; it is smallest for senseless words, then follow unconnected meaningful words, then digits, and finally connected meaningful words (sentences)[13].‡

Binet originally asked for the repetition of a sentence of 6 syllables at *three* years of age, 16 at *six,* and 26 at *twelve.* In 1911 the three-year test was retained, but that at *six* and *twelve* omitted, 10 syllables now being demanded at *five* and 26 at *fifteen.* Only one reading was permitted and one entirely correct sentence out of two, verbatim without error, was required to pass. Terman's revision altered the procedure somewhat. He asks for 6-7 syllables at *three* (almost a third of 19 such children were able to repeat 10 syllables), 12-13 at *four,* 16-18 at *six* (one correct out of three or two with one error each), 20-22 at *ten,* and 28 syllables for adults. Bobertag found that most, but not all, *five*-year-olds passed the ten-syllables test, while the 26 syllables test proved too easy at *twelve.* If the sentences were simple, most *ten*-year-olds could pass. For older children he hardly finds such sentences suitable. Better a series of sentences of the same length but graded as to difficulty. Meumann asks for 8-10 syllables at *five,* 14-26 or 28 at *six,* 16-28 at *seven* and *eight,* between 14-30 at *nine,* and up to 40 at *ten!* Goddard retains Binet's *three* and *five* year test, but asks 26 syllables at *twelve.**

How account for these differences in opinion and how *intelligence diagnostic* can such an uncertain test be? To answer this we must first examine it closer.

There is a great similarity between the digits test and that for senseless syllables or words. They measure the *attention-span* and little else. The test for words with meaning brings in another element. These words are not automatically repeated —they are first *comprehended,* that is, *associated,* in the infixing. Hence, more difficult words are grasped less quickly or not at all.†

Comparing sensible but unrelated words with related words (*i.e.* sentences) one finds that the latter are far more easily retained than the former. In fact, Binet and Henri[14]‡ found that in children memory for the latter was possibly 25 per cent. greater than for the former.¶ These series of related words, these sentences, are grasped as such, are associated and comprehended ("apperceived") in the infixing, before they are repeated, and the rapidity, clearness, etc., with which they are grasped and retained depends upon their *sense* and their *special appeal* to the child's personal interest. The same sentence will appeal differently to different children, because no two are constellated alike. Or again, two different sets of sentences, unless quite colorless in interest, would give dif-

*It will be remembered that slowness of reply was also considered an unfavorable sign by Binet. On the other hand, it has been pointed out several times that some children are "slow and thorough," and take their time in order to be sure. (See Meumann, Arch. f.d. ges. Psych. Bd ix, 1907, also Zeit. f. Pädag. Psych., etc.; 13, Heft 3, p. 162, also his Vorlesungen, Vol. 1, p. 517). L. Scholz also comments in this sense. Anomale Kinder, Berlin, 1912, p. 108 (p. 70 in edition 1919.)

†Averages better than 1.8 are with great probability proof against the pathological nature of the poor endowment, as no such averages occurred in the abnormals between the ages of 7 to 16.

‡Comparing the memory span for series of real objects, numbers, sounds, and words, it is found that memory for objects (or pictures of objects) is superior to that for words, both in immediate and delayed recall. Kirkpatrick and Calkins found that seven times as many objects as words were reproduced in delayed recall. After memory span for objects comes that for auditory numbers, then sounds, tactual terms, verbal terms, auditory terms, emotional terms, foreign terms. (See 9, p. 553-554.)

*In the Hamburg studies alluded to below (the testing of a thousand ten-year-olds), a number of children were found who gave a correct verbatim repetition of *all* three sentences, of 37, 48, and 52 syllables.

†Abstract words, especially, with greater difficulty than concrete—and in the early ages not at all.

‡These authors found that in giving 7 unrelated words acoustically, the average retention at the ages of 8-9 for immediate recall was 4.6 words (at 12-13, 4.9 words). Meumann,[15] trying the same experiment, got lower results. At 8 the average was but 4 words; at 13-14 the average was 5.6. Meumann points out that the *extremes* also give us interesting data: thus he found "a great number" of children at 7 who were unable to get beyond 3 words with meaning, or 2 senseless syllables; among the 14-year-olds "a great many" who could repeat 8 words. Elsewhere Meumann[16] says: "Individual differences in aptitude for immediate retention are very great, both in children and adults. Bright children retain twice as much as dull children of the same age."

¶In adults, Ebbinghaus found that sensible connected series could be retained 9 to 10 times better than senseless series. (See article on Memory[3].)

ferent norms, even if applied to the same child. In these facts one may find some explanation of the variations in the results of the above experimenters.*

Two distinct elements are therefore noted in this test—the element of the *attention span* and the element of *grasp or comprehension.* Are they to be evaluated in combination or separately? And how do they each correlate with intelligence? of this presently.

As to the correlation between the sentence test as ordinarily employed (*i.e.* as a test for immediate recall) and intelligence, if one judge by immediate recall in general, one might say, considering the experiments of Winteler, Winch, Watkins, and the report of Parison (all of which are cited in Meumann,[15] p. 470, et seq.), together with the conclusions of Meumann,[16] that, *on an average,* good memory of this type and good class-standing go together; *i.e.* there is real correlation between good memory and good intelligence, though such correlation *need* not occur, for there are important exceptions.

And indeed these exceptions are noteworthy and lend interpretation to the test, for, though Parison and Watkins found conditions *on an average* as stated above, both had cases in which the poorly endowed (intelligence gauged by class standing) showed up good recall, and vice versa, while in Winteler's try-out no distinct superiority was evinced of the intelligent children over the unintelligent. Finally, it so happens that in Winch's experiments the very best student of all had a poor immediate memory.

In still another work, possibly the most thorough as yet undertaken of the sentence test,[18] the authors found one of the poorest students with a high memorial ability (testing with sentences) and one of the very best students with a decidedly meager ability, and they, too, assume that "after all in the errorless repetition of sentences, the matter of attention seems to play the chief role." To this painstaking study we shall return; here, however, let us say, that judging from the foregoing, we must pronounce the sentence test as given in the usual (Binet's) manner, neither *intelligence diagnostic* if well passed, nor *defect diagnostic* if badly done, for your normal or even exceptionally bright child *may* have a poor immediate memory, while the child making a splendid showing with such tests *may* be but meagerly endowed. Or, again, one may say that *attention* is the bigger element of this test, that is, the attention *span,* and such attention span in the child does not necessarily correlate with intelligence, but rather with age.

As to the number of syllables expected to be reproduceable in the normal child, we have seen that we cannot be over exacting and that but approximate figures can be given. Looking over the data studied, the following requirements seem approachingly fair: Sentences of 6 to 7 syllables at *three,* of 10 to 13 syllables at *four* and *five,* of 14 to 18 syllables at *six,* of 16 to 18 or 20 syllables at *seven,* of 20 to 25 syllables at *ten,* of 26 or more at *twelve,* of 28 or more at *fifteen* and over.

Before giving the sentences themselves which may be employed, we must study this test from still another angle: What if one offers the child a sentence *too long* for its memory span? On the one hand the child may get panicky and fail outright. Meumann has especially commented on this, saying "The presentation of too many letters or words may confuse the pupil and give rise to inhibition of attention, which in turn brings about a complete forgetting of the presented data. Hence it frequently happened that pupils who retained the complete list of seven words were able to reproduce only one or two when the list was increased to eight. In such cases the attention follows the presentation only up to a certain point; then the observer suddenly becomes aware of the fact that he is unable to follow so many words. And the consciousness of this fact immediately has a debilitating effect upon his retention and even drives out the words which he has already imprinted upon his memory. This is a phenomenon which has frequently been referred to as retroactive inhibition".*

To avoid this, it is wise to begin with shorter sentences and gradually increase the length. In the nervous or psychopathic child in whom the attention may hold with difficulty,* as well as in the feebleminded of higher grade in whom attention is of poor stability, this fact must especially be borne in mind. (Cf. also on test of learning.)

In the matter of *sentences,* however, the likelihood of such inhibition is not as great as in words or letters, for here one has a tendency to merely hold the *thought,* the "thread," of the whole, if the sentence becomes too long, and to repeat this thought in the recall even though the exact form is forgotten. Here, indeed, we come upon a factor in the evaluation of the sentence-repeating test which has interest and importance of its own. In apprehending a sentence one sizes up its elements, orders these, notes their relations and grasps the underlying connection which binds these into a unit. There is here an association play and an infixing of the thought, *the context,* not the verbatim lines. The richer the associations the stronger, more rapid and more durable the infixing.* This very process would have the natural tendency to deter a verbatim recounting of lines, would have the tendency to *disturb* the attempt. Hence one would get errors if word for word exactness were expected. This, of course, would not be the case when the sentences were simple and well within the attention span, but rather when such sentences became long enough to exert strain on this span.

In other words, even in normal intelligent individuals errors *may* occur within the attention span without being diagnostic in a negative sense (and

*There are still other factors which may play a great part in sentence retention, namely, rhythm, assonance, alliteration, clause structure, and secondary associations—for these have considerable influence on the infixing process. Thus a series of syllables in trochaic rhythm is more easily learned than one in iambics." And as for rhyme, it aids memory to such an extent that some 24 to 36 additional syllables had to be added in Meumann's experiment[18] to make the lines comparable in difficulty to unrhymed lines. (l.c. p. 453).

*And the more decided the tendency to infix the thought rather than the words. Thus the more intelligent the individual the greater this tendency. This may be the explanation of the fact that scattering in this test is greater in the better endowed than the less endowed."

we have already said that an especially good showing need not be intelligence diagnostic), and invariably *do, must,* in fact, occur if the sentence becomes long enough.

These errors have received especial consideration in the work of Gassmann and Schmidt, already alluded to. These authors divide the errors found into two types, sensible and senseless. The intelligent individual seeing he has lost grasp of some link or detail of the whole, nevertheless *hangs on to the sense*—or rather gets the sense if not the words,—and even if some element of the thought is missed, "fills in" adequately, in replying, and keeps control of his words so that no nonsense occurs. Despite the divergence from the exact original therefore, the repeated matter shows no gaps, no iteration, no senseless substitutions or words sounding somewhat similar to what was heard, yet not correctly grasped. This very *control* is found to be distinctly *intelligence diagnostic* as it disappears as one goes down the scale, and is found feeble or wanting in the very meagrely endowed or defective. For these latter the sound elements of lines are focused on rather than the thought content.

Of course, even the intelligent child may at times be "stuck" or lose the thread of thought through shifted attention, or be guilty of senseless errors. And vice versa, the poorly endowed may here and there make sensible errors (substitutes). It is only on the aggregate results that Gassmann and Schmidt compute their findings. It is found that the intelligent child has sensible errors in preponderance, the unintelligent senseless errors.

Where sensible errors occur one finds either synonyms substituted, or nonsynonyms which fit into the sense. In the instance of nonsynonyms some element of the sentence was not sharply or not at all caught, and so a substitute consciously or unconsciously interpolated.

Comparing the results of this estimation of errors with class standing,* these authors found the correlation to be very high, namely +0.87, and conclude this method of examination a veritable gauge of the intelligence endowment—and of possessing decided diagnostic value—that is, being "highly symptomatic" (to change Stern's phrase,† somewhat) of good intelligence.‡

Without question it is the element of comprehension and combination in this test which gives it such high value; but it is neither a comprehension test as such nor one of combinational ability, but a memory test *per se,* this interpolation and filling in of memory gaps being a normal *memory phenomenon* (Cf. No. 3).

The method I have used in giving this test is as follows: One first ascertains the *approximate* attention span as Binet does—but see our norms—(and notes the number of syllables correctly repeated). At least, three sentences should be given, two of these to be correctly reproduced and without error. When there is doubt as to the accuracy of the reproduction, give two more sentences and reckon on the basis of three out of five. Then, in order to provoke errors, one gives sentences approximately one-half again as long as the span just noted. With the printed or typewritten* test-sentences before you, one can easily check off the words correctly recalled, make dashes for omissions and jot down the actual changes from the text. One may then underscore the sensible errors with one line, the senseless with two (or use red and blue pencil or special marks, *i.e.,* line, circle, etc., as G. and S. suggest). If one wishes, one may differentiate the sensible and senseless minor changes from the sensible and senseless interpolations and study these separately. *The final computation, however, is done on the summation of sensible and senseless changes of whatever type they may be, and the results noted in percentage, i.e., percentage of senseless errors reckoned on the basis of all the errors combined, sensible and senseless. Everything correctly repeated is ignored.*† ‡

The children were previously given instructions as to how the test would be given, and also told to write each sentence as well as they had remembered it. "If you haven't remembered it quite exactly, it doesn't matter if you get it a little different."

Instead of marking on individual errors (this proved too laborious in so extensive an examination), the scoring was done on *the sentence as a whole,* sensible or senseless, and when the sentences were not completed the part that had been written was examined as to its probability of proving sensible or senseless if it had been completed. Each sentence was scored with 1, 2, 3, 4, or 5, *i.e.* very good, good, sufficient, wanting, failure—and the three averaged.

As to the sentences to employ, we are still on unsettled ground. Below I give the better of the sentences of Binet, Terman and Bobertag, with additions of our own. These sentences are not ideal, however, for they vary in structure, rhythm, difficulty, interest, and especially in the number of ideas contained. Gassmann and Schmidt, in order to attain uniform results, and test similarly and fairly at each age, offer a series in groups, in each

*Comparing the first (best) student of each class of the seven class-years (grades), then the second (next best) student, etc., *l. c.* p. 55.

†W. Stern (Differential Psychology) speaks of such test as having *wide symptomatic* value (*breiten Symptomwert*).

‡In contradistinction to the sentence-span ability *as obtained with the Binet method.* Thus in the case of the two students pointed out by G. & S., in whom one, among the poorest of his class, passed a good sentence repetition test, thus showing a good grasp-span, *i.e.* an excellent attention span, the other among the best of his class, showing a decidedly poor span, the test as given by computation of errors gave the proper correlation with the class standing.

In a publication just received out of the Psychological Laboratory of Hamburg (now part of the new Hamburg University) this test is found among eight selected as tests of especial endowment—and as such employed in the examination of a thousand ten-year-old children. It is pronounced an exceptionally good test, correlating "surprisingly high with intelligence as rated by the teacher." (Die Auslese befähigter Volksschüler in Hamburg. R. Peter un W. Stern. Beihete z. Zeit. f. angew. psychologie, No. 18, 1919. (See p. 144.)

*Copies of sheets of these sentence series may easily be mimeographed from a typewritten original.

†These latter are the directions of Gassmann and Schmidt, p. 53. (These authors also suggest that one may estimate the attention span, *i.e.* comprehension-grasp-span, by noting at which point the first error occurs.)

‡In the Hamburg studies just mentioned a simpler method is used: Three sentences of 37, 52 and 48 syllables, respectively, are written on the board—one at a time. The children look at the sentence for 15 seconds; then the word is given to "read," and the entire class reads the sentence aloud. The sentence is erased and the command given, "Write." Two minutes is allowed for the transcription (though this proved insufficient time).

of which four types of sentences are represented, all having the same number of syllables, and three sentences given under each type. Thus A: 3 non-rhythmic, B: 3 rhythmic (iambic and trochaic), C: 3 in which there is a chief and accessory clause, and finally D: 3 compound sentences. For an example of each, the following may serve:

A: When the explosion occurred, I trembled.
B. It's the early bird that gathers the worm.
C. The clock about which I told you has come.
D: School is over, and we are glad of it.

The text of the Gassmann and Schmidt sentences is for the most part not suitable for our children. However, even if this were not the case, it would be quite impossible to translate the sentences (ranging from 8 to 38 syllables, 12 sentences to each set!) and make them tally in English. It would nevertheless be interesting to try out a similar English series and learn if different results are obtained with these four various types. The sentences which seem best to these authors are those under C and D, and I have tried for the most part to use like sentences in the following list. An attempt is also made in our series to have, not colorless sentences, but such as will decidedly hold the attention:

6-7 Syllables.

I am cold and hungry.—6. (B.)*
I have a little dog.—6. (T.)
My brother went away.—6. (Bo.)
I am a good little child.—7. (Bo.)
Let us all go for a walk.—7.
Have you read the lovely book?—7.

8-10 Syllables.

We have not finished our lessons.—8. (Bo.)
Have you seen the cat on the fence?—8.
Were you ever in the country?—8.
I am going to my uncle to-day.—10. (Bo.)
Summer is over; soon school will begin.—10.
My father is coming home on Sunday.—10.
It is night and all the world rests in sleep.—10. (Y.)

12-14 Syllables.

When the train passes, you will hear the whistle blow.—12. (T.)

We are going to have a good time in the country.—13. (T.)

On a cold, clear night the stars twinkle in the sky.—12.

I hope I get a sled for my Christmas present.—12.

Let us all go for a very long walk this afternoon.—14. (Bo.)

After you have finished your lessons, you may go and play.—14. (Bo.)

The engine that pulled our train went by electricity.—14.

16-18 Syllables.

Very soon great air ships will be traveling across the ocean.—16.

I saw a beautiful doll that could walk and also close her eyes.—16.

They forgot to bring the funny page with our newspaper to-day.—16.

Walter had a fine time on his vacation. He went fishing every day.—18. (T.)

After the rain the sun came out, and with it a most beautiful rainbow.—18.

I never fail to go to the circus every year when it comes to town.—18.

20-25 Syllables.

The apple tree makes a cool, pleasant shade on the ground, where the children are playing.—20. (T.)

They say that winter will come early this year, for the birds are already flying south.—21.

Yesterday evening I met an old acquaintance on the street, whom I have not seen for years.—22. (Bo.)

Though the storm was raging, the life savers launched their boat, and brought the shipwrecked men safe to shore.—22.

One can now go West either by rail overland, or by water, using the Panama Canal.—24.

The awful storm blew the ship out of her course and forced her on a rock, where she was battered to pieces.—25.

26-28 Syllables.

The soldiers marched down the avenue wearing their helmets and with bayonets glistening in the sunlight.—26.

One meets bears on the road in Yellowstone Park, but the animals do not harm you, if one lets them alone.—26.

I saw the smith bend a piece of red-hot iron into a horseshoe and then adjust it to the hoof of a horse.—28.

They call him the human fly, because he climbs the face of a building without any aid save his hands and feet.—27.

On the way in from the country we had to change cars, and by getting into the wrong one, were almost left behind.—28.

The runaway horse was caught by a man who followed in an auto, leaned out and grabbed the animal by its bit.—28.

30-40 Syllables.

It was a glorious feat to cross from one continent to the other in an airship, and do so without a mishap.—30.

All went well at camp while the sun shone; but when the rainy weather set in the boys became discontented and wished themselves back home.—34.

The knights of old were strong and brave; yet the things they did were often so strange and wonderful that it is difficult to believe them true.—35.

The general asked for an interview with the opposing commander; and so it was arranged that the meeting take place in the open space between the two armies.—40.

I like winter best, for there is sleighing and everything looks beautiful covered with snow; while in summer, though the flowers bloom, it is much too hot to be happy.—40.

The farmers' life is made easier now through modern implements, and the farm itself is brought nearer the town through the automobile, which most farmers can afford.—40.

(*To be concluded.*)

*Those marked (B.) are Binet's, (T.) Terman's, (Y.) Yerkes', (Bo.) Bobertag's. In translating from the last, some slight changes have here and there been made.

THE RELATION OF ARTERIAL HYPERTENSION TO NEPHROPATHIES.*

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THE subject of arterial hypertension has attracted the attention of the physician as well as the laity ever since correct methods of measuring it have been in vogue. The laity have no doubt stimulated our research along this line by becoming more or less familiar with the subject from the standpoint of prognosis, so much so that practically every physician has been forced to equip himself with proper instruments for taking blood pressure.

In the early study of blood pressure, the systolic claimed the greater attention, and perhaps does so at the present moment, but during the last few years, the diastolic pressure has been diligently studied, and I believe in the course of time will claim the major attention, so far as blood pressure is concerned. Every one realizes that there are marked fluctuations in systolic pressure readings, even at short intervals, ranging from 10 to 40 millimeters or more. The causes for this are many, and

*Read at meeting of Mississippi Valley Medical Association, Louisville, Ky., October 22-24, 1919.

they are, as a rule, beyond the control of the observer. Such factors as mental apprehension, worry, emotional disturbances, and nervous tension, may produce decided changes, and to this may be added temperature changes, previous exercise with stimulating or fatiguing result, lack of sleep, etc.

Marked fluctuations rarely occur in the diastolic pressure, the range being from 0 to 15 millimeters, rarely more than 10. For a number of years it has been my opportunity to observe many cases of arterial hypertension, and I have been more and more impressed with the great fluctuations in the systolic pressure and the comparative stability of the diastolic pressure under varying circumstances. Of late I am more interested in the reading of the diastolic pressure than the systolic, regardless of the astonishingly high readings sometimes found. At the time of writing this, I have two cases under my care that will illustrate this point. One has a blood pressure of 250 systolic, 90 diastolic, and in spite of the high systolic pressure enjoys moderate physical activity and has no urinary findings or subjective symptoms except intermittent claudication. The other patient has a blood pressure of 250 systolic, 160 diastolic, and is on the verge of coma, suffering with headaches, partial loss of vision, nausea, etc., and the urine contains albumin and casts. The first case has only a very slight increase of the nitrogenous waste in the blood, while the second has more than 100 per cent. increase. In observing this type of cases, the diastolic pressure is a far better indicator of the cardiorenal status than the systolic pressure, and in this study I shall endeavor to show the value of the diastolic readings in relation to the nephropathies.

Every one is familiar with the technic of taking blood pressures, so far as the systolic is concerned, and there is little chance of a misunderstanding, but in regard to the diastolic readings every one is not so positive. The true diastolic is at the end of the so-called fourth phase when the distinct click changes to a dull sound. Many observers read the diastolic when the sound of a pulse beat disappears, which is usually from 4 to 10 millimeters below the true diastolic. The readings to which I shall refer in this study are based on the disappearance of the sound, so are actually a few millimeters lower than the true diastolic.

The most common question asked the physician is, "What is the normal pressure for different ages"?, and the figures most frequently quoted are 120 systolic, 80 diastolic. This, I believe, is a reasonable standard which may vary as much as 10 per cent. and still be considered practically normal. Arthur Hunter and Dr. O. H. Rogers of the New York Life report an analysis of 62,000 systolic pressures in men and 5,000 in women during the years 1915-1916, in residents of the United States and Canada, with the following results:

Age.	Men.	Women.	Age.	Men.	Women.
15–19.....	120	117	40–44.....	127	125
20–24.....	122	118	45–49.....	129	128
25–29.....	123	119	50–54.....	133	132
30–34.....	124	121	55–59.....	134	134
35–39.....	125	123			

These figures are from fairly healthy individuals, and when one considers the range of years to be from 15 to 59, it is surprising that the increase is so small. The prevailing statement that one's blood pressure should be 100 plus one's age is not borne out in these figures, but would justify us in modifying the statement that the pressure should be 100 plus one-half the age. The systolic pressure in children from 3 to 15 ranges from 80 to 109 according to Judson and Nicholson (*Am. Jl. Dis. of Children*, Oct., 1914).

Personally I am convinced that a systolic pressure persisting above 140 and a diastolic above 90 is evidence of some changes taking place in the vascular and renal systems, and the earlier such individuals are instructed in rational care of the body, emphasizing the importance of eradicating focal infections and improving general elimination, the better the prospects of such an individual. In arterial hypertension there are three possibilities that must be considered, viz., cardiac failure, renal disease, and apoplexy, one or more of which is almost certain to appear sooner or later, and it is the physician's business to help avoid such possibilities.

To me it has been surprising to find how many cases of arterial hypertension develop a nephropathy, and my experience has convinced me that this is least amenable to treatment if allowed to reach an advanced stage. Some observations would rather indicate that only a small percentage of cases of true arteriosclerosis, so-called, have an arterial hypertension. Keigi-Saweda studied 204 cases of uncomplicated arteriosclerosis and only 12 per cent. of them had hypertension. He also reports that whenever a tension above 150 was found, nephritis must always be considered.

Pathologists state that arterial changes may be localized, or, at least, vary in intensity. Ostrander of the Kalamazoo State Hospital recently informed me that they frequently found advanced sclerosis of the vessels of the brain while other parts of the arterial system showed little or no change. The same condition, no doubt, frequently accounts for angina pectoris, with a localization of the sclerosis in the coronaries and beginning aorta without arterial hypertension or other subjective evidence of arterial degeneration. These things being true, it is reasonable to assume that in many cases localized arterial degeneration may take place in the kidneys, and in others, a general degeneration occurs, involving the capillaries and smaller vessels, including those in the kidneys, and this, I believe, is most apt to be true when we have a high diastolic pressure.

We all recognize arterial hypertension as a positive factor in clinical medicine, and the cause of this condition still remains an unsettled question. Some ask if it is the result of arterial degeneration or productive of the degeneration. Most authorities ascribe hypertension to a chronic toxemia, and we all recognize the causes for this may be many. Infections of all kinds may have a bearing, according to the case, and my impression is that they may be a source of injury to the tissues, whether they be acute or chronic. In addition to this must be considered what we may term the indulgences, such as excessive use of food, tobacco, alcohol, tea, coffee, etc., which of themselves cannot be definitely blamed for hypertension, but they serve to add an extra burden to the detoxicating functions of the body, if

we may call them such. This function is further inhibited by the defective activity of the normal channels of elimination. Sedentary habits, in combination with the above, form the maximum insult to the body welfare and are much in evidence in a large percentage of individuals suffering with arterial hypertension.

Huchard holds that excesses and, above all, errors in alimentation throw toxic substances into the blood, which produce a state of spasm of the arterial system, bringing on arterial hypertension and arteriosclerosis. Broadbent is of the opinion that "nitrogenous waste, and the products of imperfect metabolism," when present in the blood, raise the blood pressure. Russell contends that certain substances present in the blood, even in small quantities, cause arterial and capillary contraction, and this will be found to be the first stage of increased pressure, gradually progressing to arterial degeneration. The above idea is well illustrated by the action of adrenalin, ergot, and pituitary extract, which we know act by their presence in the blood, each in a little different way, on the wall of the blood vessel. With these facts in view, it is not a far-fetched idea that the nitrogenous waste products and other substances, the result of imperfect metabolism, have a detrimental effect on the tissues of the capillaries and arteries.

This philosophy concerning arterial hypertension led me to investigate the nitrogenous waste products in the blood of a large number of patients. We made a routine estimation of the nonprotein nitrogen in the blood of patients regardless of their condition. In cases having arterial hypertension with or without evidence of other complications, a more complete chemical analysis of the blood was made, which included nonprotein nitrogen, uric acid, and urea nitrogen. In addition to this, one series was studied by means of the renal efficiency diet test, and in each of these cases chemical analysis of the blood was made.

It must be remembered that arterial hypertension, as a disease, progresses insidiously and may be present for a long time before any subjective symptoms develop. In many cases the condition is discovered by accident, and it is with difficulty at times that one can make the patient believe there is anything wrong with his health. In arterial hypertension it is often difficult to find any other definite evidence of pathology. I believe that a careful study of these cases would justify us in concluding that in cases of arterial hypertension with a high diastolic pressure, we have the most unfavorable prognosis, while those with a low diastolic, regardless of the systolic, and no other pathology, have a more favorable outlook.

In the study of groups of cases presented in the accompanying tables, all stages of arterial hypertension are included.

In exhibit "A," 576 cases are represented in which the maximum blood pressure is 140 systolic, 90 diastolic, and in which the nonprotein nitrogen average is 31.0 mg. per cent., figures that coincide with the normal of other observers. The number of cases studied is large enough to lend value to the average, and the blood pressure limits are within the range generally considered normal.

In exhibit "B," data are presented in a series of cases in which chemical analysis of the blood was made because of arterial hypertension, particularly high diastolic; also a small group in which the diagnosis of nephritis was justified regardless of the pressure, and a third group in which a suspicious history, such as temporary presence of albumin or casts, or other symptoms caused apprehension regarding the condition of the kidneys. In the first group on this chart are included a number of cases on the verge of uremic coma and cardiac failure, and this explains the large amount of nitrogenous waste products in the blood. The average is also given on those with and without albumin and shows a considerable difference.

Table A.—Nonprotein Nitrogen in Blood in Diastolic Pressure Below 90.

Number of Cases.	Average Age.	Average Systolic Blood Pressure.	Average Diastolic Blood Pressure.	Nonprotein Nitrogen, m.g. Per Cent in Blood.	Range Nonprotein Nitrogen, m.g. Per Cent.
576	43	115	0.76	31.0	24–42

In exhibit "C," is presented a series where the renal efficiency diet test and chemical analysis of the blood were made, with grouping the same as in exhibit "B." In the first group of this series are none of the advanced cases as compared to the first group in exhibit "B," because all were able to take the diet prescribed for the test, a thing that would have been impossible in some of the cases in group "B."

Attention is called to the low range of specific gravity, increased quantity of night urine, retention of urinary nitrogen as well as increase in the nitrogenous waste products of the blood, which point to a renal inefficiency or nephropathy in varying degrees. In nearly half of those in group one, of exhibits "B" and "C," the ordinary urine examination would fail to reveal a pathological urine, and in considerable more than half of them would this be true, because some of these cases of arterial hypertension have only temporary traces of albumin, and because of this are frequently assured that the kidneys show no evidence of disease, thus instilling into them a false sense of security regarding their health.

Table B.—Nitrogenous Waste Products in Cases of High Diastolic Pressure.

	Number of Cases.	Average Age.	Range of Age.	Severe Infections.	Positive Wassermann.	Average Systolic Pressure.	Average Diastolic Pressure.	Average Sp. Gr. of Urine, 24 Hrs.	Albumin +.	Casts +.	Nonprotein Nitrogen, m.g. Per Cent.	Uric Acid.	Urea.
1. High systolic and diastolic pressure*	24	45	28–63	9	2	209	121	1.011	13	9	48.5	4.65	11.59
2. Low diastolic pressure, with nephritis	8	50	31–60	5	2	116	87	1.012	8	4	38.4	2.90	10.00
3. Low diastolic pressure, with suspicious history	28	43	23–60	16	0	127	94	1.014	0	3	34.9	2.70	8.09

*Average nonprotein nitrogen in cases with albumin, 55.4 m.g. per cent; without albumin, 42.2 m.g. per cent.

In group 2 of exhibits "B" and "C," the urine gives ample evidence of nephritis, and each one of these patients was aware of kidney disease, while

in group 3 trouble with the kidneys was feared because of temporary evidence. From the results of the renal efficiency diet test and blood findings, I fear that a nephropathy may be in process of formation in some of them without having produced sufficient absolute evidence to justify a diagnosis of nephritis.

In all such cases showing any abnormal evidence in the urine as studied by the renal efficiency diet test, the latter should be repeated at intervals of a year in order to be sure that the slow, progressive changes accompanying arterial hypertension are not in progress.

TABLE C.—RENAL EFFICIENCY DIET TEST AND CHEMICAL BLOOD ANALYSIS IN THE PATHOLOGICAL.

	Number of Cases.	Average Age.	Range of Age.	Severe Infections.	Positive Wassermann.	Average Systolic Blood Pressure.	Average Diastolic Pressure.	Average Ran. e, Sp. Gr. Urine.	Average Total Night Urine.	Albumin +.	Casts +.	Nitrogen Intake, Gms.	Urinary Nitrogen Retained.	Nonprotein Nitrogen, m.g. Per Cent	Uric Acid.	Urea Nitrogen.
1. High diastolic blood pressure*	36	49	31–70	21	0	206	121	8.8	758	19	28	13	4.2	41.0	4.3	12.3
2. Nephritis, with low diastolic pressure.....	11	67	25–59	7	0	158	83	7.0	750	11	9	13	4.5	41.1	4.5	13.7
3. Low diastolic, with suspicious history.....	22	46	29–63	14	0	136	79	10.0	621	0	4	13	3.7	38.7	3.1	11.1

*Average nonprotein nitrogen, 41.4 m.g. per cent in high diastolic with albumin.

In cases with an increase in diastolic pressure, similar precautions should be used so as to detect as early as possible any nephropathy that may be in process of development. Simple urine examinations, as ordinarily carried out, are insufficient to get all the evidence necessary to detect a nephropathy. If positive evidence can be found of the presence of a nephropathy, the earlier that precautions are taken to lessen the burden of the kidney, the better will be the prognosis, because when such conditions are well advanced anything that can be done has little or no effect.

SUMMARY.

1. The average ages in the groups presented indicate that arterial tension should be studied in all clinical cases over 40 years of age.

2. Both systolic and diastolic pressures should be studied, and when the diastolic is high, careful study of the renal efficiency should be made at yearly intervals.

3. High diastolic pressure is indicative of continual stress on the arterial system and more likely to produce renal inefficiency.

4. The renal efficiency diet test may show evidence of renal inefficiency, such as fixation of specific gravity, increase in night urine, and retention of urinary nitrogen, before positive changes in the blood pressure or positive increase in the nitrogenous wastes in the blood take place.

5. Persistent presence of albumin in the urine is not necessarily an evidence of marked renal inefficiency.

6. Observations on cases with low diastolic blood pressure justify a more favorable prognosis, regardless of the height of the systolic pressure, than a high diastolic.

A CLINICAL STUDY OF ECTOPIC PREGNANCY;

A NEW ETIOLOGICAL THEORY.

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THE following summary is based upon a study of forty-three cases occurring in the service of Dr. Haynes at Harlem Hospital. Out of a total of 580 gynecological operations, the ectopics thus constitute about 7 per cent.

In an endeavor to bring out the practical, salient features, I have eliminated as far as possible the irrelevant and theoretical considerations. In a study of this sort we ought to be in a position to confirm or invalidate certain conceptions appertaining to this most interesting but slightly understood pathological entity.

It is ordinarily believed that ectopic pregnancy occurs more frequently amongst multiparæ. Our series coincides exactly with this view. In fact, only six of the forty-three women had never been pregnant. Thirteen of the cases were primiparæ, twenty were multiparæ, one having been pregnant eleven times. Only six patients gave a history of previous miscarriage. This is rather interesting from the etiological standpoint, which will be considered later. Three patients had been operated upon for a former extrauterine pregnancy, one year, one and a half years, and two years ago, respectively.

A long period of sterility is looked upon as an antecedent to an ectopic pregnancy. This fact is not borne out by us. To be sure, one patient had been sterile thirteen years, and one eleven years, but the great majority had become impregnated within the last three years. Case No. 521 is of interest, the patient having had her last full-term child twelve years ago, seven miscarriages since then, the last one six months ago, and an ectopic pregnancy two years previous.

The ages ranged from 23 to 40, although most of the cases occur in women under 30 years of age.

When we come to consider the rôle infection plays, our best criterion is the condition *in vivo* of the other tube. It is well known that the gonococcus usually involves both tubes to a certain if not equal degree. Still in these forty-three cases a double salpingectomy was deemed necessary only nine times. Thus the other tube showed evidence of inflammatory involvement in about one-fourth of the cases. Many specimens were sectioned only at the site of the ectopic pregnancy so as to verify the diagnosis by the presence of chorionic villi. At this point, however, the muscularis and mucosa are so attenuated, either by rupture or the invasive and erosive action of the trophoblasts, that it is difficult to demonstrate round cell infiltration. But of those tubes that were sectioned throughout, only about one-third showed the presence of round cell infiltration and connective tissue replacement, due to chronic inflammatory changes. Furthermore, in the multiparæ the tubes could have been only slightly if at all diseased, to permit of frequent normal pregnancy. Indeed one patient became nor-

mally pregnant after a unilateral salpingectomy, indicating the patency of the remaining tube. Subsequently this tube became the site of an extrauterine pregnancy. Miscarriages are not infrequently associated with or followed by infection of a mild degree, which, travelling along the the lymphatics, produces peritubal inflammation with subsequent adhesions. But a very small percentage of cases had given a history of previous miscarriage. Thus we must admit that infection is only of minor importance from the etiological standpoint.

It has been the usual teaching, handed down from book to book, that the normal meeting-place of the ovum and spermatozoon is in the tube. There is no evidence in favor of this except the occasional occurrence of ectopic pregnancy. Nature as a rule does not work in a roundabout fashion. Why the two elementary cells, in every normal case, should first meet in the tube, then turning about, travel together toward and into the uterus, is rather difficult to conceive. It is my opinion that the normal meeting place of the ovum and spermatozoon is in the uterus. The male cell is universally attracted toward the female. Whenever and wherever union takes place, then and there cell multiplication, decidual reaction, and pregnancy supervene. The tube may be perfectly capable of accommodating both ovum and spermatozoon separately, but as cell multiplication immediately takes place, the resulting increased mass is too large to pass onward toward the uterus. The pregnancy thus continues within the tube until the inevitable termination. Various factors may account for the meeting taking place in tube: (1) Late ovulation, *i.e.* late in regard to insemination. The sperm cell may be well along in its ascent, while the ovum is just entering the tube. (2) Hypermotility of the spermatozoon. (3) Lodgement of the ovum in a recess or congenital ampulla of the tube. (4) Mild salpingitis causing stricture or interference with the ciliary motion or contractility of the musculature. The inflammation must of necessity be a mild one, as a moderate or severe involvement tends to close the fimbriated end very early, thus precluding the possibility of the ovum even entering the tube. Spermatozoic hypermotility or late ovulation could account for the few undoubtedly primary ovarian or even abdominal pregnancies.

The most vital element of this subject is undoubtedly its diagnosis, for upon the recognition of the presence of an ectopic pregnancy may depend the life of the patient. But probably no gynecological condition is so difficult to diagnose as extrauterine pregnancy. I beg to present the apparently startling fact that out of forty-three cases we correctly diagnosed only twenty-four, *i.e.* about 60 per cent.

Let us now consider why we fell down on 40 per cent. of the cases. A proper diagnosis of any subject depends upon a good history, physical examination, and laboratory data. Ordinarily physical examination is of prime importance and the other two means are but adjuvants in arriving at the proper conclusion. In ectopic pregnancy, however, we have learned to pay most attention to a good history. What then can be considered a typical history? A young woman who has gone ten days beyond her expected menstrual epoch is suddenly seized with severe intermittent cramp-like pains in her lower abdomen. These are preceded, associated, or followed by some vaginal bleeding. The cramps are repeated and accompanied by dizziness, weakness, or fainting spells. These latter symptoms are indicative of a slight hemorrhage into the wall of the tube or a moderate leakage of blood into the peritoneal cavity. They constitute the so-called diagnostic feature of the disease. If allowed to go unrecognized or not elicited by a good history, the bleeding continues until the patient presents all the signs and symptoms of shock due to internal hemorrhage, such as marked pallor, small thready rapid pulse, thirst, dyspnea, etc. Diagnosis then is no art but a reproach upon our ability.

Unfortunately, Nature has not reproduced two identical abnormal conditions any more than two normal ones. It is the deviation from the type that makes ectopic pregnancy so difficult to diagnose. For instance, the menstrual history had gone on uninterruptedly in twelve cases. Six patients had an irregular type for the past four to six months, and one for the last four years. The pain, usually quite characteristic, is misleading in those patients, who have had pelvic discomfort for a period long antedating the beginning of the ectopic. This misled us in four cases. The history of fainting spells we have often elicited after the operation, the busy house-surgeon not having had sufficient time to go into details, and the patient not considering fainting more than a daily occurrence.

Thirteen patients gave a history of vomiting during the few days previous to admission to the hospital. As this is usually due to toxic irritation of the peritoneum rather than to bloody extravasation, one is liable to misinterpret its significance. In all probability it is a concomitant of the shock. A few patients complained of frequent, burning urination, a very common symptom in infections of the genitourinary tract.

The blood picture has not been of great assistance, except in cases of frank hemorrhage. A moderate amount of bleeding gives an increased leucocytosis and a moderately high polynuclear count, thus being very similar to a pyogenic condition. Reduction in the hemoglobin and red glood cells is of course indicative of free bleeding.

When we come to the physical examination, we are again confronted by paradoxical data. For instance, why should a clean ectopic pregnancy, ruptured or unruptured, produce tenderness, rigidity, and even a rebound sign?—all signs expected in a toxic peritonitis, not in a clean simply irritating type. Still this state of affairs was present in twenty-two cases, fifteen having ruptured, with free blood in the peritoneal cavity; three were unruptured; two were old partial ruptures that had become encysted, and two were adherent to the appendix.

The vaginal examination, the *sine qua non* of gynecology, is only one link in the evidence, very often in fact misleading, when the history alone would be sufficient to make a diagnosis. The oft described sausage-shaped tumor of the tube we only rarely encountered. As the ectopic growth develops in one part of the tube, it tends to form a rounded rather than an elliptical mass. It is usually tender, not movable, and varies in size, accord-

ing to the degree of maturity of the ovum. In one case, the mass extended half way up toward the umbilicus. The tube itself does not assume such proportions, but the bowel and omentum becoming adherent to it, constitute the mass. Another case, an abdominal pregnancy, filled the entire pelvis and hypogastric region with an irregular hard tender enlargement. If a partial rupture or tubal abortion has taken place, with blood accumulation in the cul-de-sac or fornices, an indefinite boggy, crepitating sensation is obtained. It is difficult to describe but is absolutely characteristic of free blood in the peritoneal cavity. The cervix and uterus were softened and enlarged in only eleven of the cases, there being no appreciable change in the remainder.

The nineteen cases which we failed to recognize, were diagnosed as follows: eight pyosalpinx, three pelvic abscess, three fibroid uterus with cystic ovary, one cystic ovary with salpingitis, one fibroid with salpingitis, one broad ligament cyst, one retroversion with double pyosalpinx. I will just briefly cite a few of these cases:

Case 407.—Age, 23, married, no children, 4 miscarriages, menstruation every twenty-eight days for four days, last period being on time. During the past year she has suffered with pains in the lower abdomen, particularly after menstruation, vaginal discharge, and frequent micturition. Examination reveals tenderness, rigidity in both lower quadrants, and a rebound sign present. The cervix and uterus are slightly enlarged but otherwise normal. There is a slight induration in the right broad ligament. Leucocyte count 12,500, polynuclear 79 per cent, lymphocytes 21 per cent. Temperature 101°, pulse 90. Diagnosis pyosalpinx. Operation revealed a right tubal pregnancy aborting through the fimbria.

Case 567.—Age, 25, III-para, last two years ago, one miscarriage six years ago; operation for prolapsus uteri six years ago. Menstruation very irregular during past nine month, pain in lower abdomen during past four months, associated with mucopurulent vaginal discharge. During the past three days she has had a vulvovaginal abscess which ruptured on the day of admission to the hospital. Temperature, 99°; pulse, 80; respiration, 24. On the second day the temperature rose to 102°, pulse to 100, gradually becoming normal on the fifth day. The fundus is anterior and slightly enlarged, the cul-de-sac and right fornix are occupied by an indefinite mass. Examination three days later shows a large soft fluctuating mass filling the cul-de-sac, the adnexa not being palpable. The case was diagnosed one of pelvic abscess. Preliminary aspiration of the posterior cul-de-sac revealed three ounces of dark fluid blood. Another examination, immediately made, disclosed a small mass occupying the left adnexal region. The diagnosis of ectopic pregnancy now made was verified by laparotomy.

Case 207.—Age, 37, II-para, has had one miscarriage; menstruation irregular for the past six months, vaginal bleeding during the last six weeks. The main complaint was of pain in the left side of the abdomen and progressive weakness. On examination a mass was mapped out extending half way up toward the umbilicus and two inches to the right of the median line, filling the left iliac fossa. Vaginal examination showed the whole pelvis filled with an irregular, nodular mass. Leucocytes 12,000 polynuclears 80 per cent., lymphocytes 20 per cent. Diagnosis, fibroid uterus and cystic ovary. Operation showed an old adherent ectopic pregnancy with right pyosalpinx.

Operative intervention has been undertaken as soon as the diagnosis was established. In cases of rupture, we did not wait until the symptoms of shock subsided, but laparatomized the patient as quickly as possible. The offending tube was clamped off, as much of the blood clot was scooped out as possible, and layer closure of the abdominal wall was undertaken without drainage. The operative findings and procedures were quite varied. Curettage was undertaken six times, either for diagnostic purposes or under a false belief of intrauterine pregnancy. The uterus was found empty in five of the cases; in the other one it still contained considerable decidual tissue.

Twelve of the cases had not yet ruptured, eighteen cases had ruptured with copious intraperitoneal hemorrhage, and six revealed tubal abortion. It is most interesting and rather inexplicable to account for the remarkable distensibility of some tubes, one being the size of an adult's fist and still no rupture had taken place. Another tube, not enlarged much beyond the normal, had ruptured and caused excessive hemorrhage. Others were bound down by omentum and intestines at the impending site of rupture, and thus the hemorrhage was delayed. We encountered three old encysted ectopic pregnancies and one abdominal, both fetus and placenta having been implanted upon the bowel.

The associated lesions were as follows: Three pyosalpinx, two hemorrhagic cyst of the ovary, two adherent appendices, one fibroid, one retroversion. The following were the operative procedures: Thirty-two unilateral salpingectomies and nine bilateral salpingectomies were performed. The ovary in part or whole was always left in situ if at all possible. Posterior colpotomy was performed three times, twice for diagnosis, once for drainage. Hysterectomy and uterine fixation were each done once. Appendectomy was practised only eight times. In case of rupture with free blood in the peritoneal cavity, we omit appendectomy, as we fear that the blood makes too good a culture medium for the colon bacillus that might escape from the appendectomy stump.

The postoperative treatment is very simple—glucose, sodium bicarbonate, and whiskey are given by rectum every six hours for the first twenty-four hours. In four cases 500 c.c. saline infusion was administered, but no transfusion was given. Morphine is used if found necessary. The patient receives an enema and a mild catharsis respectively sixty and seventy-two hours after operation.

The prognosis is most excellent. Even those patients who have had a very copious hemorrhage respond and recuperate very promptly. Two patients of this series died, one five days after operation. During the first two days the latter showed all the signs and symptoms of an acute gastric dilatation. Under treatment this cleared up, but on the fourth day the temperature rose to 105°, she became cynotic, and died the following day. Unfortunately we could not obtain a post-mortem. The other patient died six days after operation. The post-mortem showed short chain streptococci in the peritoneal cavity.

From a study of the above series, I believe the following deductions are permissible:

Every patient who has missed her regular period should be examined for and suspected of ectopic pregnancy.

The condition occurs much more frequently among multiparæ.

Our knowledge of the etiology is very meagre, but antecedent infection is not so important as is ordinarily believed.

The proper diagnosis can be made in most cases; in some it would be obviously illogical, and in others it is apparently impossible.

Operative intervention should be undertaken as soon as the diagnosis is verified, whether the tube is ruptured or not.

41 West Seventy-fifth Street.

THE CAUSE, PREVENTION, AND CURE OF INFLUENZA AND ALLIED DISEASES.

By ALFRED KAHN, M.D.

NEW YORK.

We are now again in the midst of a serious influenza epidemic. Numbers of people have been confined to their homes and beds. Many lives have been sacrificed. Other victims will follow in order. The medical profession has again been challenged. The whole country is crying for a cure. Are we helpless? We are not. But our memories are short. For several years I have made certain clinical observations in the course of my practice. I have observed certain phenomena, which I do not think have been noted before. These phenomena have surely been seen by others, but I do not believe that they have been recorded. I make this statement off the palm, as it were. I did not intend presenting this paper to the profession in this form. I had intended waiting for further data. I had intended looking very thoroughly into the literature of the subject,—and lastly, I had intended writing a more detailed article sometime in the future, at my leisure. But as we are now in the midst of a serious epidemic, and as I believe that this knowledge may be of great value to the country, I am presenting it in this hurried form, without bibliography, without mentioning names of other worthy clinicians who would doubtless deserve recognition were it possible for me at this date to review the history and use of the drug and formulas here given. And with this in mind, may I ask indulgence on the part of the profession?

Now, I have an idea that we have laid too much stress upon the germ which causes influenza. Please bear in mind, as I proceed with this theory, that what I state here as regards influenza also holds good with regard to some of the other infectious diseases, and some other diseases perhaps not infectious,—hay fever, for example. I do not mean in the last analysis that the bacillus of Pfeiffer is not the causative factor of the disease, but what is of prime importance to each individual victim of the disease is the special soil in which the germ is planted. Of course, it is well known and it is often stated that before a germ can produce a disease, the soil upon which the germ is planted must be ripe or must be in a receptive mood for the reception of the germ. And this is important. But I contend that the soil upon which the germ is received, if you will, is even a more important factor in the causation of the disease than the germ itself.

Now, when we say the soil must be ripe for the reception of the germ, just what do we mean and why is it such an important factor? Let me make several clinical observations, simple in themselves, but like many simple things, full of meaning.

First Observation.—First, let us observe that mucus is secreted in the nose,—let us say that it is of a watery nature. It is admitted that this secretion has a salty taste. It is admitted, I am sure, that when a patient for example, has an acute rhinitis, the turbinates swell up and become congested, there is a hypersecretion from the nose, and this secretion has a salty taste. Now, you will answer if the question is put, that the secretions in the nose come from the cells of the mucous glands lining the mucous membranes of the nasal cavities. In the last analysis, the source of the excretions in the nose come from the food taken into the stomach. In the process of metabolism, food is taken in the stomach and intestines, absorbed into the bloodstream through lymphatics, etc., and carried to all the cells of the human body, and I contend, excreted not only from the kidneys in the form of urine and from the skin in the form of sweat, but also from the nose, throat, and lungs. If the food digested is highly irritating, it will irritate the kidney and bladder. If the food is highly irritating, it will irritate the skin, and you may have the various skin eruptions. If the excretions are highly irritating, you will have inflammation of the mucous membranes lining the nose (acute rhinitis), lining the throat and larynx (acute pharyngitis and laryngitis), lining the bronchi (acute bronchitis), and lining the lungs (pneumonia). So the gist of the subject is that, according to my view the mucous membranes lining these passages have the function of excreting just the same as the skin. They also have the function of absorption and so has the skin, but to a very much less degree. But the factor of absorption is not the cardinal point in this paper, so I will pass it by.

Second Observation.—If you agree with me, you admit, according to the first observation, that the nose is an excretory organ, or that it has an excretory function, and that these excretions, in the last analysis, come from the food ingested. My second observation is this, and almost any man doing nasal work has observed the phenomena: Very often upon inserting into the nose a probe or an applicator tipped with medication, there is a sudden gust of smoky vapor, which can be very favorably compared to the fumes of hydrochloric acid when exposed to the air. I have never been able to determine what this fume was but I am inclined to think that it was a fume of hydrochloric acid formed in the nasal chambers by the substance on the medicated applicator coming in contact with certain vapors in the nasal chambers. I am personally convinced that some chemical reaction takes place. Such a reaction is met with every now and then during the course of a nasal practice, and if my theory is correct, it will show that intense chemical reactions might conceivably take place at a shorter or longer interval in the nose. It will also tend to show a close relationship of the upper air passages, bronchi, trachea, and lungs to the food ingested, broken up through metabolism and excreted (the soil), on the one hand, and to the invading organism on the other. It will also promptly indicate where treatment

must be applied, and I will in a moment demonstrate that treatment applied at this point will prevent influenza, and if rightly applied, promptly applied, will, I believe, act as a specific to the diseases under consideration.

Third Observation.—This observation, I believe, will tend to clarify the other two, especially the last observation. Several years ago, Mr. W. H. Y., an old patient, who had been in my charge for several years and who was a yearly sufferer from hay fever, presented himself to me for treatment. He was suffering from an intense attack of hay fever. His eyes were watering, and if I may use the term, his nose was pouring out secretions. He would use up a handkerchief every few minutes. The turbinates of both nasal chambers were intensely engorged, the mucous membrane was in shreds and had the appearance as if a cautery had been applied to it. Leave Mr. Y. here for a moment. It is generally known that hay fever makes its appearance at certain seasons of the year, and it is generally believed that hay fever is caused through the agency of plant pollen, and I am willing to accept this. It is also admitted that certain individuals are subject to hay fever and that other individuals under the same conditions are not troubled at all. It is also well known that certain individuals present different reactions to different foods, that what may act as an irritant to one individual may not be an irritant to another, and that conversely what is sugar to one man may be poison to another.

It is also well known and admitted that poison ivy will act as an irritant to the skin of certain individuals and that on the skin of other individuals it has no effect whatever. Now, I contend that the eczema caused by poison ivy is due to an irritant produced between the perspiration or excretion of the skin on the one hand and some product or element in the poison ivy on the other; that there is a chemical reaction resulting in the formation possibly of an acid and that this acid produces the eczema. Now, there must be in these susceptible individuals some product of metabolism, excreted in their perspiration that is entirely absent in the perspiration of other individuals who are not susceptible to the poison. Now, I believe that the same state of affairs exists in hay fever. That there is something in the excretions from the nose which, when coming in contact with the pollen, produces a slow chemical reaction, with the formation of an acid (probably hydrochloric acid), and that this acid causes the inflammation in the nose; and I believe that the fumes spoken of in observation No. 2 are the fumes of hydrochloric acid, and that in a small way on the introduction of my applicator a small reaction took place with the formation of hydrochloric acid, but in an insufficient quantity to cause much irritation. And in passing I might add that such a condition may possibly have something to do with the production of catarrh of the nasal passages.

Observation 4.—It is well known to all oculists that certain foods—sugar, pies, cakes, strawberries, a heavy protein diet—may produce conjunctivitis, that often patients presenting themselves with acute conjunctivitis will get well when some error in diet is changed. Dermatologists will tell you the same thing. There are certain cases of discharging nose, due to the same factor. When the diet is changed, the disease clears up and the secretion stops.

At the beginning of this article I pointed out that in the last analysis all secretions, whether it be from the kidneys, from the skin, whether it be tears, secretions from the nose, throat, lungs, all of these secretions and excretions come from the food taken into the body. This is surely an axiomatic fact, and I feel certain that it is not necessary for me to reason this out with the reader. So, having this in mind, let me try to answer the question, why is it that when certain food is taken into the body and metabolized and excreted by some individuals, these excretions act as irritants, either alone (conjunctivitis, skin eruptions, certain nasal discharges) or act as irritants when brought in contact with some outside element, such as the pollen of plants (hay fever) poison ivy, certain bacteria. There seem to be only two answers, and one of these I think is hardly to be considered. I will discuss these two answers as we proceed. Let us take for argument's sake, two individuals exactly alike if you will, the one is susceptible to hay fever, poison ivy, influenza, or a hundred other diseases—the other conversely, not susceptible to any of these diseases. Let us agree for argument's sake that the susceptible individual is susceptible to these diseases and that his susceptibility is due to some peculiarity in his ingestion and metabolic processes. Now, let us say in these two individuals that, so far as we can see, their anatomical make-up is equally perfect, their stomach, bowels, kidneys, etc., are equally normal. And still one is susceptible and the other is not. The secretions from the stomach, liver, pancreas, and organs of digestion in each individual are equally perfect. Now, these facts being true, what other element could cause the difference? To my mind, the difference is due to bacterial life in the intestines. Their bacterial flora is different. I believe it is due to this difference of bacterial flora in the intestines that certain ferments are formed in some individuals and not in others. I believe that these ferments are absorbed in the processes of metabolism, and that when these ferments are eliminated through the kidneys, they may tend to irritate the kidneys (Bright's disease), through the skin (various skin lesions), through the nose (rhinitis), in the tears and glands of the conjunctiva (conjunctivitis). These secretions of fermentation in the intestines, when brought in contact with certain outside elements, the pollen (hay fever), the ivy plant (poison ivy), the bacillus of Pfeiffer (influenza),—this explains your ripe soil; this explains your receptive soil.

Now, if what I say is true, if you can stop the fermentation taking place in the intestines in these susceptible individuals, if you can do this, there will be no receptive soil in the nose, throat, lungs, etc.; if you have a drug that will do this, you have a drug which will act as a preventive and a curative agent—and we have such a drug

—and it is creosote; salol (phenylsalicylate) is excellent, but the master is creosote.

The other factor that would tend toward the elimination of irritants would be due to insufficiency on the part of some organ of metabolism —for example, an insufficiency of the liver might cause diabetes, and the history of diabetes is very often the history of the elimination of irritants. In addition diabetic patients are easy victims to infections. They present a peculiarly ripe soil to an invading organism. The same may be true of a diseased kidney. The kidney not functioning properly allows irritants to pass out through the emunctories, bringing the individual in the class of a ripe soil. This may be true as pertains to other organs, and in a similar way. But in a consideration of influenza I think this factor of an insufficient functioning organ is hardly to be considered, as most of the victims are in the prime of life and in perfect physical condition. Therefore, I believe the other view, fermentation in the intestines, is the etiological basis.

Creosote.—It is not necessary, in a paper of this type, to enter into a long dissertation on creosote. It has been used often with success by many clinicians. It has especially been praised in the treatment of tuberculosis and pneumonia. I do not know whether it has ever been recommended before by any other physician, especially for influenza. However, in any case, I am indebted to other men for nearly all of my information regarding this drug. The drug has been used in many ways, even before the time of Socrates. And I do not claim any priority in the matter. In the diseases discussed, I believe the views and theories here propounded are original, and in this respect I possibly am entitled to priority. I have not had time to look into the literature of the subject. An excellent formula for administering the drug is

℞ Creosote carbonate.....ʒss
Sapon medicat .....ʒi
Caps No. 60
Sig: 2 every 3 hours; 10 to 12 daily.

Another mixture is creosote carbonate administered in peppermint water with a small addition of glycerin, and an adult dose is 15 minims every 3 hours. For children it is well to give creosote carbonate according to the following dosage:

1	year	4	to 15	grains	daily	in 4	doses
2 to 4	"	15	to 45	"	"	"	"
4 to 6	"	45	to 60	"	"	"	"
6 to 10	"	60	to 75	"	"	"	"

The patient is apt to get much relief and comfort and an early breaking up of the tenacious cough by inhaling the following:

Beechwood creosote
Alcohol
Spirit of chloroform, aa equal parts

or the following inhalant:

Tincture of benzoin comp.....ʒi
Menthol .....gr. xxx
Beechwood creosote .....ʒii
Oil of gaultheria .....ʒi

This should be inhaled from a steaming kettle, using about half an ounce to half a pint of water. If there is much irritation of the nervous system, give creosote valerianate, 6 drops 3 times daily. after meals. If the influenza is of the rheumatic variety, give guaiacol valerianate, 6 drops 3 times daily after meals.

These are average doses, but my advice is to push the drug to the highest point compatible with any individual case. If the drug is carefully regulated, the stools should be practically odorless. Of course, one might smell the creosote, and if you can keep the stool odorless, I can almost surely state that your patient will recover. In a given case, everything else being equal, the odor of the stool after the administration of creosote is a valuable prognostic sign.

I do not mean in this that any given individual, for example one who is a sufferer from hay fever or who is inclined to be susceptible to poison ivy, will necessarily be subject to influenza; it has been my endeavor merely to point out that the body processes present a striking similarity. A patient may be an easy victim, for example, of hay fever or poison ivy or other diseases, but this would not necessarily indicate that he would be an easy receptive individual, a ripe-soiled individual, if you will, to influenza. I have endeavored to explain this very difficult subject and I hope I shall not be misunderstood. In conclusion, I repeat that it is my belief that if the suggestions here offered are carefully followed, many a patient will be cured and it will be a means of bringing the epidemic to an end. A good preventive or prophylactic prescription to give, one which I have been giving to my patients, and none of them have been taken down with the disease, is the following pill:

Creosote ¼ grain.
Ex. nux vomica, ⅛ grain.
Pepsin (1-3000) 1 grain.

I should advise the use of such a tablet 3 or 4 times every day, after meals. The patient must not skip a day.

50 East Forty-second Street.

THE PROSTITUTE IN JAIL:

AN OPPORTUNITY FOR PUBLIC HEALTH WORK THAT GIVES RESULTS.

By HERMAN GOODMAN, B.S., M.D.

NEW YORK.

FORMERLY VENEREAL DISEASE OFFICER, CAMP LAS CASAS, PORTO RICO.

THE vigorous efforts of the past two or three years for the abatement of the so-called venereal diseases have given most wonderful results as the returns of our army both here and abroad have shown. The United States has almost unanimously accepted one plan of action even now that the war is over, and during the period of active training the Federal Statutes governed a zone about each camp and cantonment. These statutes were of a stringent character, and prostitution and the business of prostitution were kept at a most inactive level.

In Porto Rico a camp was organized for the training of 12,000 men for the world conflict.

Former experience had taught that the possibilities for venereal disease infections among the drafted men from the interior coming in contact with the vice of the seaport towns would result in many infections. The Attorney General of Porto Rico, Mr. Howard L. Kern, made a most splendid effort to follow the plan laid down by the Federal authorities for the suppression of prostitution and the liquor traffic for the protection of the men in uniform.

The confinement of a large number of prostitutes through the activities of the Judges and District Attorneys of Porto Rico[1] made medical examinations possible. At the Hospital Jail of Ponce, 43 women among the 332 confined, or more than 12 per cent., had infectious syphilitic lesions. The lesions had all been neglected and none of the patients had had any treatment prior to admission. Of the lesions seen, we had: Chancres, 13; mucous patches, 2; condylomata lata, 19; skin syphilides, 8; congenital syphilis, 1.

The routine blood Wassermann test was done on all patients. The number of four plus Wassermann tests on women without lesions was 119. The percentage of women who were without lesions but had four plus Wassermann tests was 42. This indicates that this number at least were in the latent tertiary stage or the stage of potential active syphilis. The syphilitic index was 50 per cent., since 165 of the 332 women were positive clinically and serologically.

In the San Juan institution we found two cases of chancre; one case of syphilitic ulcers of the cervix; one case of incised and ulcerating inguinal adenitis; one case of secondary maculopapular syphilide; and ten cases of condylomata lata. On routine blood examination of all patients, we found 62 with four plus positive Wassermann reaction.

At Arecibo, the social diseases among the 332 women were especially prevalent. Twenty per cent. of the women had active infectious syphilitic lesions, and 70 per cent. gave four plus Wassermann reactions.

At the three jails, 12 per cent. of the women had dangerously infectious syphilis. Forty-two per cent. more on routine blood examination had four plus positive reactions. Since the Wassermann is effective in only 80 per cent. of latent tertiary syphilis, this indicates that eight per cent. more were in the latent stage, free of lesions, in whom one examination did not give the positive results. The true index of syphilitic infection among the women was, therefore, 62 per cent.

Comparative figures from Vedder[2] are very interesting:

Average figures are probably given by Kneeland, who says that the records of the Bedford Reformatory for girls show that 25.56 per cent. of the 647 inmates have clinical manifestations of venereal disease. With the Wassermann test, 224 or 48 per cent. have positive reactions, and 30 or 6.4 per cent. gave doubtful reactions. In a later statement, Davis says that 51 per cent. of the inmates of this reformatory are syphilitic. Walker in an examination of 337 prostitutes in Baltimore found that 57 per cent. gave a positive Wassermann reaction.

Sullivan and Spaulding find among 63 women arrested for alcoholism only, syphilis was found in 42.8 per cent., while 9.6 per cent. show a doubtful Wassermann. Among 94 women arrested for alcoholism and other offenses, syphilis was found in 46.8 per cent., with 14.9 per cent. more showing a doubtful Wassermann. Among 243 prostitutes syphilis was found in 65.5 per cent. with 9.5 per cent. more showing a doubtful Wassermann. Among the entire 500 consecutive cases, who were all regular and irregular prostitutes, 44.7 per cent. were undoubtedly syphilitic, while 9.5 per cent. more had a doubtful Wassermann.

By a special study[3] made to answer the question, "At what age is the prostitute most dangerous?", we determined that 139 of the 721 girls were under 17 years of age; 42 per cent. of this group had three or four plus Wassermann reactions. Fifteen per cent. of these young girls had active, infectious syphilitic manifestations, such as chancre, mucous patch, or condylomata lata.

The age period from 18 to 22 gave us 388 prostitutes or 48 per cent. of the total studied. Of these 388, 193 or about 50 per cent. were strongly Wassermann positive; and 11 per cent had active genital lesions of syphilis.

One hundred and forty-seven girls fell into the next age period, 23-27, of whom 45 per cent. were serologically positive, and 11 per cent had dangerous syphilitic manifestations.

Only 64 women were in the age group 28-32, and 43 per cent. of these had three or four plus Wassermann reactions but only four per cent. were with active lesions.

Beyond 32, the number of women became much smaller, and the percentage of positive Wasserman reactions became much lower, while none showed any active infectious manifestations of syphilis. Briefly stated:

33-37: 36 women, 38 per cent. Wassermann positive; 38-42: 12 women, 33 per cent. Wassermann positive; 42-56: 5 women, 20 per cent. Wassermann positive.

These old women were not engaged in the active prostitute life, as might readily be supposed, but were either maintaining houses of ill-repute, or acting as servants and lookouts for the younger girls.

In the series studied, we had 422 whites, 304 mulattos, and 65 negresses. Even with such disparity in numbers, the percentage of Wassermann positive cases was constant, about 47 for each color.

In the ratio of active syphilitic lesions, however, there was a marked difference. The whites gave 10 per cent., the mulattos 13 per cent., and the negresses only 3 per cent. with infectious syphilitic manifestations.

While the women arrested and sentenced because of the war activity of the insular officials were in the jails, every effort was made to render them noninfectious in regard to their venereal diseases and to improve their general health which was very bad. The district jails at Arecibo, San Juan, Ponce, and Mayaguez were entirely reorganized for the reception of women only and modern hospital services were inaugurated in charge of competent physicians. In addition, the Commanding Officer of the United States Base Hospital at San Juan inspected the hospitals and the Commissioner of Health of Porto Rico was active and provided a specialist to work at the Arecibo Hospital Jail. The Venereal Officer

of Camp Las Casas[4], [5] was deeply interested and took an active part in the diagnosis and treatment of the women affected with venereal disease and diseases of the skin. The Field Director of the American Red Cross for Porto Rico and the Virgin Islands[6] was alive to the question of the relation of the health of the soldier and the freedom of transmissible diseases in the public women, and he furnished, through the Headquarters of the organization, arsenobenzol (606) and transportation for the Officer to administer the drug. More than 1,400 intravenous injections were given to the syphilitic patients and more than 5,000 injections of mercury. The blood Wassermann was repeated after the courses of active treatment were completed in those instances where the patient was still under our care, and in almost half the cases the Wassermann was changed from four plus positive to negative. In 12 per cent. more, the Wassermann was reduced, but in the remainder the Wassermann was not affected. We gave the most intensive treatment possible[7], [8], [9] and followed up each course of salvarsan with the necessary mercury to a degree that we are certain that cures were permanent in most cases in which the Wassermann was reduced. Probably if we could have had the patients under observation sufficiently long to repeat the course, more cures would have been effected. As it was, no case left the institution in an infectious state. Dr. Yordan, writing of the Jail at Ponce, typifies all the jails:

> The women received in six months what they could not receive outside in two years. One of the reasons for this was that we had control of every case and they reported for injections every day, which would be impossible in private practice. The physician in private practice is confronted with the fact that he cannot make a patient continue treatment persistently. We have been able to push the treatments to the utmost and we get better results than in private practice. We would not have so many chronic invalids in society had they received the intensive antisyphilitic treatment these women are getting. Not a woman here could have afforded to receive in private practice the treatment she has received while in this institution.
>
> We know that we have saved many from death that is directly traceable to syphilis; we hope to have removed many more from the road to chronic invalidism; and we have, furthermore, diminished the chances of having these women give birth to syphilitic children. We received women from communities where they were disseminating infectious and contagious diseases, and when released they are noncontagious and noninfectious, and many of them permanently cured.
>
> The patients have all gained in weight, have better complexions, and their general condition is better than when they were admitted. This is due to (*a*) a change in living conditions, (*b*) the absence of alcohol, (*c*) the absence of cigar smoking, (*d*) the medical treatment that was directed to their general condition as well as to their local troubles. They have received the best and most modern treatment for their venereal afflictions and the results have been gratifying.

The cases of gonorrhea were most valiantly treated. Discharges ceased, after different periods of medication. In many cases examination after treatment failed to reveal the causative diploccoccus of Neisser, but we are not so optimistic as to believe that we effected complete cures in all of the chronic cases.

Five cases of yaws or framboesia were recognized and treated. The annual report of the Board of Health for 1917-18[10], [11], gives a very interesting historical and clinical account of this disease in Porto Rico, together with photographs of a recent epidemic on the island. Although not ordinarily classed with the social diseases, yaws is very easily transmissible from one person to another through contact of a lesion to the broken skin surface of a healthy person.

Two cases of an heretofore unrecognized disease in Porto Rico were diagnosed among the inmates of the Hospital Jails. Ulcerating granuloma of the pudenda[12] is the name of this disease, and it is infectious and almost incurable. One of the patients had this disease seven years, during all of which time she carried on her life as an active prostitute. We did our utmost to cure these patients, using the medication found efficacious by the South American authorities, tartar emetic. Unfortunately, the cure takes years rather than months, and we had to release the girls before rendering them harmless. One of the patients was transferred to the Municipal Hospital at Arecibo and the other advised to apply for admission to the Quarantine Hospital at San Juan.

Scabies, ringworm, hookworm, lice, etc., were all treated. Patients were vaccinated against typhoid and smallpox. Several pregnant women were delivered, and miscarriages in others were given necessary care.

The influenza epidemic gave the doctors and nurses more work to do, but the strict quarantine measures limited the ravages of the disease, and the death rate was negligible.

Minor nervous disorders were common, and several cases of actual insanity were properly disposed of.

The teeth were taken care of by qualified dentists, which made the injections of mercury less likely to lead to mouth trouble.

While in jail, teachers were provided for the ignorant. Courses in lace-making and sewing were given, and in many instances the girls were able to earn some money by the sale of their work. This reconstruction effort was nobly performed by the Social Service Committees of the towns in which jail hospitals were situated.

That the main source of infection is the prostitute, and that with her isolation new cases of syphilis among the men of the community and from these to the women and children cease, was definitely proved in Porto Rico.[13] The repressive measures made it difficult for the prostitute to ply her trade.

After six months in camp during which time the number of enlisted men rose from 250 to 12,000, only 20 new cases of venereal diseases were acquired, of which four were syphilitic infections.[14] We are very proud of this low number among a population so recently under military control.

The beneficial effects of the intensive treatment administered to these women has an everlasting effect. Even, as is not improbable, many return to the life from which they were taken to jail, it may be some time before they are reinfected. In the women treated for syphilis, we consider that about half are so far advanced in the cure

that reinfection may be possible. In the other fifty per cent. of the cases, we are not so optimistic, and these women are considered to be in the latent tertiary stage. The amount of medication administered to them during their enforced hospitalization should, however, prevent any infectious lesions for a long time.

On the other hand, many of the girls, rid of the disease which may have prevented them from returning to a more decent mode of living, will not now be hindered by this cause, and will revert to domesticity without being a danger to all their associates.

The expense of such an undertaking seems large when first considered, but the end results warrant even greater expenditures of money. For each woman rendered noninfectious, a number of men are probably prevented from receiving an infection which takes years to cure and which they may pass to others. While the prostitute is in jail she should be treated with the most modern methods and drugs at our command, that in addition to the penal routine, she have her health restored.

Thanks are extended to the Hon. H. L. Kern and to the many officers of the Department of Justice of Porto Rico for their cooperation and advice, and to the Director and assistants of the Institute of Tropical Medicine and Hygiene, San Juan, P. R., for the execution of the laboratory studies.

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Infantile Paralysis in Uruguay.—Escardo y Anaya sums up a serial article as follows: Classical infantile paralysis occurs sporadically in Uruguay and there have been three epidemics—in 1906, 1912-13 and 1916-17, respectively. There can be no doubt that this malady is the Heine-Medin disease of Europe commonly called infantile paralysis. Nevertheless in Uruguay it shows certain peculiarities even in comparison with the same affection in Argentine and Brazil.—*Brazil Medico.*

CANCER DEATH RATE IN NEW YORK CITY DURING 1919.

BY L. DUNCAN BULKLEY, A.M., M.D.,
AND
L. BULKLEY CADY, A.B., M.D.,
NEW YORK.

DURING the past two years the mortality from Cancer in New York City during 1917 and 1918 has been presented by one of the writers, and it is interesting to pursue the subject further, as to 1919; for it is instructive to learn if any progress is being made in the control of this dire disease, which is at all commensurate with that obtained in tuberculosis.

These studies have been made from the Mortality Statistics of 1917, the last published by the United States, and from the weekly reports of the Board of Health of New York City in 1919, compiled from the actual return of death certificates: but, as remarked before, these by no means reveal the true death rate, for many cancer sufferers die from intercurrent diseases, as "The Flu," under which the death is recorded, while in certain cases the diagnosis of cancer is withheld for personal or family reasons.

For the first time since 1906 the cancer death rate per 100,000 population in the United States showed a very slight *decrease* in 1917 (the last report, just issued), 81.6 against 81.8 in 1916, for the average yearly *increase* since 1906 had been 1.02 per 100,000.

According to a special report, just received from Washington, there has been a still further *decline* in the death rate from cancer throughout the United States, that is gratifying, and may be due to wiser views as to treatment, but also partly to the high general death rate due to influenza. In 1918 the death rate from cancer was 79.8, a *decrease* from 1917 (when it was 86.6), of 1.8 persons per 100,000.

In the State of New York the cancer death rate has continued to increase, 93.3 in 1917 against 92 per 100,000 in 1916. In some states it has fallen, but in some it remains very high: thus, Massachusetts 108.3, Vermont 107.7, Maine 105.9, New Hampshire 105.3, California 105.1, in the 100,000 population. Some states have a relatively low mortality, South Carolina 36.8, North Carolina 43, Tennessee 46.6, Virginia 53.3.

The cities naturally show a large mortality, owing to patients coming to them for treatment. Thus, the rates for 1917 are: San Francisco 152 deaths, Albany 150, Cambridge 134.7, Toledo 121.3, Boston 120.5. New York City by this report showed 85.6 deaths per 100,000, from malignant disease in 1917, against 84.5 in 1916.

In New York City the *general* death rate has fallen greatly during 1919, compared to the preceding year, when the influenza carried off so many, the figures being 97,615 for 1918, and only 75,036 for 1919, a difference of 22,579, or a reduction of over 23 per cent.

But the recorded deaths from cancer have *increased* from 4,894 in 1918 to 5,124 in 1919, 230, or more than 4.6 per cent. over the preceding year. This is remarkable and unexplainable, for in 1918

the cancer deaths were only 36 more than in 1917, less than *one* per cent. increase. These 5,124 cancer deaths in 1919, (2,250 males and 2,874 females,) divided by 365 days make an average of over 14 deaths daily from this disease against 13.39 persons dying daily in 1918. The lowest number recorded in any one week was 81, or 11.52 persons, and the highest, the surprising number of 132, or 18.83 daily, in the week ending December 20th: the next highest week ending December 6th, giving 119 deaths from cancer, or 17 average per day. There were 24 weeks in which there were reported 100 or more deaths from cancer.

The recorded deaths from tuberculosis in New York City have *fallen* during 1919 from 8,823 to 7,396, or 1,427, that is 16.1 per cent., while, as we have seen, those from cancer have *risen* over 4.6 per cent., an approach of the two of over 20 per cent. The deaths from tuberculosis were 7,396 in 1919, and those from cancer 5,124, a difference of only 2,182. At this rate of change it will not take many years for cancer to outstrip tuberculosis in mortality.

Of what significance are these figures? Why have not our modern diagnosis, our increased skill in surgical technique and the greater intelligence of the laity on the subject, why have not these all been instrumental in staying this dread disease?

Is it not true that present current methods of treating this disease have been found wanting in a large proportion of the cases? And that just as amputation of the gouty toe would fail to cure, so have many of the present methods in treating cancer been disappointing!

That the constitutional treatment of cancer is a vital matter, the writers firmly believe; and they feel that when this aspect of the disease is more widely accepted, progress in its therapeutics will be more rapid, and the mortality from cancer will be materially reduced.

39 West Fifty-eighth Street.

SERUM SICKNESS TREATED WITH PROTEAL.

By F. TWEDDELL, M.D.,

GREAT NECK, N. Y.

On November 20, 1919, E. A. D., aged 30, came down with lobar pneumonia, pneumococcus type I. November 22, 1919, he was given 100 c.c. serum intravenously, and on November 23, 95 c.c. On December 2, he developed a rash which had almost disappeared by December 10 when an acute general arthritis manifested itself, involving nearly all the joints, especially the shoulders, hips, knees, ankles, and wrists, which were hot, red, swollen, painful, and tender. This attack almost subsided and the patient was able to get about slowly, when on December 21 there was an acute exacerbation of all symptoms and practically every joint in the body was involved, including the joints of the fingers and toes and even the temporo-mandibular joints, and the patient was in extreme pain for days. The rash came out for the second time.

By January 8, 1920, the patient was able to get about, but still suffered pains, especially in the shoulders, hips, and knees. On this day I gave him ℞5 proteal No. 39 (alfalfa seed) obtained through the kindness of Dr. Henry Smith Williams of New York. On January 9 the patient reported that he felt no pain a few hours after the first injection, but he noticed a few twinges in the shoulders for a few minutes about two hours before coming to the office this day. He was then given ℞8. January 11 patient stated that he had had no pain or discomfort since last injection. Given ℞10 this day. January 15, has had no symptoms, given ℞10.

The first three doses of proteal were given at 8 P. M. and each night the patient was kept awake for several hours and could not get to sleep. The fourth and last dose was therefore given in the morning and the patient went to sleep that night without difficulty.

I wish I had decided to use the proteal earlier, as I believe the foreign vegetable protein would have neutralized the horse serum, and the patient might have been spared very much suffering. Salicylates and sodium bicarbonate were previously given by mouth and by rectum but did not modify the symptoms.

I hope this experience will be the means of helping other patients developing arthritis after injections of serum and that physicians will give the proteal a trial, as it can do no harm.

Medicolegal Notes.

Disease Resulting from Accident.—In an action on an accident policy, the Texas Court of Civil Appeals holds that evidence that the insured had no hernia previous to his fall while attempting to alight from an automobile, that a hernia developed just after the fall, and a doctor's opinion that in all probability it was due to the fall, justified the jury in finding that the accident was the sole cause of the injury, "exclusively and independently of all other causes," within the policy provision.—Metropolitan Casualty Ins. Co. v. Edwards (Tex.) 210 S. W. 856.

Validity of Quarantine Regulations.—The District Court of Appeal, Second District, California, holds that the adoption of measures for the protection of the public health is a valid exercise of the police power of the state, as to which the Legislature is necessarily vested with large discretion, not only in determining what are contagious and infectious diseases, but also in adopting means for preventing their spread, as by imposing on the health department of a city the duty, when having knowledge that one is afflicted therewith, of taking the necessary measures to prevent its spread. The court holds that a woman with gonococcus infection, declared by the California statute to be infectious, who was originally taken into custody without warrant, but who submitted to examination, is not entitled to habeas corpus to release her from quarantine in a hospital where she was confined for treatment. It is also held that one infected with a contagious disease, declared to be such by the said statute, may be subjected to quarantine regulations by the health commissioners of a city, without its first being judicially established by some proceeding in court that he or she is so affected. —Ex parte Johnston (Cal.) 180 Pac. 644.

Hypothetical Questions.—In a cross-action for malpractice it was held that the fact that a hypothetical question did not contain certain important facts did not render it erroneous where it did not appear that their recital was necessary to enable the expert to form and express an intelligent opinion upon the matter at issue, particularly since additional facts may be brought out in the cross-examination. Objection to a hypothetical question for failure to contain essential facts must specify the additional facts which ought to have been included. It is held better practice to eliminate from a hypothetical question directed to a physician statements not bearing on the treatment and the question should not call upon the witness to interpret the meaning of statements which should be interpreted by the jury.—Dameron v. Ansbro (Cal.) 178 Pac. 874.

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New York, March 20, 1920.

ANNUAL REPORT OF THE SURGEON-GENERAL OF THE ARMY.

IN his letter of transmission to the Secretary of War, Brigadier-General Merritte W. Ireland, Surgeon-General United States Army, submits a two-volume report containing statistics for the calendar year 1918, and the account of the general activities of the Medical Department, together with the financial statement for the year ending June 30, 1919.

In a war of such proportions as the one from which the world is just now emerging the contemplative mind was fairly staggered by the prodigiousness of the undertaking, while the mind given to "snap shot" judgments was inclined to estimate the whole by the more or less obscure understanding of a part. It is well, therefore, "when the hurly-burly's done, when the battle's lost and won" to have some concrete and tangible gauge by means of which those who have maintained the attitude of suspended judgment may form a just conclusion, and by which the short-visioned diagnosticians may correct or modify their findings.

So far as the activities of the Medical Department during the World War are concerned, the report of the Surgeon-General provides such an instrument. Even a cursory review of the two volumes, which cover the activities of the department at home and overseas, will serve to impress upon the reader the enormity of the undertaking and will cause him to marvel at its successful inauguration, prosecution, and culmination, especially in the light of all the circumstances involved. For, as the Surgeon-General reminds us, the period covered by this report and that which preceded it has been one of the most memorable in the history of this country. It has witnessed the inauguration, the full development, and the successful ending of the unparalleled activities of the War Department and of the nation as a whole. We are reminded by contrast, that during the Civil War the maximum strength of the United States Army, including both Regulars and Volunteers, was approximately 860,000, of which number 300,000 were absent from duty for various causes. The maximum forces for the United States Army, excluding the Navy and Marine Corps, were, in October, 1918, over three and a half millions. At the beginning of 1917, or practically at the beginning of the war, the strength of the army was less than 100,000. To increase this small army to one of over three and one-half millions, properly to clothe, equip, and train it, and to transport something over 2,000,000 soldiers with all the necessary modern equipment, supplies, and transportation to the battlefields in Europe, over 3,000 miles of submarine-infested ocean, was, as the Surgeon-General states and all must agree, an undertaking worthy of the efforts of a great nation. The process of devolution, so to speak, was no less wonderful than that of evolution. The safe return of practically all of this immense army to home and peace-time pursuilts was accomplished with such expedition and facility as to cause unstinted admiration and congratulation for all concerned—which means the country as a whole.

The part played in this great drama by the Medical Department of the army and the medical profession of the country is partially outlined by the Surgeon-General in this report. Again figures serve to indicate the herculean task which the Medical Department faced when this country entered the war. At the beginning of the war the entire Medical Department, including commissioned officers, contract surgeons, army nurses, and civilian employees, numbered 8,634. This personnel, according to the report, reached a maximum of 354,796, almost three times the strength of the entire army a few years before the beginning of the war. The Medical Corps increased from 833 to 30,591; the commissioned ambulance service from 0 to 209; the Commissioned Dental Corps from 62 to 2,002; contract surgeons from 181 to 939; the Commissioned Sanitary Corps from 0 to 2,919; the Army Nurse Corps from 403 to 21,480; the enlisted personnel from 6,619 to 281,341; civilian employees from 450 to 10,695. The hospital facilities of this country had to be expanded from the needs of an army of less than 100,000 to the needs of one of nearly 2,000,000. In the American Expeditionary Forces it was necessary to provide hospital accommodations not only for the usual percentage of sick and injured, but also for the great number of wounded. There sprang into existence from nothing a total of about 300,000 hospital beds, including the emergency beds and those in convalescent camps. At the time of the armistice a little less than 195,000 of these beds were occupied.

These facts and figures, which give but a flash-light impression, serve as indicators. One must go further to appreciate fully the splendid achievements of the Medical Department. The Surgeon-General has given an admirable survey of the whole prodigious undertaking of weeding out the unfit, keeping the fit in condition to fight, and bringing the sick and wounded back to health. The complete details of this accomplishment in all the departments of this great establishment must of necessity be awaited until the full account—the Medical and Surgical History of America's participation in the world war—is published—as we assume it some time will be. In the meantime, this report

should serve to dispel any lingering vestige of "A. E. F. grouch," of which one heard enough a few months ago, and should serve to stimulate enrollment in the new Medical Reserve Corps.

TREATMENT OF SOME CHRONIC PROCESSES BY BACTERIOTHERAPY.

When certain affections of the digestive tract, as well as those of the respiratory, circulatory, and nervous systems, and skin, such as gastrointestinal disturbances, emphysema, arteriosclerosis, asthma, dermatoses, etc., are considered they will be seen to be manifestations of the same process whose characteristic is precisely the slowness of its evolution and incurability designated under the term of chronicity. The intercurrence of these various chronic affections would seem to indicate an identical causal entity in all these cases. From the humoral viewpoint this chronicity is a manifestation of a chronic state of anaphylactic hypersensibility. We know that an acute infection produces a reaction with a double manifestation in the organism—a state of increased resistance or immunity and a state of diminished resistance or increased sensibilization known by the name of anaphylaxis. This hypersensibility—requiring special conditions for its appearance—has been more particularly described in its acute manifestations after inoculation of the causal factor; in other conditions this state exists in a chronic way but in a different form.

In this respect, it is of interest to recall Danysz's experiments. If horse serum is injected in small doses in the rabbit and repeated for twenty or thirty days, an attack of anaphylaxis will never be observed although the serum will be precipitating after the fifteenth day. If the animal is left alone after these injections, nervous symptoms—pareses—will appear in two or three months, or else dermatoses with alopecia, rheumatism, etc., will develop, if no other infectious disease intervenes. Similar phenomena occur in horses immunized intensively for producing antitoxic or antimicrobic sera. The animals are less active and vigorous and often die from internal hemorrhages or ruptures of the liver. These morbid states recall the functional disturbances of what is called chronicity.

In the above experiments, everything appears as if the reactions of the organism against an antigen were in play. Now, the lesions found at an autopsy of these animals immunized against toxins show an intense functional activity of the viscera and increased hyperplasia of the hemolyph organs—spleen and bone marrow, manifest evidence of hypersecretion of the endocrine glands—which indicates a hyperactivity of the cells, the function of which is precisely the production of antibodies. The superproduction of antibodies overworks the cells. The same process occurs in man, with this difference that the production of antibodies occurs only as rapidly as the introduction of antigens into the organism takes place. These are always present at the point of entrance in the form of intestinal bacteria and incompletely transformed albuminoid débris. If now a very trifling disturbance of the physiological integrity of the intestinal mucosa arises, these agents at once invade the organism in variable quantities. The tissues resist the first shock—there is active immunity. The period of immunity begins, then a state of slow anaphylaxis and develops gradually for a certain length of time, but with the second attack the anaphylactic crisis will be more or less sharp.

These manifestations are not necessarily clinically in evidence from the start and the patient's condition may be overlooked. Everything takes place in the depth of the body, hence the origin of cell disturbances which goes on increasing and finally becomes apparent. The clinical manifestations are quite as varied as in animals; at first mild—temporary congestion, pruritus without apparent cause; then dermatoses, asthma, gastrointestinal disturbances, rheumatic attacks, etc., make their appearance year after year in succession. It is consequently important to determine the origin and nature of the antigens capable of provoking this anaphylaxis. The skin is not easily invaded so that the cutaneous bacteria are unimportant from this standpoint. On the other hand the bacteria of the intestines play an important part, but it is to be remembered that these intestinal antigens are multiple, they are not only represented by bacteria, but by their secretions as well, or albuminoids of alimentary origin which have been incompletely transformed—polypeptids, albumoses, peptones—in opposition to which the organism is also in a state of latent anaphylaxis.

The treatment of these disturbances should first be to reinforce the digestive power by proper diet, but the curative treatment should be antianaphylactic. This consists in neutralizing the ill-effects by the exhibition of small doses of appropriate antigens, namely, the intestinal flora derived from the patient's stool. These are isolated, cultured, and then sterilized at 60° C. This vaccine is given per os—two to three milligrams of microbic bodies, or preferably subcutaneous injection—an emulsion for twenty-four hours comprising one to two hundredths of a milligram of microbic bodies. This treatment is not a vaccination producing a specific immunity because there is no specific causal agent at work. Its action is more like that of proteosotherapy, lymphotherapy, or autoserotherapy. As Widal, Abrami, and Brissaud have shown, in utilizing autoserum in asthma or paroxysmal hemoglobinuria, a specific antibacterial action is not in play but the outburst of an anaphylactic crisis, the first shock of which is hematic, a physicochemical disequilibrium is avoided. In cases in which this bacteriotherapy has been resorted to the results seem to be encouraging.

THE RELATIONSHIP BETWEEN INFLUENZA AND TUBERCULOSIS.

Influenza may, as has been frequently asserted, cause a lighting up of tuberculous manifestations in subjects who have apparently recovered from a former tuberculous infection. This awakening of a tuberculosis upon the occasion of a grippal infection recalls by its symptomatology that which takes place after other infectious processes in general. The signs may be given in the order of their appearance as follows: presumptive signs represented by the hereditary antecedents of bacillosis; signs of probability made evident by a long drawn out convalescence, a low blood-pressure, the reappearance of the fever which is irregular with oscillations, the persistency of the cough accompanied by a free expectoration, a progressive decrease of the physical strength which takes the place of the increase occurring in convalescence from an uncomplicated influenza. The sign of certitude is given by the presence of the tuberculous bacillus, so that a systematic examination of the sputum should always be carried out in cases of convalescence from influenza which do not frankly recover, but drag on. It should be understood, of course, that the awakening of a tuberculous process must not be mistaken for influenzal manifestations simulating tuberculosis on account of their development at the pulmonary apex and giving rise to hemoptysis which so frequently accompanies the pulmonary lesion. Hence the importance of laboratory examination of the sputum. It is of great importance not to misconceive the situation, because a fresh development of a tuberculosis must be dealt with vigorously and with no loss of time since the soil has been weakened by the influenza and consequently is less resistant to the bacillus of tuberculosis.

It is known that tuberculosis developing in the adult is usually an explosion of an old latent process, because man acquires by tuberculization a relative immunity—a kind of autovaccination. Now, when the subject contracts an infectious disease, his immunity becomes less and the organism may even present a state of antianaphylaxis, especially when the infection is as weakening as is influenza; hence the return to activity of incompletely cicatrized lesions. At the same time that organic resistance is lowered it is quite possible that a hypersensibility may exist in a tuberculous subject—a sort of anergy results from the new infection. The microbic associations are also not indifferent to this process as this association increases the virulence of the bacillus, therefore adding its very marked congestive action to epithelial desquamation which results in and consequently favors the development of the lesions. But although the associated microbic agents of influenza may exert a stimulating action upon the bacillus of tuberculosis, some data seem to show that, in other conditions, tuberculous subjects may possess a kind of indifference towards the grippe, and although apparently contradictory these can be fairly well explained. It would seem that to a certain extent these subjects are refractory to influenza, as has been shown by Bricaire, Bezançon, and Guinard. In progressing tuberculous cases influenza seems to be infrequent and is more prone to develop in patients with a mild tuberculosis. Marfan is of the opinion that tuberculous patients offer a certain immunity to this epidemic affection. That this may be the result of parabacillary microbic associations is possible. Cornil, Babes, Mosny, and Aviragnet have shown the frequency of pneumococci around foci of tuberculosis, while Veillon that of other bacteria—the streptococcus, staphylococcus, and pneumobacillus. There is no reason why individuals with such lesions should not offer a certain resistance to an infectious process whose etiological agents are the very ones encountered in influenza, at least in its more serious and complicated forms. On the contrary, in cases of long standing tuberculosis in which Koch's bacillus is asleep in the midst of a cicatrized lesion, the associates of the bacillus will have returned to their modest rôle of saprophytes.

MEDICAL MISSIONS AND THE PEKIN UNION MEDICAL COLLEGE.

Medicine as introduced by western missionary doctors into the non-Christian countries of the East, has recently undergone changes which are both interesting and important. At first its emphasis was necessarily quantitative. A pioneer medical missionary like the great Dr. Joseph Plumb Cochran of Persia treated many thousands of cases a year. Even recent figures showing the numbers treated in the mission clinics and hospitals would stagger the busiest of similar institutions in this country. Of course thoroughness was sacrificed to numbers. But within certain limits hasty treatment is better than no treatment—certainly better than magic and incantations.

Gradually—or rather (considering handicaps) with remarkable rapidity, the missionary hospitals and medical schools have provided natives trained in at least the essentials of modern medicine. The missionary colleges in China now stand ready to offer the premedical courses for a medical school which bids fair to be second to none in this country, namely, the Pekin Union Medical College. This is an institution with which the profession should cultivate a close acquaintance. It owes its existence to two factors: the pioneer work of the medical missionaries, and the philanthropy of Mr. Rockefeller, so wisely carried out, in certain directions, by the Rockefeller Foundation. The teaching personnel has been selected in large part from the highly trained workers of the Rockefeller Institute. They will have the double task of instruction and investigation—and clinical material they will have in superabundance.

The missionaries have been hampered by overwork and by inadequate funds. The staff of the

new school at Pekin will have plenty to do. They will also have means and equipment with which to do it. Their results will probably be much more sensational, at any rate from the scientific point of view, than those of their medico-evangelical colleagues. But, far from overshadowing the missionaries' work, they will really serve to indicate its intrinsic value. If the venture at Pekin is a success, as it undoubtedly will be, similar institutions for instruction and research will in all probability be established in other distant lands, whether or not by the Rockefeller Foundation. Such enterprises should be welcomed and their growth fostered by the profession at home.

THREE BAD BILLS.

THE New York Legislature has now under consideration three bills relating to the medical profession in this State, and three worse bills could hardly be conceived of. One of these is the revived Davenport bill for compulsory health insurance. It is unnecessary to review that, for the profession in this State is now familiar with its chief features and has condemned it with practical unanimity. It legalizes the worst features of the old lodge practice, and all that it insures is, in general, poorer treatment of the sick wage earner than is now at his command with or without fee.

The second of these vicious bills is that known as the Gibbs bill, which purports to provide a greater degree of narcotic drug control than is now afforded by the national and State drug laws. An ordinary man's house is his castle and cannot be broken into without a warrant except in an emergency, to prevent crime or to capture a criminal, but under this bill a doctor's house can be entered at will by the commissioner of narcotic drug control who may, if he wishes, delegate this task to one of his deputies or inspectors. And when the house has been forcibly entered the inspector may pry into every bureau drawer or private desk on the bare suspicion that a morphine tablet may be lying around somewhere.

The third attempted invasion of the physician's rights is provided for in the Kenyon medical license bill, which calls for annual licensing after examination of the doctor's credentials, filing of his photograph, and payment of a $2 fee. Without all this vexatious and humiliating tomfoolery the practitioner of twenty or thirty years' standing will be denied his right to follow his calling and will be put on an equality with the advertising venereal quack, or the unlicensed beauty doctor.

With the physician being forbidden to prescribe a necessary drug until he has done enough paper work to gladden the heart of an army surgeon, and broken the law by revealing professional secrets; being restricted to the dose of an ounce and a half of brandy a day in a case of prolonged sepsis or pneumonia; being liable to the invasion of his house by a drug commissioner's deputy who may without reason suspect him of hoarding morphine; and being forced to buy each year the privilege earned decades ago of practising his one-time honorable profession, the doctor's rights to life, liberty, and the pursuit of happiness seem to be not altogether unalienable.

CODEINE POISONING.

FATALITIES from the use of codeine are so rare that so recently as 1910 von Jaksch said that he knew of no case of this sort, although in 1906 Brouardel had reported one in a child of sixteen months. In 1919 MacNally of Chicago mentioned three deaths in Cook County during the period of 1905-1917 without giving details. Cases of codeine poisoning with recovery seem equally rare. All in all we know little of the toxicology of this alkaloid. Boissonnas in the *Revue médicale de la Suisse Romande* for December, 1919, xxxix, 12, relates in detail a case of this nature in a child aged three years. The case was due to an accident in which 4 cgm. of codeine was given by mistake for calomel. The powder was swallowed at half past seven in the morning and there was no action observed until three-quarters of an hour later when the child complained of violent headache, which was promptly followed by convulsions and coma. The author was summoned and found the pupils contracted to the limit, the neck rigid, the head thrown back, and the pulse imperceptible. The heart was beating at 120 with clear sounds. An injection of camphor oil was given and followed by a rally, consciousness returning and the pulse becoming perceptible. Wet cups were applied over the loins and the patient was made to drink freely. The alleged calomel from the apothecary's was hurriedly sent out for analysis and camphor injections were repeated. At a quarter of ten the patient had a crisis of rigidity and executed swimming movements with the arms, again losing consciousness. By eleven o'clock he had become relaxed and appeared to be asleep with normal respiration. The earliest report from the laboratory was that the supposed calomel was an alkaloid, nature not yet determined. The addition of milk sugar complicated the analysis. In the meantime the apothecary who dispensed the prescription confessed his error and told the nature of the alkaloid. At four P. M. the condition of the patient was encouraging save for complete anuria. A catheter could not be passed and 400 c.c. of urine was drawn off by aspiration. In a few days recovery was complete.

CHROMIUM SALTS AND PERFORATION OF THE NASAL SEPTUM.

AMONG the diseases and stigmata of occupation perforation following ulceration of the nasal septum is well known, but details in these affections are not always forthcoming. Ranielletti, an Italian physician, whose original article is abstrated in *La Presse Médicale* for December 20, 1919, xxvii, 78, has recently studied the subject at first hand in a bichromate of potassium factory. He reports that the lesion is as characteristic as is phosphorus jaw in match workers. The workmen in the factory inspected showed ulceration in 56 per cent. and perforation in 15 per cent. In addition, there are fre-

quently, but by no means always, preliminary catarrhal discharge and epistaxis. The seat of the ulcer and perforation is the area—as was experimentally shown—where the fumes and débris impinge on the septum. This is at the lower portion of the cartilage and more often anterior than posterior. The ulcer is small—no larger than a lentil—with clean-cut margin and of a grayish color. It is often bilateral. Unless treated, perforation inevitably results. The ulcer is perfectly circular, with reddened border. It gives rise to no symptoms, and this silence is doubtless the reason for the slight rôle it plays in occupational pathology—in other words, it is better regarded as a stigma of occupation than a disease. Moreover, in the ulcerative stage it is easily cured while in general it is a condition which is quite preventable if one takes the trouble. The worker should wear a piece of salicylic gauze in the nostrils while occupied. If this is burdensome application of zinc oxide ointment may be recommended. After the ulcer has appeared cauterization with nitrate of silver stick will prevent perforation. The real management, however, must deal with the problem of dust and vapor in the workshop.

Beriberi as a Mask for Other Affections.

It seems inevitable that in countries in which beriberi is a scourge other chronic cachectic affections may be wrongly diagnosticated. Thus Doctor Bobeau of Saigon relates a case in which the diagnosis was "abortive form of beriberi." A colleague of the author thought that the case resembled Addison's disease and obtained an autopsy, in the course of which he found lesions of the adrenals, and sent slides to the Society of Comparative Pathology for microscopic study. In a second fatal case Bobeau likewise dissented from the diagnosis of abortive beriberi in favor of tuberculosis, and autopsy revealed an enlarged tuberculous mesenteric gland. These two cases open up a field which may prove to be very extensive. It seems especially likely that a typical tuberculosis may mask as beriberi. A writer in *Le Caducée* for January 15, 1920, xx, 2, takes exception to these strictures by Bobeau upon the trustworthiness of the French Colonial Office in regard to dealing with medical problems and the need of an independent medical mission; he regards the medical men in charge of sanitation in Saigon as fully qualified to deal with questions like masked beriberi.

Contagion of Rheumatism.

Grenet believes that acute articular rheumatism may sometimes be contagious. Aside from cases in which one case is followed by others there are examples in which some other infection appears to give rise to acute rheumatism and vice versa. This possibility is not so remote as might at first sight appear. Thus acute rheumatism may be preceded by angina and an angina may be contagious, with the result that another subject contracts it and also develops rheumatism like the first. But the possible contagion of rheumatism is no new theme and many well-known clinicians have upheld it, among them being Mantle, Thoresen, Feldkamp, Friedlander, Edlefsen, Fiessenger, and Monnier with Leclerq and Pierret. The author, writing in the *Gazette des Hôpitaux*, reports the case of a healthy soldier who developed acute articular rheumatism, and six days later those next to him on either side in the ward developed the disease. Again, a convalescent from pneumonia placed next to a subject with acute rheumatism himself developed the latter disease.

News of the Week.

Newark Handles Whiskey Problem.—Newark druggists have been profiteering on whiskey to the tune of of $7.50 a pint. The City Dispensary, by order of Mayor Gillen, as head of the city health department, sells it at the rate of one dollar a pint. It is obtainable on physician's prescription, and each patient, under the law, is permitted to purchase a pint every ten days.

Nurses Graduated.—The Margaret Fahnestock Training School for Nurses, of the Post-Graduate Medical School and Hospital, New York City, graduated fifty nurses March 9. Plans are being made for additions to the School for Nurses on adjoining property, recently purchased.

Fire in Ohio Hospital.—Seven male patients lost their lives in a fire, thought to be of incendiary origin, in the Ohio State Hospital for Epileptics at Gallipolis, March 9. Three other patients were in a serious condition from inhaling smoke.

Saleswomen Pro Tem for Charity.—Fifty prominent women in New York City have been working as saleswomen in a local department store in the interest of the Social Service Bureau of Bellevue Hospital. Ten per cent of their sales will be received by the women, who will turn the money over to the hospital.

Plague Warning Sounded. — Surgeon-General H. S. Cumming, newly appointed head of the United States Public Health Service, who has just returned from overseas, warns against the possibility of bubonic plague and typhus fever being brought into the United States from the Levant. Dr. Cumming has been making a tour of investigation, visiting every country except Bolshevist Russia. Precautions should be taken, he says, at the ports of embarkation in the Mediterranean, which would necessitate an increase in the force of United States health officers abroad for the purpose.

World Child-Welfare Movement.—During the recent convention of the League of Red Cross Societies at Geneva a campaign for child welfare was agreed upon which, it is thought, will profoundly affect child life and the health and care of mothers throughout the world. It is proposed to make the plan immediately effective everywhere when once it is in operation.

Milk for Italy.—The American Free Milk and Relief for Italy shipped 10,000 quarts of dry milk to Italy last week for the relief of destitute children. It is announced that the organization will increase its shipments from 60,000 to 100,000 quarts of dry milk a month.

Grave-Diggers Strike.—News comes from Berlin that great inconvenience has been caused by a strike on the part of grave-diggers. The rela-

tives of the deceased have had to dig graves themselves in many instances.

Canadian Hospital in New York City.—Members of the Canadian Club in New York City are planning a campaign to raise $1,000,000 to build and equip a Canadian hospital in this city. Committees will be appointed to direct the drive.

Aid for Middle Europe.—At its recent convention in Geneva the Board of Governors of the League of Red Cross Societies, acting upon an appeal by Arthur J. Balfour as President of the Council of the League of Nations, passed resolutions declaring for the extension of voluntary relief work among the starving and diseased populations of Central and Eastern Europe, with the proviso that the essentials of food, clothing and transportation be previously assured these peoples through Governmental action.

The Harvey Society.—The eighth lecture of the series will be given on Saturday evening, March 27, at 8:30 o'clock, by W. McKim Marriott, M.D., Professor of Pediatrics, Washington University, on "Some Phases of the Pathology of Nutrition in Infancy."

Bacteriologist-Pathologist Needed by New York State Department of Health.—The New York State Civil Service Commission announces an examination to be held April 10 for bacteriologist-pathologist. The salary is $2500 to $3000; the age limits are 25 to 45 years.

Dr. William Wesley Carter has removed his office to 2 West Sixty-seventh Street, New York.

Dr. Charles Winfield Perkins has removed his office to 180 West Fifty-ninth Street, New York.

Compulsory Insurance Again.—The compulsory insurance bill was introduced in the New York State Senate last week under the name of "Illness prevention and illness insurance for industrial workers." The new bill provides that employees and employers shall share all expenses and manage the illness prevention and insurance system through a board of directors selected by themselves, half from each side.

Brooklyn Doctor Violates Volstead Act.—The first arrest of a physician in Brooklyn for violating the Volstead Act was made last week. The offender was alleged to have issued five prescriptions for one pint each to one man in thirteen days, which would certainly not be an excessive amount in certain cases of sepsis.

Welch Memorial Volumes.—The seventieth birthday of Dr. William H. Welch, of Baltimore, which occurs in April, is to be signalized by the publication of his various papers and addresses in three volumes, to be issued from the Johns Hopkins Press, under the editorial supervision of a committee. The set of three volumes, bound in linen, is offered to subscribers for $16.50. The edition will be restricted to the number subscribed.

The American Posture League at the annual business meeting held on Saturday afternoon, March 13, elected the following officers: *President*, Jessie H. Bancroft; *Vice-President*, Dr. Frederick R. Green; *Secretary*, Dr. Henry Ling Taylor; *Treasurer*, Dr. George J. Fisher; *Executive Committee*. Jessie H. Bancroft, Dr. Frederick R. Green, Dr. Eliza M. Mosher, Dr. George J. Fisher, Dr. Henry Ling Taylor. The annual public meeting for the League has been postponed to the week of April 5 when the American Physical Education Association holds its annual convention in New York.

Obituary Notes.—COLONEL LOUIS A. LA GARDE, Medical Corps, United States Army, retired, of Washington, D. C., died March 7, of apoplexy while en route from Chicago, where he had been attending a meeting of the National Board of Medical Examiners, of which he was secretary. Colonel La Garde, who was born in 1849, was graduated from Bellevue Hospital Medical College in 1872, and entered the service in 1876. He had contributed to medical literature, especially that of war surgery, being the author of a well-known work on "Gunshot Wounds." He was instrumental in securing the adoption of the heavy calibre automatic pistol now used by the army.

Dr. SILAS BLAISDELL HULL of Brooklyn, N. Y., died March 6. He was graduated from the Long Island Medical College in 1916, and served in the United States Navy during the war as a senior grade lieutenant in the mine-sweeping service in foreign waters. He was a member of the Kings County Medical Society, the Association of Military Surgeons of the United States, and other organizations.

Dr. PETER LAWRENCE SCHENCK of Brooklyn, N. Y., died March 6, in his seventy-seventh year. He was graduated from the College of Physicians and Surgeons in 1865. After his graduation Dr. Schenck enlisted in the Civil War, and served until the close of hostilities. He was at one time assistant surgeon and later medical superintendent of the Kings County Hospital. He was not in active practice at the time of his death. Dr. Schenck was a member of the Kings County Medical Society, the Brooklyn Pathological Society, and other organizations.

Correspondence.

CALCIUM THERAPY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Were it not for the sinister implications, the communication from Dr. Meltzer (MEDICAL RECORD, March 6, 1920) would require no reply. To the quotation from my article he adds a "rider" and then fights the rider. At this interview not a word was said about intraspinal administration of calcium salts for threatened collapse incident to the intraspinal use of magnesium sulphate. The latter method of administration was then confined to hospitals and like institutions, and intravenous medication was but rarely employed, at least by the general practitioner. I had in mind to give the calcium salts internally, as their employment in this manner during the preceding seven years had produced such uniformly good results. Evidently, Dr. Meltzer's statement was a subconscious verdict, for he now says, emphatically, "that the dose of the solution of calcium salts *must be only moderate*, since large doses of calcium following injections of magnesium may prove to be deleterious for the heart. This warning is based upon many incidental experimental observations." And he naively adds, "But they were made only in recent years

and the nature of the deleterious action was not yet studied experimentally."

Perhaps I can refresh Dr. Meltzer's memory by an incident. When I mentioned the remarkable results attending the experimental investigations carried out by Dr. Oscar Loew, of the United States Department of Agriculture, he said he knew Dr. Loew very well, that he was professor of chemistry in the University of Munich before coming to this country, but he corrected my pronunciation of the name, said it was pronounced Lœf.

Now, my theory of "magnesium infiltration" is based upon Dr. Loew's demonstrations in plant life, as follows: "The calcium nucleoproteids of the organized structures are transformed by the presence of soluble magnesium salts into magnesium compounds, while the calcium of the former enters into combination with the acid of the magnesium salt. By the transformation of organized nucleoproteids into magnesium nucleoproteids the capacity for imbibition will change, which must lead to a disturbance in the structures that will prove fatal. Only the simultaneous presence of dissolved lime salts can prevent this effect, according to the law of mass."

JOHN AULDE, M. D.
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ENCEPHALITIS ALETHARGICA.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Noting the editorial note in the last issue of the MEDICAL RECORD on sleeping sickness, I wish to call attention to a condition which I have named "encephalitis alethargica."

The patients have various symptoms of sleeping sickness: more or less severe pains in head, neck, limbs, and abdomen. The temperature, however, ranges low, usually about 99° to 100° F., occasionally to 101°. Vertigo is prominent and in about 60 per cent. of cases, ocular symptoms develop about the third to fifth day, the patient complaining of "double vision." Occasionally there is some cyanosis.

The most prominent complaint, however, of the patient and attendants is inability to sleep. Opiates, bromides, and chloral seem to have little or no effect. In fact, opiates seem to have very little effect on any of the various bodily pains.

The pulse is slow, as a rule, easily compressible, and no dangerous condition seems to arise, except a moderate degree of delirium in the cases with the higher temperatures, averaging 101° F.

After one week a stationary stage is reached and the patient makes no progress either for better or worse.

I would like to hear of the experiences of other men with these cases and would very much appreciate suggestions regarding some treatment which would change the patient's condition from the stationary stage mentioned above.

I have had a series of about sixteen cases and the diagnosis seems to be a very mild form of encephalitis. All cases give a history of more or less definite influenza infection from two to four weeks previous.

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OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, February 27, 1920.

Meeting of the British Medical Association.—The eighty-eighth annual meeting of the British Medical Association will be held in Cambridge on June 29-July 2, under the presidency of Sir T. Clifford Allbutt, K.C.B., F.R.S., Regius Professor of Physic in the University. Arrangements are going forward steadily to make of the meeting a great success. Most of the circumstances seem to conspire to bring about this result. No better or more convenient place than Cambridge could have been selected throughout the length and breadth of Great Britain. It is easily reached from all points, being a great railway center, and is little more than an hour's run by rail from London. It not only has ample accommodation for the large meetings and the meetings of sections, but its hotels and boarding houses can provide for and accommodate comfortably a very large number of visitors. Moreover, the university itself, with its colleges, libraries and various places of interest to the scholar and man of science, will attract many, and it is excellently adapted from the social standpoint for both amusement and instruction. Sir T. Clifford Allbutt, the president-elect, is now the grand old man of the British medical profession, one of the most learned and cultured speakers and writers in the country, and a man whose charm of manner was equaled among the members of the profession only by the late Sir William Osler. The annual general meeting will be held on the afternoon of June 29 and on the same evening Sir Clifford Allbutt will give the presidential address. The scientific sections will meet June 30, July 1 and 2, the mornings from 10 A.M. to 1 P.M. being set apart for discussions, and the afternoon from 3 o'clock for clinical and laboratory demonstrations. The sections this year are twelve in number. The section of medicine, President, Sir Humphrey Rolleston; of surgery, President, Sir George Makins; of pathology and bacteriology, President, Professor Lorrain Smith; of neurology and psychiatry, President, Dr. Henry Head, and of physiology and pharmacology, President, F. G. Hopkins, will meet on each of the three days. The remaining sections, each meeting on one day, are as follows: Obstetrics and gynecology, President, Dr. Herbert Williamson; tropical medicine, President, Professor G. H. F. Nuttall; electro-therapeutics, President, Dr. A. E. Barclay; medical education, President, Sir George Newman; medical sociology, President, Dr. G. E. Haslip; naval and military, President, Colonel Joseph Griffiths, and venereal, President, Mr. E. B. Turner. The popular lecture will be given on the evening of July 2 by Dr. G. S. Graham Smith.

International Health Commission.—The League of Nations Council, which met in London on Feb. 14 last, appointed a committee to draw up a scheme for an International Health Commission. Such a central authority as a commission of this character would necessarily be is greatly needed at the present time. The war has generalized diseases formerly localized, and the easy constant intercommunication of all the peoples of the earth has rendered the establishment of an international health

commission essential to the preservation of the public health.

British Honor for Professor Tuffier. — His Majesty the King has been pleased to approve the appointment of Professor Tuffier to be an Honorary Knight Commander of the Order of the British Empire. As the *Lancet*, Feb. 21, remarks, this recognition of Professor Tuffier's services to the wounded British officers and men brought into Paris during the early phases of the war and of his kindly and untiring efforts to make the Inter-Allied Surgical Conferences a success will be regarded with general satisfaction by all those who enjoyed the pleasure and privilege of working in association with him.

Medical Science and Life Assurance. — It has been suggested recently that a large number of interesting questions will arise if there is established, as many think there may be established, a connection between life assurance and medical science. Of course, there is a limited connection at the present time, but not so useful or so intimate as it might be made. When an office receives a proposal for life assurance it is almost invariably considered advisable for a medical examination to be made. This may take place at the head office of the company, and be conducted by its chief medical officer, or the examination may be made locally, and the company's chief medical officer, perhaps in consultation with the actuary, may decide whether the case is to be accepted as first class, to be postponed, to be rated up or to be declined. It goes without saying that care in the selections of lives is important for a life office, because it determines whether or not future mortality is likely to be favorable or the reverse. When a life office is simply seeking favorable mortality, the use at present made of medical knowledge may perhaps be considered fairly adequate. As Mr. William Schooling points out in an article on the subject in the *London Daily Telegraph*, Feb. 24, all reliance is placed upon the empirical judgment of a medical man based upon knowledge that is only organized to a very slight extent. There is no pretence of trying to obtain the assistance of medical science; and the present methods do not always secure the best possible results from even the art of medicine. Presumably every life office seeks as its chief medical officer the most competent and experienced man that can be found. When a proposer is examined at the head office, as much or as little investigation can be made as the examiner thinks necessary. But when the examination is made by a local examiner, the basis upon which the case is dealt with leaves much to be desired. Sometimes the local examiner is carefully chosen for his medical qualifications, while in some instances the amount of life assurance which the local doctor is prepared to take, largely influences the choice. Even when the medical man with the best qualifications is selected it does not always follow that the fullest use is made of the services he is competent to render. To begin with, there is the somewhat difficult point as to an appropriate fee for a medical examination for life assurance. The transaction is a financial one on both sides. Any doctor will endeavor to save life or alleviate suffering, though he may receive no fee at all, but the information or advice he gives to a life office is based on no such humanitarian sentiment. If the doctor is in error the company may lose money; if he reports fully and wisely it may save money. The life office is likely to receive information and advice which is worth what it chooses to pay, and no more. Some life offices invite the doctors to fill up elaborate schedules of information, and, if the doctor were to do so for the fee he is sometimes offered he would be acting as an ill-paid clerk. Moreover, as the majority of medical men have no belief in the utility of these excessively detailed forms, it may be taken for granted that such information as is supplied upon them is of no great value. As a matter of fact, the question of the fee that a life office can pay is not an easy one to settle. If the premium is small, the medical fee may absorb the whole or a large proportion of the first year's premium. The case may have to be declined, and then the fee is a net loss to the company that pays it. Yet even for policies of comparatively small amounts, no life office, hoping for permanently satisfactory results, will dispense with a fairly careful medical opinion about each life. Conditions in life offices with regard to medical examinations are not so satisfactory as they might be. In Great Britain, at any rate, they appear to be wedded to the old methods, although the war produced some heart searchings. For example, the examination of would-be aviators presented many difficulties, so many indeed, that it was proposed that in the medical examination of these, specialists should be employed by the whole of the offices, and this brings us to Schooling's suggestion that a medical examining institute should be established. According to Schooling, such an institute would quickly bring medical science to the help of life assurance, in place of that medical art of intuitive guessing upon which life assurance at present chiefly relies. Further, while the medical profession, or those members of it who examine for life companies, will hardly agree with Schooling that the results of their examinations are founded upon intuitive guessing, such an institute could do very much more than merely make examinations as a preliminary to life assurance. Regarded as an insurance medical institute, it could systematically examine all policy holders assured in the offices that were maintaining it. They could go every year, or every five years, or whenever they thought fit, to be examined and could be given a report as to their condition and progress. The institute would be equipped with every modern scientific means for making a diagnosis; x-ray examinations could be made, blood could be tested, and thus there would become available the life histories of a large number of cases. A number of cases of cancer might be found. A detailed examination of the early history of all cancer cases might show certain features in common to suggest the way in which it developed, and ultimately, perhaps, a method for its cure. It is undoubtedly perfectly correct to say that it is impossible to overestimate the value to the community of the vast mass of recorded observations that would in time be accumulated by means of scientific medical examinations in an institute of this nature. Up-to-date medical men do not concern themselves solely with the curing of disease, but by discovering the primary causes to prevent it. It is a fact admitting of no dispute that the analysis of systematic examinations of thousand of lives would

go far to facilitate that organization of medical knowledge which would entitle it to be termed medical science.

Probably, however, to expect that life assurance companies, many of those in Great Britain being notoriously conservative, would welcome such a scheme is Utopian, or, at least, premature. That it would be of national benefit seems certain, but it is likely that most of the boards of directors would look upon the matter from a different viewpoint or fear to put a system so contrary to traditional ideas into execution. A plan of this kind seems more apt to receive consideration from go-ahead Americans, and perhaps might be commended to the attention of the British Ministry of Health. In any event, the conception is a fascinating one and in the future, possibly in the near future in America, may be practically realized. Even as an experiment it should be well worth while.

The Professorship of Anatomy at Cambridge.—The General Board of Studies of Cambridge University have recommended that in future the Professor of Anatomy shall receive a stipend of £1,200 a year, of which £350 will be charged on the funds of the department.

Miners' Eyesight.—In a paper dealing with the lighting conditions in mines, with special reference to the eyesight of miners, read at a meeting of the Illuminating Engineering Society, at the Royal Society of Arts, on Feb. 24, Dr. T. Lister Llewellyn said it seemed incredible, but the source of light which gave the highest candlepower at the coal mines was the tallow candle. With the exception of the manufacture and packing of some specially sensitive photographic plates in darkness, no industry was carried on with such feeble illumination as that of coal mining. In the speaker's opinion the dominating factor in the production of miner's nystagmus was the low illumination found both in the open light and in the coal mine safety lamp. It was quite justly alleged that many accidents were due to carelessness on the part of the workmen, but might not increased illumination lessen the incidence of those accidents? If we conserved our manpower by diminishing the incidence of accidents and disease we should necessarily increase the output. The direct result of increased illumination should be increased output.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 4, 1920, clxxxii, 10.

1. The Meaning of the Normal. A. Le Roy Johnson.
2. The Clinical Bacteriology of the Pneumostreptococcus Group. D. M. Lewis.
3. Notes on the Use of the Portable Respiration Apparatus. Francis G. Benedict.

1. The Meaning of the Normal.—A. Le Roy Johnson calls attention to the confusion of ideas as to the meaning of the word normal as it is employed in present-day medical and dental literature, and discusses the subject from the dental point of view. The nature of the structures with which the dentist is concerned, *i.e.*, the teeth and their supporting and surrounding tissues, forces him to a careful analysis of the meaning of the normal. The conception of the normal dental arch is the foundation of modern dentistry. To assist in establishing and maintaining the normal functional activity of the masticatory apparatus of the living human being is its purpose. Thus the concept of the normal, what it means, what it signifies, is at the very foundation of dentistry, and its careful analysis is a practical necessity to the progress of the science.

New York Medical Journal.

February 21, 1920, cxi, 8.

1. Occupational Diseases. John F. X. Jones.
2. The Education of the Physician. Frank Thomas Woodbury.
3. Compulsory Health Insurance. E. MacD. Stanton.
4. The Bill of Rights of the Child. Isaac W. Brewer.
5. Clinical Interpretation of Scarlatinoid Rashes. Moses Scholtz.
6. My Friend, the Consultant. L. Miller Kahn.
7. Metatarsalgia and Allied Conditions. Arther D. Kurtz.
8. The Treatment of Syphilis by a New Mercurial Preparation. J. Lewengood.

1. Occupational Diseases.—John F. X. Jones, in developing the idea of the part that the calling of the human being plays in the determination of his decay, reviews the literature concerning occupational diseases from the time of Bernardo Ramazzini of Padua, who wrote in 1703, to the present day.

5. Clinical Interpretation of Scarlatinoid Rashes.—Moses Scholtz offers an interpretation of scarlatinoid rashes as the result of a study of their symptomatology, pathology, and pathogenesis. The theoretical justification of this interpretation would be the advancement of the dynamic biological viewpoint over the static, morphological, which is still too much in evidence in dermatology. The practical advantage of its adoption is the simplification of the nosological conception of the scarlatinoid erythemata and the avoidance of an unnecessary and practically impossible differentiation. The advanced views are summarized as follows: 1. Scarlet fever rash is not a well-defined and distinct dermatological entity and cannot be differentiated from the rest of scarlatinoid rashes; it is merely a specific type of toxic scarlatinoid erythemata. 2. Scarlatinoid erythema is not an independent clinical entity, but merely a symptomatic erythema caused by all varieties of systemic toxins. 3. The differentiation of scarlatinoid erythemata cannot be made on purely dermatological grounds, but essentially on the associated clinical symptoms and the mode of development. 4. Nosologically scarlatinoid erythemata should be regarded as an erythematous type of the great generic group of erythema multiforme.

New York Medical Journal.

February 28, 1920, cxi, 9.

1. Röntgen Ray Studies of the Functional Alteration of the Diaphragm. Henry K. Pancoast.
2. Errors in Abdominal Diagnosis as Seen by the Pathologist. Stanley P. Reimann.
3. Relationship of Ophthalmology to Group Diagnosis. Homer E. Smith.
4. Sources of Error in the Estimation of Blood Pressure. A. E. Ollensis.
5. Modern Treatment of Sterility. H. M. Armitage.
6. The Treatment of Tuberculosis in Experimental Animals. Benjamin S. Paschall.
7. High Heels and Body Health. H. Schelmberg.
8. Bone Tumors of Thyroid Origin. J. Christopher O'Day.
9. Heredity. L. Donald McEvoy.

3. Relationship of Ophthalmology to Group Diagnosis.—Homer E. Smith defines the oculist as "the clinician raised to the *nth* power, who, in addition, is 'one skilled in diseases of the eye'." Specialism, he holds, when by this is meant the treatment of a single organ of the body, is manifestly an absurdity and an impossibility. In ophthalmology not even one of its four grand divisions, the external and internal diseases, refraction work or surgery, can be so isolated as to come within the scope of the lexicographer's definition. The external diseases of the eye may be segregated as conjunctival, scleral or corneal, but the oculist may need the bacteriologist, the hematologist, the serologist, or the microscopist to make the diagnosis complete or to indicate the proper line of treatment. The ophthalmoscope will reveal abnormalities of the media or fundus but to correlate these to their proper etiological relationship might mean a search through every organ of the body and perhaps a chemical or biological examination of every body fluid. The oculist cannot be an expert röntgenologist, but there are times when only the x-ray will solve his problem. The eye grounds may

show beginning disease but as yet not sufficiently advanced to permit of any differentiation as to type, as to whether it is tuberculous, syphilitic, malignant, infectious, toxic, leukemic, or diabetic, or whether it is due to any other of a dozen different systemic disturbances. Here the oculist is in need of group diagnosis. Even the surgical status of the patient may need the help of the internist, and the operability of the eye calls for the aid of the bacteriologist. If one is to cope successfully with ophthalmological problems one must call to one's aid the help of experts in every division of medical research.

Journal of the American Medical Association.

March 6, 1920, lxxiv, 10.

1. Acidosis in Nephritis. Arthur F. Chace and Victor C. Myers.
2. Hemolytic Activity of Solutions of Arsphenamin and Neo-Arsphenamin. John A. Kolmer and Elizabeth M. Yagle.
3. Differences in Pathology of Pandemic and Recurrent Forms of So-called Influenza. Douglas Symmers, with the collaboration of Morris Dinnerstein and A. D. Frost.
4. Yellow Fever Control in Ecuador: Preliminary Report. M. E. Connor.
5. Arterial Hypertension. Frederick M. Allen.
6. Infection by the Broad Tapeworm, Diphyllobothrium Latum. M. W. Lyon, Jr.
7. Squamous-Cell Epithelioma of the Lip: A Study of Five Hundred and Thirty-seven Cases. A. C. Borders.
8. The Intentinal Tube: Its Significance and Applications. Jacob Buckstein.
9. The Treatment of Eczema. J. S. Eisenstaedt.

1. Acidosis in Nephritis.—Chace and Myers recall the fact that the term acidosis, although originally coined by Naunyn to apply to the ketosis of diabetes, has come to be used in a much broader sense with the development of knowledge of the subject. Obviously, acidosis may result either from an abnormal formation of acid substances or, as in nephritis, from a decreased elimination of normally formed substances. Under conditions of health, the blood is uniformly maintained at a constant slightly alkaline reaction through the influence of the bicarbonate, phosphate and proteins of the blood. The following factors have been suggested as a measure of the degree of acidosis: (1) Lowered carbon dioxide combining power of the blood; (2) lowered alveolar carbon dioxide tension; (3) decreased affinity of hemoglobin for oxygen; (4) reduced alkalinity of the blood; (5) increased hydrogen ion concentration of the blood; (6) increased intensity of urinary acidity (hydrogen ion concentration), and (7) the retention of alkali by the body in cases in which the kidney is capable of rapidly excreting an excess of alkali. All these factors have furnished valuable information in the development of knowledge of the subject, but the first, second, and seventh have yielded information of special clinical value. From their study of the subject the writers hold that all fatal cases of chronic nephritis with marked nitrogen retention show a severe acidosis, sufficient in many instances to be the actual cause of death. In some cases of acute nephritis and acute exacerbation of chronic nephritis the distress is apparently due to the acidosis, since the judicious use of sodium bicarbonate results in general clinical improvement. With the rise in the carbon dioxide combining power of the blood, the dyspnea and hyperpnea disappear.

5. Arterial Hypertension.—Frederick M. Allen discusses the theories regarding the causes of hypertension; the restriction of water and salt; cases of pure hypertension; hypertension with kidney impairment; hypertension with diabetes or severe nephritis; limitations in treatment. Under the last head he mentions certain precautions or limitations with regard to the practical application of the principles outlined. First, a diet which is reasonably satisfying and at the same time sufficiently poor in salt is not so easy to arrange as it may appear. Both physician and patient may believe that strict abstinence from salt has been maintained, when analyses will show the blood chlorides undiminished and an output of from 5 to 10 gm. in the twenty-four-hour urine. Such analyses are important for controlling the treatment, and no pressure is rightly called irreducible unless the daily chloride excretion has been reduced to practically zero. Second, some quantity of salt is considered indispensable in the permanent ration. This is stated as about 2 gm. for normal persons, but the limits for nephritics have never been determined. On the one hand, it is not certain that the intake need be as great when the output is obstructed. On the other hand, there may be danger in withdrawing salt from certain nephritics, especially with nitrogen retention, who seem to need much more than 2 gm. of salt for its diuretic action to ward off uremia. As a rule the outstanding effect of undue salt privation has been weakness. It is necessary, therefore, to work out salt rations for individual nephritics which may range from almost zero to a considerable quantity. Third, restriction of salt or fluid, like every dietetic treatment of organic disease, is only palliative. Success is not uniform as in the treatment of diabetes, and complete or partial failures are more or less numerous. When the first results are more or less satisfactory, there is still reason to fear that the same patients may pass into a hopeless condition in the course of months or years. Furthermore, the most effectual relief of the hypertension demonstrates strongly that the essential trouble is more than mechanical. Reduction of the blood pressure nearly or completely to normal may still leave the patient an invalid, either from weakness due to the strict salt privation which is necessary to hold down the pressure, or still worse, if salt is given so as to allow the pressure to go up. They may also be subject to attacks of hypertension and accompanying symptoms from little or no evident cause. Notwithstanding these limitations, the benefit of suitable chloride restriction for hypertension is still great, in making patients more comfortable, diminishing the danger of apoplexy, and possibly also in actually checking the progressiveness of the disorder.

The Lancet.

February 14, 1920, cxcviii, 7.

1. Hunterian Oration on Blood Vessels and Pressure. Leonard Hill.
2. The Results of Protective Inoculation against Influenza in the Army at Home, 1918-19. Major-General Sir William Leishman.
3. Complement-Fixation Experiments in Influenza. H. J. B. Fry and C. Lundie.
4. The Periodicity of Influenza. C. O. Stallybrass.
5. An Efficient and Economical Pylon. W. Montgomery Johnston.

3. Complement-Fixation Experiments in Influenza.—Fry and Lundie report a continuation and amplification of studies previously published (*Lancet*, 1919, ii, 51) concerning an organism isolated from cases of influenza. The serum of the patient from whose blood this organism had been isolated had shown definite complement-fixation with an antigen prepared from the organism. This result encouraged the writers to experiment with sera obtained from other cases of influenza, which had been investigated during the two previous waves of the epidemic. Syphilitic and other patients were used as controls. The experiments grouped themselves under the following heads: 1. Old sera obtained from cases of influenza at the height of the epidemic in 1918-19. 2. Fresh sera and cerebrospinal fluids from recent cases of influenza. 3. Control sera (*a*) from normal individuals; (*b*) from syphilitic patients who have never had influenza; (c) from patients with no recent history of influenza, and (*d*) sera from patients suffering from other pyrexial diseases, typhoid fever, malaria, tuberculosis, etc. The total number of influenza sera examined is 15, which includes five old sera, eight fresh sera, and two influenza cerebrospinal fluids. The observations are summarized as follows: 1. An antigen prepared from an organism isolated in the third wave of the epidemic shows fixation of complement with sera derived from cases of influenza, both recent and those occurring in the previous waves of the epidemic. 2. This complement-fixation is absent in the case of sera from normal individuals who have never had influenza. 3. It is absent in the case of sera from individuals who are suffering from other specific diseases, and are free from any recent history of influenza. 4. An antigen which has been prepared from another microorganism will show no fixation of complement with sera from cases of influenza.

British Medical Journal.

February 14, 1920, 1, 3085.

1. The Modern Treatment of Functional Nervous Disorders. A British Medical Association Lecture. Bernard Hart.
2. Appendectomy by a New Route. H. Anglin Whitelock.
3. The Results of Protective Inoculation against Influenza in the Army at Home, 1918-1919. Major-General Sir William B. Leishman.
4. Observations on the *X*-Ray Treatment of Neoplasms. G. E. Vilvandré.
5. Chronic Infection of the Faucial and Post-Nasal Lymphoid Tissue in Children. Percival W. Leathart.
6. Ruptured Gastric Ulcer in an Old Man: Laparotomy: Recovery. Andrew Fullerton and T. S. S. Holmes.
7. A Method of Treating Tinea. C. J. Glasson.

4. Observations on the X-Ray Treatment of Neoplasms.—G. E. Vilvandré gives the result of observations of facts and deductions which have been forced upon him during the past three years, the object of his investigation being not only to obtain successes, but to inquire why success was achieved in some cases and failure in others. Looking back over the cases of new growths treated by *x*-rays in the *X*-ray Department of the London Hospital, he found the greatest benefit or inhibition in sarcomatous neoplasms, and in the slow-growing varieties. Leaving rodent ulcers on one side—in which radium treatment shows at its best—it may be said of carcinomas that the results of radiation are not striking. Vascularity was not the determining factor, since experience with enlarged spleens—it is difficult to imagine a more vascular organ—showed that under *x*-rays the diminution of enormous spleens, such as are seen in leukemia, is most striking. Breaking down malignant glands such as follow "epithelioma" of the lip, or squamous-cell carcinoma springing upon an ulcerated lupus lesion, do not do well under *x*-ray treatment. Neoplasms of the lung react to hard rays, but heavy filtered doses are necessary. Bulk is no hindrance; it is the nature of the growth that counts.

5. Chronic Infection of the Faucial and Post-Nasal Lymphoid Tissue in Children.—Percival W. Leathart calls attention to the fact that a child with enlarged tonsils and adenoids is not ill because of the increased size, but because of a chronic infection of its faucial and post-nasal lymphoid tissue, which serves not only as a nidus for the manufacture of toxins, but also as a port of entry for many other systemic diseases. This condition of chronic infection, which is extremely common, is easy to diagnose if the three cardinal physical signs—enlarged tonsils, rhinitis, and enlarged cervical glands—are kept in mind. Running ears, bronchitis, mastoiditis, etc., are physical signs to be noted, more correctly described as complications. The disease is highly infectious, as shown by the facts: (1) That it is far more frequent among school children than among children who do not go to school; (2) that when one child in a family is attacked the disease subsequently spreads to others who were previously healthy; (3) microorganisms can always be grown from the nasal and post-nasal secretions, which are normally sterile. There is a tendency to chronicity, the child, in such case, being a "carrier," and consequently a source of danger to all healthy children with whom he comes in contact. The direct complications are far reaching, spreading beyond the sphere of the throat and ear surgeon, the ophthalmic surgeon, and the laryngologist, into the domain of the physician in the way of bronchial affections, and broncho-pneumonia. The indirect complications are even more serious, for the lymphoid tissue, having lost its natural resistance, is rendered more liable to become a port of entry for other specific infections, such as tubercle, rheumatic fever, measles, scarlet fever, diphtheria, and influenza. Treatment includes prevention and the treatment of the individual. If the latter is satisfactory, complete removal is necessary.

Hygiea.

January 16, 1920, lxxxii, 1.

Embolus in the Femoral Artery Removed by Operation.—Sundberg relates the case of a man of 63 with chronic myocarditis and atherosclerosis who suffered with an embolus in the femoral artery. Twelve hours after the earliest symptoms the author cut down on the vessel and succeeded in extracting the embolus intact through the incision. The arteriotomy wound was then closed with button sutures, which were so applied as to spare the intima. Healing of the vessel was perfect. The removed embolus was 86 cm. in length. The patient made a complete recovery and has since remained well. In literature the author has been able to find twenty such cases, not counting emboli in the pulmonary artery. The total number of permanent recoveries is six, and of these no less than four were at the hands of Swedish surgeons—Key, Bauer, Lundmark, and the author. Bauer's patient had an embolus in the abdominal aorta, but the others were in the extremities—femoral twice and brachial once.

Formic Acid as a Remedy.—Kjerrulf first refers to the ancient *aqua magnanimitatis* which contained an extract of ants. In 1822 Berzelius first prepared formic acid in the laboratory, and soon after it was introduced into medical practice, although it had become quite obsolete in the latter half of the nineteenth century. But of late years there has been a slight tendency to make use of formic acid and formates in cardiac disease. This is an odd coincidence, for the old *aqua magnanimitatis* received its name from its supposed power to exalt the courage. For that purpose a half tablespoonful was given in wine just before the ordeal. The formula of the *aqua* called for 2 pounds of ants, 3 pounds of alcohol, and about 100 grams of spices, the mixture being distilled. Just as the textbooks had almost ceased to mention formic acid at all Huchard announced that it possessed toni-muscular and diuretic properties which rendered it applicable to cardiac diseases. But a German, Krull, had announced as far back as 1901 that the acid had some virtues in psoriasis and gout, and this author seems to have taught its virtues over a period of twenty years—from 1891 to 1911—giving it in minute doses. In 1909 Merck was making it as a drug in use, and in 1905 Couch, in the MEDICAL RECORD, recommended injecting the remedy for rheumatism. Another American, Stern, had used it for sixteen years in the same and other chronic affections.

American Trypanosomiasis in Venezuela.—The *Anales de la Dirección de Sanidad Nacional* of Caracas, which is in its first year of publication (January-June, 1919, i, 1-2) contains an article by Tejera on the transmission of Chagas's Disease in Venezuela. Until recently the latter was believed to be limited to certain parts of Brazil. In the latter country the transmission is effected almost entirely by the *Conorrhinus megistus*, and the incidence of the disease is determined by the incidence of this insect. The latter is closely related to the "big bedbug" of our Southern states, and the "kissing bug" of the newspapers. It was originally believed that the species in all these insects is identical, but it has since appeared that several closely related species are concerned. The disease is said to be known in the Western states of the republic as "Pito bite." Not until 1918 was it discovered that the transmitting insect of the latter is the *Rhodnius prolixus*, closely related to the *Conorrhini* above mentioned. It is not the sole agency, for another *Reduvius*, as yet unclassified, has been found infected. This may not mean that it is a human blood sucker, for it may prey only on certain species of animals. Officially the *Conorrhinus megistus* does not exist in Venezuela. The *Rhodnius* is well known in the Western states by a number of popular titles, varying with the locality, as the "whistle," the "sucker," the "bush-bug," etc. It can readily be infected with the trypanosome through allowing it to bite guinea pigs previously infected, and can then as readily convey the disease. A number of human patients have been studied and the affection is believed to be not uncommon. Chagas's disease is now well known to medical men, and clinically is at first an acute thyroiditis. Recent studies in Brazil have made it probable that a variety of blood-sucking insects, which includes the ordinary bed-bug, are capable of occasionally transmitting the disease. The *Conorrhinus Laporte* of Venezuela, which has been known since 1832, is theoretically capable of transmitting the disease by reason of its habits and preferences, which are those of blood sucking hemiptera in general.

Society Reports.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Annual Meeting of the Eastern Section, Held at Newark, N. J., February 7, 1920.

Dr. Wells P. Eagleton in the Chair.

A New Form of Medication for the Nose and Nasopharynx.—Dr. Wolff Freudenthal of New York City made this preliminary report. The author stated that not all cases of dryness in the nose and throat, headache, etc., are relieved by operative measures. Nasal douches, salves, etc., are not always effectual. This was because the parts affected were often not reached by the medication. Thus the author had sought means to apply some form of medication that would remain in contact with the affected parts. Freudenthal tried a nasal bougie, which was found unsatisfactory on account of displacement. Then a simple apparatus was constructed consisting practically of nothing but a few wires fastened together. This served to hold the bougie in contact with the part desired. The applications could be made easily in the office without cocaine, although in sensitive people a few drops of a 1 per cent. solution of cocaine had been used. The patient could be shown how to apply the bougie himself, at his home. So far the author had used chiefly bougies of cocoa butter containing boric acid. Other ingredients used had been tannic acid, eucalyptol, and adrenalin, the latter in one case of perennial vasomotor rhinitis, with great success. Usually from 3 to 8 minutes were reqired to dissolve a bougie. A pledget of cotton in the nose prevented flowing away of the dissolved portion. In some cases the bougie was not dissolved. Such cases presented absolute atrophy of the mucous membrane. The time of dissolution of the bougie would act as a measure for the function of the nasal mucous membrane. It was found, also, that in cases of sinus affection the alterations extended sooner or later to the nasal cavity itself. The bougie treatment, it was stated, was an adjunct to, not a substitute for, office treatment by the physician himself. In view of the rapid absorption of drugs by the mucous membrane of the nose, it was suggested that careful experimentation be made as to the therapeutic value of drug administration by this means.

Dr. N. Wilson of Elizabeth, N. J., said he would like to ask the speaker how long he kept this apparatus in the nose. Had he made any experiments as to the melting of the bougie at a temperature of 98° outside of the body? Whether the mucous membrane was functioning or not was not so important as the temperature of the bougie. At body temperature in the office this would be dissolved.

Dr. T. J. Harris of New York said he always welcomed every paper from Dr. Freudenthal. It was bound to be worth while and helpful. It was very refreshing to see a paper which was off the beaten track. In recent years the society had been so absorbed in surgical questions that it had more or less lost sight of medication. Dr. Freudenthal made the remark that we failed to get 100 per cent. good results from surgery. Therapy was often insufficient, and results were by no means 100 per cent. Other factors and elements entered into the cure which Dr. Freudenthal had touched upon. The question of the destruction of the mucosa was a very broad one. What Dr. Freudenthal had said in regard to the impossibility of any form of medication being able to restore a hopelessly diseased gland to normal function was also true. In regard to the bougie, he would have been glad had the speaker touched not merely on the introduction of the bougie but also on the results obtained. It seemed that in the long run it had worked out well. It was also important for specialists not to lose sight of the fact that there was other than local treatment in nasal disease. He felt more and more impressed with the beneficial results from the treatment of the nose and sinuses by dieting. Great benefit was obtained by treatment of the gastrointestinal tract, or any other tract of the body where there was good reason to suspect disturbance. More attention should be given to this line of therapy, and careful investigation should be made of any and every possible channel of infection or of reflex irritation which might aggravate or help to maintain irritation of the nasal mucous membrane. This was particularly true of the gastrointestinal canal.

Dr. W. P. Eagleton of Newark said that Dr. Freudenthal spoke of the value of medication in systemic disease. That point had been greatly neglected. When one considered the tremendous influence of cocaine and adrenalin, it seemed inconceivable why it had not been tried by this means. There must be many occasions when administration of stimulation by this channel could be made. Stimulants could be rapidly absorbed and in the absence of hypodermic medication, it would be valuable.

Dr. Freudenthal, in closing, said he had learned a great deal during this interesting discussion. Dr. Wilson's remark was important. Heat alone would dissolve bougies at a temperature of 98°, but the temperature of the interior of the nose was not 98°. To dissolve the bougie in the nose it needed more than heat; it took moisture, too. He was sure that he appreciated the remark that one did not get 100 per cent. results. Operation would remove certain troubles, but it would not cure everything. Men should cease to operate as much as they had been doing during the last few years. Without general treatment one would never get the full results. In regard to temperature, one must bear in mind the climate in which he lived, and also that many of us were office workers. With an office temperature of 80° and a moisture of 15 per cent., instead of the normal amount, it was no wonder that the nasal mucosa dried out.

Report of Two Cases of Cerebellar Abscess.—Dr. C. J. Imperatori of New York made this presentation. He said that the diagnosis of otitic cerebellar abscess before operation was made with great difficulty, although possible in some cases. Two cases were cited: one a Pole, 32 years of age, occupation stableman. This man had had a chronic discharge from the right ear for eight years, and for a few weeks prior to being admitted to Bellevue Hospital complained of dizziness and falling to the right, and some mornings vomiting. He was deaf on the right side. Tests showed facial paralysis, loss of cochlear and static function, and radiographs showed a mastoid sclerosis. The possibility of cerebellar abscess was considered. This was found at operation and two drams of foul-smelling pus evacuated. The patient was discharged cured in two months. The condition was cerebellar abscess complicating labyrinthine suppuration. The second patient, a Greek, aged 42, was admitted in a stuporous condition. He lay on his left side, with limbs flexed. The spinal fluid was under pressure—225 cells. Radiographs showed a sclerosed mastoid on the left side. A radical mastoid operation was done. The patient's condition did not improve and in 36 hours an opening was made over the cerebellum, posterior to the sinus; no pus was found. Another opening was made anterior to the sinus and a half ounce of foul pus was evacuated. The man died 12 hours after operation. In these cases it would seem justifiable to do radical mastoidectomy, labyrinthectomy followed by exploration of the cerebellum.

Dr. W. P. Eagleton of Newark said there were many points about these two cases which threw light on a very difficult subject. Knowledge of cerebellar abscess was more or less in the experimental stage. Cerebellar abscess was frequently a complication of labyrinthitis. We should understand the problem and the necessity of attacking the principal lesion first. Any communication that gave in detail the findings in cerebellar abscess, detected at operation, was most valuable. In looking over the literature of the cases reported, in 127 a post-mortem had been obtained, but very few reports of these cases were of scientific value. The men who reported them made no attempt to systematize the examination of their cases, or to make a careful record, symptom by symptom. The result was that the whole subject remained in a state of chaos. Details of the neurological examination were often entirely lacking. Of the whole 127 cases, in less than 12 had a detailed report been made. There were a

few specially interesting points in regard to the value of certain signs to which enough attention had not been paid. One of these is the value of a "protective meningitis" as a diagnostic symptom. He had coined the word "protective meningitis," instead of "sympathetic meningitis." Its value in the diagnosis of an intracranial lesion had been of great importance. With a high cell count this should always be suspected. The lesion was then beyond the labyrinth. The brain lesion itself should then be attacked. Another point to remember was that with suppurating ear, with suspected brain abscess, in the upright position one failed to get a reaction from the vertical canals, which did not functionate. With the body lying back the horizontal canals would functionate. The cold caloric did not react on the affected side. In these cases one should be induced to open the dura instead of opening the labyrinth. One point was essential—ligation of the sinus prior to operation. This removed the technical difficulties of the operation, leaving a very large field that could be kept clean. This method would very soon be adopted as a universal procedure.

Dr. W. C. Bowers of New York City said that several years ago he saw a case with a cell count of 2600. There was marked rigidity and a marked Kernig. The child had abscess under pressure, posterior to the sinus and external to the dura. A spinal puncture was done. In two weeks the child got well. There was considerable increase in the cell count, but no intracranial pathology.

Dr. E. P. Fowler of New York said that in regard to the increased cell count in cerebellar abscess, he would like to mention a recent case in New York which recovered following labyrinthectomy. The case was a very chronic one. There had been meningitis and labyrinthitis. There was a recurrence after one and a half months and the patient was brought to the Manhattan Hospital and there operated upon. There was no abscess except an ordinary mastoid. He would like to know the value of past pointing as a sign.

Dr. T. J. Harris of New York asked to know the present conclusions in relation to past pointing. What was the chairman's opinion?

Dr. L. M. Hubby of New York said that one thing about past pointing was useful to know. When nystagmus was present, if one turned the patient over on the diseased side and had him turn the eyes as far as possible, one could often increase past pointing.

Dr. W. P. Eagleton of Newark said that there was a modification, but he did not know how far this was diagnostic in cerebellar abscess. These cases were often not examined when it was possible to examine them; one could not examine a patient in regard to past pointing when he was in a comatose condition. There was a long time previous to this when records could have been made. However, these were not available. There was no effect on past pointing in slow-growing tumors. Most of these patients showed an outward deviation, but whether this was also true in cerebellar abscess he could not say.

Dr. J. W. Park of Harrisburg, Pa., asked whether the doctor said that there was a careful ophthalmoscopical examination made or not. He thought that in cerebellar or meningeal conditions this should be done, even as often as four hours apart, with careful notation of the condition of the central arteries and veins.

Dr. W. C. Bowers of New York said he had a case of cerebellar abscess a month ago. The man had had the condition for a year. He had been operated on for a mastoid condition, and had had a radical operation. He returned with increased symptoms and complained of headache and tendency to fall to the right. There was nystagmus and falling to the right and forward; no past pointing. This was normal on stimulation of the right canals in every direction. He was totally deaf. At operation it was found that the bone was destroyed over the posterior and middle fossæ. Even the bone in the angle between the two fossæ was destroyed and the facial nerve was completely exposed. The necrotic bone had to be removed. The dura was very thick in all parts. It was impossible to find any trace of the sinus. When he came back he still had the former symptoms and optic neuritis as well. There was no spontaneous past pointing. When exploration was made he endeavored to ligate the sinus and went to the front of where the sinus should be and found a thick-walled cavity. He attempted to pass ligatures, but it was hard and dense. It was thought that the case was one of sinus thrombosis, and on cutting through it was found that this was true. The sinus thrombosis probably caused the abscess, rather than the labyrinth wall, which was one-half inch thick. Three-quarters of an inch was cut away, leaving a large opening. Two weeks ago he was doing very nicely. There was no past pointing in that case.

Dr. C. J. Imperatori said that a very careful opthalmoscopic examination was made, and was considered in the diagnosis. The eye grounds were negative, according to the report of the eye men. There was no possibility of past pointing; the man was comatose, and except that adiadochocinesia was brought out he could do nothing. He kept on doing that and kept it up. In the first case there was a slight spontaneous past pointing on the left. The lesion was on the right side. It would appear that without a high cell count the prognosis would be more favorable. He was not able to explain why the horizontal canals would functionate on the sound side and the vertical canals would not.

Abscess of the Frontal Lobe, Simulating Frontal Sinusitis.—Dr. S. McCullagh of New York presented this topic. The patient, a girl of 11, was admitted to the Manhattan Eye, Ear and Throat Hospital with headache, somnolence, and swelling of the left upper eyelid. Seven years previously she had fallen 40 feet and suffered compound comminuted fracture of the skull. Mentality had been low ever since. On admission the patient was lethargic and resented being roused. The left eyelid was ptosed. There was marked tenderness over the frontal sinus. After some days, as the condition did not improve, operation was decided on and the frontal sinus was opened. Free pus and granulation were found. The incision was deepened and the frontal lobe explored. About an ounce of thick, greenish pus gushed out. The walls of the cavity were thick and did not collapse. The wound was gently irrigated and a rubber drainage tube put in. Culture from the brain abscess was sterile. The child was extremely uncontrollable, and repeatedly forced out the drainage tube with screaming and struggling. The wound, however, healed promptly. It was apparent that this abscess must have occurred at the time of the cranial injury and had laid dormant for years. Subsequent reports from school showed that the child's demeanor was better, but the mentality had not improved.

Dr. W. Freudenthal of New York asked what was the condition of the frontal sinus when opened. How did the mucosa appear? How was the swelling of the left eyelid afterwards? Was there edematous infiltration or only pus?

Dr. T. J. Harris of New York said that Dr. McCullagh was to be congratulated upon the satisfactory result of his case, in spite of the difficulties encountered. In many of these cases the diagnosis was made only at the time of operation on the frontal sinus. The headache and high temperature were ascribed to infection of the sinus. One point to be noted in this case was the persistent vomiting. The infection lay in the posterior wall in the majority of cases. The condition was by no means a light one. There were many cases that resulted badly even after operation. Surgery, delayed until the proper time, was distinctly indicated, and Dr. McCullagh's procedure was to be recommended. In the case of one boy, who became comatose after weeks in which the condition was unrecognized, with marked depression of the pulse rate, down to 40 or 50, the patient responded very promptly to operative procedure. In a few days he was mentally alert. A defect in the canal was discovered. In some cases infection was through the lymphatics and blood supply. It was interesting to hear of the prompt recovery of the child, in spite of the difficulty in keeping the dressings in place.

Dr. J. P. Berens of New York said he would congratulate Dr. McCullágh on his surgical results, as proved by the rapid convalescence of the patient. He recalled the case Dr. Harris referred to. The patient made a complete recovery. The frontal sinus was

drained with horse hair, more horse hairs being added until the drain was large enough. The only symptom was a great deal of frontal headache before the operation, and a very slight redness of the eyelid on the left side. The man worked in a bank, and so few were the symptoms that the manager of his bank never knew that he had a brain abscess; in fact, the patient himself did not know that he had.

Dr. H. S. HEDGES of Charlottesville, Va., recalled a case of a boy with extensive empyema of the frontal sinus. The child was doing well ,and was almost ready to go home when he became comatose and died in a few hours.

Dr. J. H. CULP of Harrisburg, Pa., mentioned a case of a man who was injured by an exploding emery wheel and suffered fracture of the frontal and occipital bones. Dr. Culp had removed the loose pieces of bone from the cranium. The man did well for a month, and then developed somnolence and pain in the head, although his mental condition was not impaired. There was a bulging of the sinus and it was decided to open it. At operation an abscess was found in the cavity of the left frontal sinus. The point to be emphasized was that until the time of death there was no clouding of the mental faculties.

Dr. S. M. COATES of Philadelphia said he had a case seventeen years ago in which there was an abscess of the left frontal lobe. The patient had suffered from sinusitis and a left ethmoid involvement. He came back to the hospital later, suffering from brain abscess. The hard capsule of the old abscess in the frontal lobe was found at autopsy.

Dr. W. P. EAGLETON of Newark said that very few cases showed an optic neuritis. The frontal lobe did not interfere with the cerebrospinal circulation. There must be interference to cause increased intracranial pressure. The examination of the eyes every four hours was important. In sinus thrombosis there was a fullness of the veins on one side. Bilateral enlargement was not important. Some years ago it was pointed out that in a frontal lobe tumor there is an optic neuritis on both sides and then development of atrophy on the side of the tumor. That did not apply to frontal lobe abscess. With extradural abscess and frontal sinusitis it was better to explore the frontal lobe. For some reason or other intracranial abscess was much more commonly associated with extradural abscess than with abscess behind the ear. A diseased frontal bone had something to do with disturbed circulation. Osteomyelitis was comparatively common with frontal bone conditions, and almost unknown with temporosphenoidal lesions.

Dr. MCCULLAGH said that the case reported differed from frontal lobe cases following frontal sinusitis. The child's accident was sustained at four years of age, before the frontal sinus had developed. The abscess was formed at the time of the accident, and was dormant for six or seven years. Pus from both the abscess and the sinus were sterile, which would indicate that this was the case. The abscess ruptured through the posterior wall of the sinus and discharged into the sinus. It was a frontal lobe condition. What Dr. Eagleton had said in regard to the blood supply of the frontal sinus from the dura would furnish an explanation as to why this abscess occurred and ruptured through the bony wall. A very slight increase of pressure might cut off the blood supply and then necrosis would result. In this child's case it was difficult to gauge with accuracy the intensity of the symptoms, because the child was so undisciplined and uncontrolled. Reneated fundus examination was negative for any gross lesion. If there was any change in the size of the vessels it was not reported. In answer to Dr. Freudenthal, there was nothing but edema of the eyelid, which changed from day to day. At the time of operation the edema decreased. The mucous membrane lining of the sinus was thick and degenerated. It must be remembered that this abscess did not follow frontal sinusitis at all. It ruptured into the frontal sinus.

Greetings to Dr. Holbrooke Curtis.—Dr. T. J. HARRIS offered a motion that greetings should be sent from the section to Dr. Holbrooke Curtis, who was severely ill. This was in recognition of the fact that for many years Dr. Curtis had been one of the most active and interested members of the society. This motion was seconded and unanimously carried.

A Method of Restoring Tubal Function.—Dr. E. P. FOWLER of New York presented this paper. The speaker said he had obtained very satisfactory results for a long time by the balloon method. The application was well known. The head was turned over to one side and the muscles pulled upon. In normal cases the ears were opened more readily. In obstructed cases it helped the opening of the tube. There had been much controversy as to whether there was any increase of the air of the nasopharynx in swallowing. The catheter did not give an index of air in the nasopharynx during the act of deglutition. Respiration through the mouth, it was said, caused no increase in intranasal pressure, but in ordinary mouth respiration there was some appreciable change in the density of the air in the nasopharynx. There was a perceptible difference in the balloon during ordinary swallowing. He had had patients for ten or fifteen years, with blocked tubes, who had gotten good results from the use of this very simple means.

Dr. G. EMERSON of Orange, N. J., said that the so-called catarrhal otitic conditions were consequences of the systemic condition of the patient. These cases were familial.

Dr. T. J. HARRIS of New York said he would like to go further than Dr. Fowler. For a long time he had maintained that persistent and often unwise treatment of the middle ear was harmful. Any treatment by inflation without getting at the cause was harmful. One could not cure these cases without getting at the local infection, which was mostly in the nose. The condition would progress unless one could clear up the infection.

Dr. E. L. VANSANT of Philadelphia said that not enough attention was paid to the anatomical construction of the tube. The tube was lined with ciliated epithelium. This must be restored before one could keep the tube clear of mucus. A very simple method was the use of warm air in the Eustachian tube.

Dr. T. CORWIN of Newark said he would like to call attention to conditions of the bony structure and their imperfect development associated with catarrhal conditions. A number of years ago radical suggestions were made, namely, that nasal respiration would be improved by direct mechanical expansion. The maxilla was to be expanded by pressure exerted through the teeth. It had been shown, and advocated by many men, that in early life when the second teeth were about to erupt, expansion of the jaws could be accomplished without any uncomfortable pressure. The jaws were then in a plastic condition. After puberty it became tedious and difficult. A contracted hard palate, or defective palatal development, was evidence of faulty development of the upper maxillary bone. This, in turn, was associated with catarrhal conditions.

Dr. H. S. HEDGES of Charlottesville, Va., asked the speaker to explain the mechanism of the muscles. He had said that they tended to open the tube when the head was on one side, but it seemed that the tensor palati and levator palati remained the same while the palatopharyngeus was more relaxed.

Dr. W. H. HASKIN of New York said that Dr. Brown of Washington was a great advocate of rapid expansion, and he did not hesitate to do a real surgical operation. He did not merely put on the brace. He made an incision and put the chisel between the maxillæ and held the maxilla open. This was widened by a plate until the tissues closed in.

Dr. FOWLER, in closing, said that the whole trouble with regard to inheritance was that "some do and some don't." If there were anything in the theory it should be more regular. In regard to the catheter, he agreed with Dr. Harris absolutely, but there were many patients who, either from lack of time or from lack of money, found it impossible to come with sufficient frequency. That meant that they must do something to help themselves. In these cases the apparatus had helped a great deal. He thought the whole subject of focal infections had been overdone. During the war they often would have lost every tooth in the regiment. He had to call on the colonel to stop it. These teeth were no doubt diseased, but they sufficed to chew with during the war, and served their purpose. In

regard to the ciliated epithelium, it was impossible to inflate without some trauma, but one had to choose the lesser of two evils. One had to get an opening somehow. In regard to expansion of the jaws, it was being overdone. Blocking was nearly always due to congestion, and the absolute blockage was not as much as one thought. Wire apparatus was efficacious, but disagreeable to wear. In regard to the mechanism of the muscles, the pharyngoscope showed that the pharyngeoglossal and the styloglossal were stretched with their fasciæ and aponeuroses. They exerted more or less of a pull.

Deep Cervical Abscess and Thrombosis of the Internal Jugular Vein.—Dr. HARRIS P. MOSHER of Boston read this paper. Examples of cases were cited in which, had the proper diagnosis been made, a fatal termination could have been avoided. The speaker said that the vital structure in the neck, as regards infection, was the internal jugular vein, especially in deep cervical abscess. Chills and septic temperature occurred with phlebitis or thrombosis of the vein. The vein should be laid bare and its condition determined. In phlebitis the vein should be tied, in thrombosis, dissected out. A deep servical abscess should be regarded always as a perijugular abscess. It should be dealt with as a perisinus abscess and watched knife in hand. In the past the cases had been labelled septicemia, and surgery was confined to taking blood cultures. This often led to fatal results. Sinus thrombosis had long been recognized, but the same condition in the vein lower down had escaped notice. Infection came as readily from the tonsil as from the middle ear, and this was one more example of the obvious thing being the hardest to see.

Dr. W. FREUDENTHAL of New York referred to two cases belonging to this class. One, a middle-aged man, had been operated on for mastoid trouble two or three weeks before, and he still had pain and swelling in the neck. The second case was that of a young woman, 25 years old. She had a retropharyngeal abscess. The larynx was almost entirely closed. Both arytenoids were swollen. There was an abscess in the arytenoids. An incision was made by the indirect method. One arytenoid was opened a good deal, and pus came out. A tracheotomy was done and she could breathe better. This perhaps had a bearing on this type of case.

Dr. W. W. CARTER of New York said that in listening to this presentation he had just been able to diagnose a case during the last few minutes, although two years after the patient died. The patient was a nurse, 25 years of age. She had suffered from a peritonsillar abscess, which was opened by the surgeon, but still the patient ran a high septic temperature, varying from 106° down to 96°. She was getting worse. This was six days after the peritonsillar abscess had been opened. The surgeon noted induration of the side of the neck, and thought there was deep-seated pus. He made an elaborate incision, but did not discover any pus. He supposed the induration was low down in the carotid sheath. The patient did not get any better. Dr. Carter was asked to see the case and he said he saw the battle for life was nearly over. The patient died after ten hours. There was no autopsy. He regarded the case at the time as one of death from extreme sepsis.

Dr. S. MCCULLAGH of New York reported a case as a matter of differential diagnosis. The patient had an acute catarrhal condition of the right ear, and had had previously an acute suppuration of the left ear. When seen the left ear was normal. The right ear cleared up under treatment. A short time afterwards his adenoids and tonsils were removed. He was a young man, 22 years of age. About a week after the removal of the tonsils he came to the office, complaining of severe earache on the left, with bulging of the drum. A paracentesis was done. Temperature was 101°. He went home and went to bed. Soon after his family telephoned that the patient was screaming with pain in the head. He had a chill and temperature of 106°, with remissions. The left ear drained very nicely, and there was nothing to be seen in it. A day or two after the paracentesis the temperature persisted. At that time, on the left side of the neck, over the site of the tonsil, there was a slight induration of the glands. Blood culture showed the blood swarming with streptococci. The diagnosis was phlebitis of the internal jugular on the right side, following tonsillectomy, and ligation of the jugular on the left side was advised. The lateral sinus was thrombosed; it was blocked off and the jugular excised. The patient made an uninterrupted recovery. In these cases there was also a possibility of the ear condition being overlooked by going into the neck only.

Dr. H. P. HOWELL of New York said he was surprised the author of the paper did not mention Ludwig's angina. It was frequently considered in the hospitals a few years ago.

Dr. W. C. BOWERS of New York said he saw a patient who had a swelling situated over the left side of the neck. He had a high temperature. The dentist was called in and extracted the two last molars. The family doctor then made a small incision in the anterior pillar of the tonsil, thinking there was an abscess. The patient had a temperature of 106° and severe chills. There was a small swelling on the left side of the palate. A larger incision was made and about half a teaspoonful of pus came out. A blood culture was made and *Streptococcus hemolyticus* was found. Five or six days later the temperature was ranging from 99° to 106°. The jaws were then opened under an anesthetic, and a retropharyngeal abscess, containing 3 ounces of pus, was opened. Four hours later the man died. This belonged to the same class of cases. The whole picture was one of sinus thrombosis.

Dr. LEWIS FISHER of Philadelphia said he had a flash similar to that of Dr. Carter, but his patient was alive to-day. He did not recover from a peritonsillar abscess, and he had a chronic suppurative ear at the same time. Phlebitis of the lateral sinus was suspected. The man had had a radical mastoid done, but there was no trouble in the sinus. The temperature was septic, 96° to 107°. The jugular was tied and the following day the patient was practically well. In any similar case, the speaker said, he would ligate the jugular first.

Dr. H. R. MOSHER thanked the members very much for the very full discussion. The point he wished to make was the unifying conception of the deep retropharyngeal abscess. The pharyngeal fossa was one and the same thing as the jugular fossa. Pus sometimes ran down into the trachea and strangled the patient. It was very gratifying to have so many members recall similar cases. Dr. Howell had said that infection could come from the submaxillary gland. It could come from anywhere. As to Dr. Fisher, whatever he did was always right.

Vestibular Tests as an Aid to the Diagnosis of Brain Disease, with Report of Cases.—Dr. LEWIS FISHER of Philadelphia made this presentation. In Case I the patient was 20 years of age, and was admitted complaining of continuous severe headache, vomiting after meals, blurred vision, drowsiness, anorexia. After neurological examination the case was diagnosed as one of right cerebral tumor and temporal decompression was advised. From an otological standpoint the case was one of central lesion, and presented the problem of accurate localization within the cranium. Good past pointing in both arms apparently excluded the cerebellum. Otological tests suggested that the lesion involved the cerebro-ocular pathways of nystagmus, originating on the right side. Autopsy later showed a large subcortical abscess in the right cerebral hemisphere. Case II, a woman of 62, complained of severe buzzing in the left ear, vertigo, and sharp pain across the top of the head. Otological tests produced a vertical nystagmus, instead of horizontal, indicative of a central lesion. A difficult point in the diagnosis was that the left, or vestibulary nonfunctionating side, had practically normal hearing. A selective destruction of the vestibular fibres only appeared unusual. However, a diagnosis of an angle lesion was made. Autopsy showed a tumor of the petrous portion of the left temporal bone encroaching on the cranial cavity, and extending to the antrum of Highmore. The diagnosis of a cerebellopontile-angle lesion was, however, made when the patient's hearing was good on both sides.

In the third case, a young man of 28, the evidence pointed to the lesion being both central and peripheral. At operation a tumor was found in the cerebellopontile angle, and at autopsy, a few days later, another growth was found to the right of the posterior fossa, involving the cerebellar peduncles.

Dr. W. B. EAGLETON of Newark said that this was another instance of the specialists invading the field of general medicine, and adding their quota to the knowledge that belongs to that field.

Dr. J. H. CULP of Harrisburg, Pa., said he would like to ask how it was that the patient of 55 years retained absolutely good hearing on the side where the tumor was found.

Dr. S. A. BRUMM of Philadelphia thought there should be something said to emphasize the use of vestibular tests. It should be imperative for every otologist to do this more than they do. From experience in the army he was astonished to see how little men who called themselves otologists knew. At the present time he would view with skepticism the diagnosis made by a man who did not know the value of, and practise vestibular tests.

Dr. W. P. EAGLETON of Newark said he would like to know the speaker's opinion as to the value of pointing and deafness in induced nystagmus.

Dr. P. W. PARK of Harrisburg, Pa., asked what was the ophthalmoscopic examination; was anything shown?

Dr. FISHER said that the second patient, the woman of 55 years, had her hearing intact when first examined. She was sent by a general practitioner because she had buzzing in the ear. The good hearing did not persist in this case. The woman became deaf three months before death. She had a proliferation of the bone and involvement of the vestibular fibers before the other fibers. This was the only possible explanation of the phenomenon. As to the ophthalmological findings in these cases, the man with tumor had marked choked disks in both eyes. The woman did not have choked disks. In the first case, a girl, the right eye was clear, but the margins were obscured by exudate. There were two good-sized hemorrhages. The posterior fundus was normal. The eye symptoms suggested cerebral neoplasm on the right side. That was the oculist's report. As to Dr. Eagleton's question regarding the significance of past pointing in cerebellar abscess, he had never been convinced that there was anything peculiar in cerebellar abscess as compared with other lesions. The responses were interfered with in some manner, and very often there would be exaggeration of the response irrespective of the type of lesion.

CLINICAL CONGRESS OF THE AMERICAN COLLEGE OF SURGEONS.

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(Special Report to the MEDICAL RECORD.)

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Radiotherapeutic and Other Methods of Treatment of Cancer of the Uterus.—Dr. S. M. D. CLARK of New Orleans spoke informally. He stated that cervical carcinoma might be divided into groups. In the first group were included those cases in which the existence of the carcinoma had made no constitutional inroads; the patient was a good surgical risk; the disease was confined to the cervix, and there was no infiltration or invasion of the uterus; the uterus was freely movable. In this group of cases he favored radical surgery, since it afforded a mortality of only 5 per cent., and in a large percentage of cases, if there were no metastases, a complete cure. After the radical removal of the cervical carcinoma, the stump of the cervix might be cauterized, the abdomen opened and the glands at the external iliac and uterine arteries examined. If they showed metastases they were removed, together with the uterus, and radium was applied. The second group of cases were those which showed, in addition to the local involvement, constitutional impairment, hemorrhage, and a local condition more advanced than in Group 1, there being slight encroachment on the vaginal wall and slight thickening of the parametrium. In this group of cases radiotherapy was a valuable adjunct, but it fell far short of the mark as a curative agent. The application of radium in these cases previous to operation lessened the operative risk 50 per cent. Patients of this group subjected to radium treatment should be operated upon in from four to eight weeks after receiving the radium treatment or else fibrosis would make surgical interference very difficult. Radium was much preferable to the cautery. Radium, as was well known, had a limited penetrating power, and he believed cancer cells could be eradicated through a wider area by operation. This group of cases was the last in which surgery was applicable. The third group comprised the more advanced cases, with uterine involvement, and it was well to leave these cases alone so far as surgery was concerned and to use radium. In these cases radium was received with open arms and marked a distinct step forward. In 19 per cent. of cancer cases the patient died from the local disease and not from metastases, and if the local disease could be controlled the patient's life might be lengthened. In numberless cases radium had brought new life or an extension of life. It relieved symptoms and lessened discomfort in these advanced cases of cancer. Although it was in no way connected with the title on which he was speaking, Dr. Clark said he could not forbear a reference to the early diagnosis of cancer and the prevention of this disease. After a woman had finished the child-bearing period she should be subjected to a physical examination. A lacerated cervix at this time of life provided an inviting soil for carcinoma and should be repaired. There should be a cancer crusade to disseminate information of such facts as that one in every thirteen women who reached the age of 38 years died of cancer. It was the duty of the Congress to keep up pressure and to keep hammering into medical students and at medical societies the necessity for the early recognition of cancer.

Dr. JAMES F. PERCY of Galesburg, Ill., stated that disseminated heat held and would continue to hold a high and successful place in the curative and palliative treatment of all forms of malignancy. The accomplishment of the best results was being temporarily held in abeyance because of a misunderstanding of the correct application of this agent and its use by the inexperienced who would be its friends but who had not learned the limits of its application. It was a valuable remedy because nerve structures, blood vessels, and muscle cells were more resistant to heat than cancer cells. The application of heat through abdominal incisions could be so regulated that the ureters and important blood vessels could be preserved while the cancer cells in the parametrium and lymph channels were destroyed with their load of infection. By the use of heat one did not transplant cancer cells as one did with the scalpel. With the abdomen open the operator could tell when he had applied enough heat and if he gave too much he would know at once and could take means to repair the damage. After treatment with heat the glands could be removed easily but this was not necessary as they would disappear spontaneously. The methods of producing heat had been much improved and there were electrical devices that did more than spread heat; they made heat. The various forms of electric energy devitalized nerves and affected the blood supply, sometimes causing chronic endarteritis. Nature was not prepared to repair these injuries but burns were a part of Nature and she stimulated their repair. The application of heat was something more than a mere local cooking procedure. It was unfortunate that they continued to talk about the cautery as though it were something else than heat; it was essentially heat. Their 1917 record showed 15 per cent. of the utterly hopeless type of cancers cured for periods ranging from 2½ to 5 years on the basis of sixty-five cases. No doubt a review of these cases to-day would show that more could be added to this 15 per cent. Thus far the application of heat had done more than anything else in cancer of the cervix at the time that it was reaching the inoperable stage.

Dr. HENRY K. PANCOAST of Philadelphia said that, in the treatment of malignant conditions by the *x*-ray or radium, one must consider the local growth, the

metastases existing, and the metastases that were likely to occur. Unless all three zones were treated they could not be successful, and they could not be successful unless the primary growth could be removed. In the treatment of carcinoma of the uterus with the *x*-ray, one must consider the possibility of starting up metastases, and the more nearly inoperable a cancer was the more likely was one to start up metastases. The *x*-ray treatment of carcinoma of the uterus could not be considered as strikingly rational. Its purpose was as a supplement to radium and operation. It could be employed as a postoperative aid but he did not believe it was successful unless radium was used as a free operative or postoperative treatment, but he believed it was an advantage to use it with radium. The use of radium was the method of choice in those cases which started in the cervix and than invaded adjoining structures. If the growth had invaded the broad ligaments and the pelvic lymph nodes, radium alone could not cure, but only gave relief from pain and symptoms. Some believed they became worse after radium treatment. The dose of radium should be the maximum one because it penetrated over an area only a few centimeters in diameter, and beyond this area it did no good. One should not depend on radium treatment if cancer was located where it could be removed. The details in reference to radium treatment should be studied statistically. The radium treatment should be given through many ports of entry (ten or a dozen were not enough), and the *x*-ray should be given anteriorly, posteriorly, and in every direction. Such treatment exerted an effect on the intestinal tract, but this was not to be considered in comparison, with the harm resulting from the growth. The treatment with the *x*-ray must be carried out by as uniform a technique as that connected with the use of radium.

Dr. HOWARD C. BAILEY of New York said that in order to form an estimate of the value of radium in the treatment of uterine cancer, consideration must be given to the way it was used. The cases fell into three groups; (1) Operable, (2) Borderline, (3) Inoperable. In the first group radium might be given from two to six weeks before operation and postoperatively as a prophylactic against recurrence. The minimum dose was 2,000 milligram hours. The postoperative dose should be given three or four days after the operation when the patient had recovered her equilibrium. If large amounts of radium were available a dose of 1500 milligram hours might be given in the body of the uterus, the mass of radium being suitably filtered and directed to the fundus of the uterus. Radium emanations should be directed to the parametrium through the vault of the vagina following hysterectomy. Not infrequently so much of the vaginal wall was removed at operation that it was not possible for radium emanations to reach the parametrium through the vault of the vagina. There were two obstacles to the application of radium postoperatively—the thickening of the scar tissue and restriction of the rectum. In certain borderline cases it might be better not to operate but to employ radium treatment and keep the patients under observation. In large cauliflower growths filling the vault of the vagina and certain other large growths, preliminary cauterization, and the application of radium emanation tubes might be employed, but it must be remembered that by just that much time was the treatment of the parametrium delayed. The operability of carcinoma of the body of the uterus was so difficult to estimate that following operation no case received proper treatment without thorough radiation of the pelvis.

Dr. BURNHAM of Baltimore stated that cancer of the uterus and closely allied cancers of the cervix and vaginal vault presented, not one, but a series of distinctly different problems. The treatment depended upon the extent, location, and histological character of the cancer. The prognosis depended upon the operability of the cancer and the technique employed in its removal. Hysterectomy for carcinoma of the uterus had been fully developed and widely employed for ten years; the tendency was to employ it in too advanced cases. In such cases it was only palliative as it relieved the discharge and pain and prolonged life. With the aid of radium many more cases of carcinoma of the uterus were saved. The speaker discussed separately carcinoma of the body of the uterus, carcinoma of the cervix, and carcinoma of the vagina. Carcinoma of the body of the uterus should be treated surgically and not with radium. When operation was contraindicated radium should be used by intrauterine application; its use had been of much help but he had not seen a single case of huge carcinoma of the body of the uterus permanently cured in this way. In advanced carcinoma of the cervix he had seen some marked improvement under radium treatment and in a few cases a clinical cure. He urgently recommended radium in the treatment of carcinoma of the cervix. In discussing vaginal carcinomas he considered five subgroups depending upon the degree of involvement, and in certain cancers in this group offered a possibility of permanent cure. He quoted statistics showing 15 per cent. of apparent cures in cases that would formerly have been considered incurable, and concluded that radium was a most welcome addition to the methods of treating cancer; a combination of radium and the *x*-ray was better than radium alone; a combination of radium and early operation gave better results than radium alone or operation alone. Radium could lead to painful and even fatal results if improperly used; therefore surgeons should learn how to employ this treatment safely. Would it not be possible for the College of Surgeons to take up the standardization of cancer reports?

Plastic Operations for Facial Burns.—Major GILLIES of Sidcup, England, gave this presentation, which consisted in a lantern-slide demonstration of his methods and results in the treatment of severe facial burns by various plastic operations. In some instances the Wolf graft was used and in some the Thiersch graft. The method of employing the tube-pedicle was demonstrated and its advantages in plastic surgery described. By means of a tube-pedicle it would be possible to reconstruct an esophagus. Procedures by which cartilage was employed in rhinoplasty were described and a slide shown of an upper abdomen and chest in which pieces of cartilage were imbedded awaiting use—a cartilage larder.

Convocation.—Dr. FRANKLIN H. MARTIN presented 400 candidates for fellowship in the American College of Surgeons, fifty of whom were from the Army and fifty from the Navy. Dr. William J. Mayo received the applicants into Fellowship. Honorary Fellowship in the American College of Surgeons was conferred upon Sir Anthony Bowlby, Sir Robert Jones, Major General Tuffier of Paris, and Dr. Irving H. Cameron of Toronto. Surgeon General Ireland awarded the Distinguished Service Medal to Sir Anthony Bowlby and Sir Robert Jones in recognition of the assistance given America in the treatment of her wounded soldiers.

Presidential Address.—Dr. WILLIAM J. MAYO delivered this address, in which he said that the American College of Surgeons was beginning its seventh year under inspiring circumstances. In spite of the war it had made progress in all lines. The Clinical College of Surgeons had been taken over by the American College of Surgeons. Only members would be welcome to its clinical meetings. The organization was open to all men of sterling ability within the limits of North America. Unless a sufficient number of men of high ideals and adequate professional attainments were affiliated with it, it would fail of its purpose. There should be one surgeon to 1,000 persons. This was about the proportion they had in the Royal College of Surgeons of England. The next generation would not be so much troubled about educational standards as this one had been. He believed for the present that a man who brought a high order of skill in surgery should not be refused because of a lack of fundamental training. He thought, however, that their educational standards should be raised from time to time. Their educational requirements now included graduation from college, and from medical college and then special training in the branch of surgery the surgeon expected to practise. Three years at least would be required for such special training. Under the present system, if three years were added it brought the man to the age of thirty-one years before he was prepared to practise surgery, and the question was whether the man would not reach his life work too late. Another question that arose was whether the cost of this education would not make of surgery an aristocracy, a profession open only to the sons of

rich men. One investigation carried out among college graduates showed that those men who had been graduated before the age of twenty-five years were a greater asset to their community than those who had been graduated at a later age. All were agreed that the time devoted to medical education should not be shortened. It was also agreed that much time was lost during the period of preliminary education. Dr. Mayo proposed a plan which, he stated, was in successful operation in a Minnesota town whereby the primary and grammar grades could be completed in six years. He insisted that the instruction should be given in the English language. It should be a common education given along common sense lines and might be made a requisite for suffrage. Languages should be optional, though he believed Latin would be necessary for a professional man. There was an idea prevalent among cloistered scholastics that an education along practical lines with a commercial object in view could not be cultural. This idea was outworn. The great problem was to get money enough to equip the universities so that they could accommodate all those who desired an education. To meet this problem standards should be raised until the number of those who could take a university education was reduced. It should be the duty of the American College of Surgeons to see that certain faults in preliminary education were remedied so that they could graduate medical students at an earlier age. Many South American universities were preeminent as educational institutions. If it wished to be truly American the American College of Surgeons should affiliate with these South American universities. He felt sure that a way would be found to this end.

Fellowship Address.—Sir Anthony Bowlby delivered this address, in which he said that the late war that shook the world had passed, the Ship of State had weathered the storm and lay in harbor, and the time had arrived to see what they had learned by the experience. Millions had died in battle and tens of thousands had been wounded. He would consider the lessons that had been learned in the treatment of these wounded men, confining his remarks to France and Belgium. The world had a right to expect that it would profit by their war experience. Far more had been learned than any one would have dared prophesy before the war. The system of caring for the wounded from the front lines to the base hospital had been organized with a perfection that would never have been thought possible before 1914. Before that time it was thought impossible to treat the wounds of war as the wounds of peace were treated. It was not realized that that was just what they should have expected to do; that was now their ideal. It paid a country to treat the wounds of its fighting men as well as possible, since it helped the army to return the men to the front sooner and in greater numbers, and it was a great saving in pensions. In principle the same thing applied to the wounds of industry. The fact that the wounded soldier frequently suffered from lack of food and exposure in addition to his wounds often caused shock out of all proportion to the extent of his wounds. Often, with complete rest, hot drinks, and plenty of water, the soldier would recover from shock. Much wound shock could be obviated by a supply of well warmed and well equipped ambulances. He had just equipped 500 motor ambulances, with well trained drivers and orderlies, for the transportation of persons injured in industry, and he suggested the same plan to his hearers. One could train these men to apply first aid dressings as well or better than professional surgeons had been accustomed to apply them before the war.

Loss of blood volume and fall of blood pressure were treated by rest. As all the soldiers had limited supplies of water they required water as soon as they arrived at the first aid station or ambulance. Rectal injections were useful if the patient had lost much blood. The blood pressure and blood volume were improved more by rectal than by intravenous injections. Physiological saline solution was practically useless. It was the opinion of Bayliss and of most observers that 6 per cent, gum arabic in saline solution was of benefit in maintaining the blood pressure. Transfusion of blood had been of benefit where there had been an excessive loss of blood. Properly tested and citrated blood was sent up to the front and could be used from twelve to eighteen hours after it had been citrated. He had suggested that a sterilized gum solution be kept ready for use. Where limbs were hopelessly shattered or the abdomen perforated, the patients had to be operated on as soon as possible, even at the risk of additional shock. Most of the men had excessive bronchial exudates, as they were wet almost all the time, and in order to make the administration of the anesthetic safer the ether vapor was warmed. Later they decided that ether was not a safe anesthetic, not only because of the possible danger at the time of administration, but because of the sickness after the operation, which often took away the patient's last chance for life. They then employed nitrous oxide and oxygen. With this anesthesia even extensive operations could be performed, and they believed this had been the means of saving many lives. In abdominal operations the best results followed with the use of nitrous oxide and oxygen anesthesia with infiltration anesthesia of the abdominal walls. It was by the use of this combination that they were successful in saving 74 patients out of 104 with abdominal wounds.

In the treatment of fractured arms use was made of suspension and extension, and there were no longer contractions caused by bandages. Legs were no longer encased in wooden boxes or in plaster of Paris, and in consequence wasting muscles and defects in the joints had been greatly diminished in all the hospitals. The setting of a fractured limb, as taught in the medical schools, was only the beginning and not the end of surgical treatment. As long as the principles were kept in view the details must be left to the individual surgeon. A too early standardization of the operative methods employed in the war would spell stagnation. The principles would remain while the methods would change. Looking back to the beginning of the war they had much to unlearn before they could learn, and many were unduly influenced by their previous experience.

Their experience had taught them the necessity of excising all devitalized tissue and the uselessness of attempting to sterilize wounds by the use of powerful chemicals. Lister himself had long ago said that if an infected scalpel conveyed pus to a wound it was not likely that it could be sterilized by any antiseptic we now had or were likely to have. The next question was how to treat wounds after they had been properly cleansed mechanically. The answer was by early primary or late primary closure. Wounds healed well and permanently even if there were some organisms present, so long as they did not contain the virulent streptococcus. The results obtained might be summed up by saying that not only were many lives saved by these methods of wound closure but a further lesson from the army point of view was that fewer beds were occupied and nursing service was spared. Furthermore, many soldiers were returned to the front within a few weeks instead of suffering for months. He wondered if in the future they would close knee wounds and delay primary suture in extensive wounds in civil life?

With reference to suppurative wounds they had learned two things. The first was that it was more often possible to close them by suture than they had thought in advance. He had seen successful primary closure of compound fractures. Second, that the Carrel treatment supplied a thoroughly scientific and carefully thought-out method of great use if applied at the right time. They had learned much that would be useful in the treatment of suppurating wounds in civil surgery, and much that might be made use of in the prevention of suppuration. He believed in the future the surgeon would work more with the bacteriologist. While many advances had been made, there was still much to be learned. The safe attitude was that, however good a method might be, it was always possible to evolve another that might be better still. The surgeon of the immediate future might expect that there would be improvement in the transportation of the wounded and that shock would be better treated. If he were to enter into the surgery of the head, chest, abdomen, and the different regions, Sir Anthony said, he could cite many instances showing notable advances in surgery, but he had only attempted to mention the general principles.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

COLORADO BOARD OF MEDICAL EXAMINERS.

Denver, October 7, 1919.

(*Concluded from page 382.*)

OBSTETRICS.

1. (*a*) What do you understand by accidental hemorrhage and its causes in obstetrical practice? (*b*) Give briefly symptoms of the following varieties of accidental hemorrhage: (1) slight cases, (2) fulminant cases, (3) recurrent cases.

2. (*a*) Give definitions for cephalic, bipolar cephalic, and podalic versions. (*b*) Name five important indications for podalic version.

3. (*a*) Under what conditions would you hasten delivery in the interest of the child? (*b*) Why best to place your patient in Walcher's position if you are to apply forceps at brim of a contracted pelvis?

4. Give briefly your technique in a podalic version.

5. Name the four types of vertex presentation and how you would diagnose a R. O. P. position.

6. What are your instructions to the nurse after normal delivery as to the care of mother and child for the period of three days?

7. What do you understand by a subinvolution of the uterus and what means would you use to deliver it?

8. Name a few causes of sore nipples in a nursing mother. Do or would you recommend any special preventive steps before the birth of the child?

9. What indications during the second stage of labor might appear to justify you in the use of a high forceps delivery.

10. Describe the symptoms of a ruptured uterus during labor.

SURGERY.

1. What is gangrene? Its causes and varieties.

2. Give differential diagnosis in gastric crises, acute appendicitis, acute cholecystitis. What chest conditions may give symptoms simulating any of the foregoing?

3. What symptoms accompany pathological conditions of the pituitary body?

4. Give differential diagnosis in tuberculosis and syphilis of the larynx.

5. Give causes of varicose veins.

6. Name the varieties of talipes and give causes of each variety.

7. With what conditions may brain abscess be confused? Give differential diagnosis.

8. Define the terms thrombus, phlebitis, and varix with causes of each.

9. Give the symptoms and differential diagnosis of septic surgical fever.

10. Discuss prolapse of the rectum in children, giving causes and indication for surgical interference.

ANSWERS.

OBSTETRICS.

1. *Concealed hemorrhage* is a bleeding resulting from the partial or complete separation of a normally seated placenta, occurring in the later months of pregnancy or at the beginning of labor. *Causes:* Loose attachment of the placenta, violent muscular effort, violent uterine contractions, short cord, excessive distention of uterus, external violence as blows and falls, diseases of decidua or placenta, nephritis, toxemia, and acute infectious diseases.

Apparent variety.—"Accidental hemorrhage usually occurs before labor begins or in the first stage. It is necessary to distinguish it from rupture of the uterus and from placenta prævia. The former occurs later in labor and is attended with recession of the presenting part, with diminution of the uterine tumor, and the development of a new abdominal tumor. The latter is readily recognized or excluded by a physical examination. Bleeding from low implantation of the placenta may easily be mistaken for accidental hemorrhage."

Concealed Variety.—"The principal signs are: Extreme pallor; shock of some degree; persistent tension of the uterus, while the rhythmic contractions become weak; a node or boss forms on the uterine surface at the site of the retroplacental blood collection, or the uterus becomes atonic and is distended by the accumulation of blood. The uterine tumor may be boggy, or tense, especially in the upper segment; the fetal parts are obscured in palpation; there may be continuous pain and tenderness in certain cases from distention of the perimetrium; *bloody liquor amnii may be detected by pushing up the presenting part and allowing a portion of the liquor amnii to escape;* the fetal heart-tones are feeble and irregular, or absent.

"Together with these signs are the signs of internal hemorrhage, viz., collapse; pallor; surface, especially of extremities, cold and clammy; excessive perspiration; respiration irregular; sighing; sobbing; yawning; pulse rapid, thready, and compressible; thirst; jactitation; tinnitus aurium; dyspnea; nausea; dimness of vision syncope.

"It should be remembered that a concealed hemorrhage may coexist with an insignificant apparent hemorrhage."—(Polak's *Manual of Obstetrics.*)—

2. *Cephalic version* is the operation of version, in which the head of the child is brought down.

Bipolar cephalic version is the name given to cephalic version when the operator manipulates with one hand on the anterior abdominal wall of the patient, and the other hand in her vagina; two or three of his fingers are passed into the uterus.

Podalic version is version in which the feet of the child are brought down.

Five indications for podalic version: (1) in placenta prævia; (2) in malpresentations of the head; (3) in simple flattened pelvis, and in minor degrees of pelvic contraction; (4) in prolapsed funis; (5) in any case where speedy delivery is imperative.

3. *Delivery should be hastened, in the interest of the child,* in: Placenta prævia; moderately contracted pelvis; toxemia of pregnancy; when the mother is suffering from severe cardiac respiratory or renal disease. Also when the fetal pulse is very rapid, and the heart sounds are weak.

4. *Braxton Hicks' method of bipolar (podalic) version:* "The patient should be placed in the lithotomy position and be deeply anesthetized, to relax the parts and allow the whole hand to be pushed into the vagina. The external hand is placed over the breech, so as to depress it; while the presenting part is tilted away from the brim by the fingers inserted through the os. The fingers press against the front of the child and flexion is lessened. When the head is out of the brim the external hand can be used to elevate it towards the fundus. As soon as a knee or foot comes within reach of the internal fingers, it should be caught and brought into the brim, the membrane being ruptured at the same time. If the os is fully dilated, delivery may be finished at once, as in an ordinary breech case; but if the os is only partially dilated, it must be left to nature, to allow of dilatation."—(Jardine's *Delayed and Complicated Labor.*)

5. *The four types of vertex presentation,* are: (1) Left occipito-anterior; (2) Right occipito-posterior; (3) Right occipito-anterior; (4) Left occipito-posterior.

To diagnose a R. O. P. position: Abdominal examination shows the fetal back on the right side and posteriorly, with the extremities above and to the left anteriorly. The fetal heart sounds are best heard in the right flank below the umbilicus. Vaginal examination shows the dome of the vertex presenting, with the smaller fontanelle posterior and pointing to the right sacro-iliac synchondrosis; the sagittal suture is in the right oblique diameter, and the anterior fontanelle is high up anteriorly near the left acetabulum.

6. DIRECTIONS FOR THE NURSE.—The following are given by Hirst (*Text-book of Obstetrics*):

No vaginal injection to be given unless ordered. Take the temperature three times a day—morning, noon, and evening. Place pad of nursery cloth *under* patient; change it when soiled. Occlusive bandage to be made up of salicylated cotton and carbolized gauze, with sterile hands, and to be changed, for the first five days, every four hours. The external genitals to be washed off four or five times a day with warm corrosive sublimate solution, 1:4000, made up with boiled water. Use absorbent cotton for this purpose. If, at the end of twelve hours, the bladder cannot be emptied naturally, use a catheter Afterward, if necessary, catheterize

patient three times a day. The patient is to lie on her back; she may be moved from one side of the bed to the other several times a day; her limbs may be rubbed with alcohol and water or bathing-whisky once a day.

The nurse's hands must be protected by sterile rubber gloves before catheterizing the patient, cleansing the genitals or breasts.

Diet.—First 48 hours.—Milk (1½ to 2 pints a day), gruel, soup, one cup of tea a day, toast and butter. *Second 48 hours.*—Milk tost, poached eggs, porridge, soup, cornstarch, tapioca, wine-jelly, small raw or stewed oysters, one cup of coffee or tea a day. *Third 48 hours.*—Soup, white meat of fowl, mashed potatoes, beets, in addition to above.

Child.—After being well rubbed with sweet-oil, the child is to be washed on the nurse's lap. The bath-tub may be used by the end of the first week. Water not over 100° F. The cord is to be dressed with salicylated cotton. Observe carefully for bleeding. A good dusting-powder for the navel is salicylic acid 1 part, starch 5 parts. The child should be bathed daily, about midday, in the warmest part of the room. Use castile soap and a soft sponge; avoid the eyes. Diapers changed often enough. For chafe, use cold cream and talcum powder.

Nursing.—The child is to be put to the breast every four hours for the first two days. *No other food is to be given it.* After the second day it should be nursed every two hours, from 7 A. M. to 9 P. M., and twice during the night (1 A. M and 5 A. M.). After every nursing the nipples are to be carefully dried and then smeared with a little sweet-oil for the first week or two, applied with fresh pledgets of absorbent cotton.

7. When the uterus does not return to (approximately) its normal size and condition within about six weeks after labor, the condition is called *subinvolution. Subinvolution* is caused by fibroid tumors, pelvic inflammatory conditions, early resumption of sexual intercourse, premature rising from bed, retained secundines, uterine displacements and adhesions, etc. It is characterized by enlarged uterus and irregular bleeding. In all cases rest in bed, copious hot vaginal douches, abstinence from sexual intercourse, correction of constipation, and the administration of tonics are beneficial. Any treatment should be preceded by thorough curettage. Displacements should be corrected.

8. *Causes of sore nipples:* Cracks, fissures, erosions, and chafing, are often due to poor development of the nipples, and to maceration and lack of cleanliness. During the latter part of pregnancy the nipples should be bathed constantly with soap and water, gently massaged with oil, or rubbed with alcohol; boric acid, glycerin and tannin or some other hardening or disinfectant agent may be used. The nipple must be kept clean and dry.

9. *Indications for the use of forceps* are: "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 3. *Passenger at fault:* A.—Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B.—Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). 4. *Accidental complications:* Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both."

10. *Ruptured uterus* is announced by a sudden, acute, and persistent pain. Sometimes the sound of the rupture is heard by the patient; the symptoms of internal hemorrhage and shock are present—collapse, air-hunger, cyanosis, rapid, feeble pulse; the uterine contractions cease. Vaginal examination shows that the presenting part of the child has receded from its former situation owing to escape of the fetus (partially or completely) through the rent into the abdominal cavity, where it may be felt by abdominal palpation.

SURGERY.

1. *Gangrene* means death of macroscopic portions of tissue.

The varieties are: Moist and dry (clinically); and direct, indirect, and specific (etiologically).

Dry gangrene occurs when death happens in a part which has been previously drained of its fluids. The usual cause is arterial thrombosis supervening on atheroma or calcification of vessels.

Moist gangrene occurs when the dead part is full of fluid, and may be aseptic or septic, generally the latter.

Direct gangrene may be due to: Crushing of the part; pressure; acute inflammation; the action of heat or cold.

Indirect gangrene is death of a part due to a cause acting at some distance—*e. g.*, gradual diminution in the caliber of the blood vessels; sudden obstruction in the blood vessels; imperfect innervation; general causes such as diabetes, acute fevers and the use of ergot.

Infective gangrene is due to specific infective organisms: Acute traumatic gangrene due to the bacillus of malignant edema; phagedena; cancrum oris or noma.—(From *Aids to Surgery.*)

2. *Gastric crises.*—Lightning-like attacks of agonizing, cramping, epigastric pain, associated with nausea or violent vomiting, at first of but a few minutes' duration, later persisting for hours or days, separated at first by long intervals, but progressively increasing until for a period of weeks they may occur daily.—(Greene's *Medical Diagnosis.*)

In *appendicitis:* The pain is at first diffuse, but later becomes localized over the appendix in the right iliac fossa; nausea, vomiting, and constipation may be present; tenderness over the appendix and rigidity of the right rectus abdominis muscle are present; there is generally moderate fever.

In *cholecystitis*, the pain is in the right hypochondriac or epigastric region, and occurs in paroxysms and without reference to time of eating; nausea, vomiting and jaundice may be present; constipation is common; and there is generally severe prostration.

"When the three cardiac symptoms of the disease are present—that is, sudden onset of acute abdominal pain, followed by vomiting, occurring in one previously well; unilateral rigidity of the right lower abdominal wall; tenderness over the site of the appendix—the diagnosis of *acute appendicitis* is warranted in nearly every case."—(Deaver's *Appendicitis.*)

Thoracic Conditions.—"Cases of both pneumonia and pleurisy occur, in which there is complaint of severe pain in the abdomen at the onset of the disease. This is especially true in children. There may be rigidity of the abdominal muscles on the side affected. In pneumonia there is a history of a chill. The acute onset is followed by dyspnea, and marked increase in respirations and pulse-rate. The pain is seldom as well localized as in the acute abdominal conditions, nor is the muscular rigidity as circumscribed and constant.

There is one form of pleurisy (diaphragmatic) which simulates acute abdominal affections very closely. The breathing is shallow and costal, the pain is severe and referred to the upper abdominal region."—Eisendrath's *Surgical Diagnosis.*)

3. In *hyperpituitrism*, or excessive secretion of the pituitary gland, there may be a narrowing of the field of vision, followed by acromegaly; this latter consists of a marked overgrowth of the head and extremities, the face becomes larger and coarser, the skeleton increases in size, the patient becomes like a giant, the terminal phalanges of the fingers become "mushroomed," the skin becomes thickened, there is an increase of hair on the body, and sexual activity is diminished. In *hypopituitrism*, or diminished secretion of the pituitary gland, the patient shows small stature, development of fat, lack of hair, delayed or deficient sexual development, the temperature is subnormal, blood pressure is low, the mental attitude is sluggish and there is a tendency to drowsiness.

4. TUBERCULOSIS OF LARYNX.	SYPHILIS OF LARYNX.
Pain severe on deglutition.	Pain usually slight.
Favorite site in the interarytenoid space, and base of arytenoid cartilages.	Attacks any portion of the larynx.
Ulcerates slowly.	Ulcerates rapidly.

TUBERCULOSIS OF LARYNX.	SYPHILIS OF LARYNX.
Usually first appears as small spots or nodules which are rapidly followed by great edema.	Is rarely seen in stage of induration, the first evidence being a clear-cut, deep ulcer.
Great edema of arytenoids.	Some induration around ulcer, but usually very little edema.
Ulcers extend laterally but not deeply.	Ulcers extend deeply, often involving cartilage.
Surface of ulcer covered with thick mucopurulent secretion and agglutinated mucus.	Surface of ulcer covered with mucopurulent secretion and necrosed tissue.
Mucous membrane usually pale.	Mucous membrane hyperemic, injected.
Laryngeal stenosis rarely occurs.	Laryngeal stenosis uncommon until cicatrization occurs.
Health impaired previous to laryngeal involvement.	General health unimpaired.
Previous or coincident pulmonary trouble common.	Frequently evidence of syphilitic disease in other tissues.
Iodides have no influence.	Readily improves under iodides.

—(From *Reference Handbook of Medical Sciences.*)

5. *Causes of varicose veins*—Overdistention, caused by long standing; increased abdominal pressure from tumors or pregnancy; congenital overdevelopment of the veins; failure of the valves in the veins; blocking of deep veins by a thrombus.

6. VARIETIES OF TALIPES, WITH CAUSES.—(1) *Talipes Equinus*, generally acquired, rarely congenital; infantile paralysis of extensor muscles of foot; partial paralysis of leg muscles, the calf muscles overcoming those on the anterior surface; spastic contraction of the calf muscles; compensatory to shortening of the leg, as in hip disease; from pressure of the bedclothes, as in talipes decubitus. (2) *Talipes equinovarus*, may be congenital or acquired; paralysis of extensor and peroneal muscles; injury to external popliteal nerve; overaction of calf muscles; (3) *Talipes calcaneus*, rarely congenital, usually the result of infantile paralysis of the calf muscles. (4) *Talipes valgus*, rarely congenital, results from paralysis of the tibialis posticus and the flexors, with secondary contraction of the peronei.

7. BRAIN ABSCESS.—"The *symptoms* in traumatic cases are acute and, as there is usually diffuse meningitis, there is intense pain, fever, and rigors, coma quickly supervening. In the more common chronic cases the symptoms are often vague in the early stages, but when well marked consist in signs of intracranial pressure. 1. The *headache* and tenderness are severe and localized to the site of the abscess. 2. The *temperature* is subnormal, unless there is associated meningitis. 3. The *pulse* is markedly slowed, even down to 30 or 40. 4. The patient is quite intelligent, but *cerebration* is very slow; vomiting and optic neuritis are usually present. 5. *Motor symptoms* may occur if the abscess is in the anterior part of the temporosphenoidal lobe, either irritative or paralytic. If the cerebellum is affected, there is giddiness both while walking and lying down, together with weakness of the hand grip and increase in the knee jerk on the side affected. Lateral nystagmus often occurs."

It is to be diagnosed from meningitis, extradural abscess, and lateral sinus thrombosis:—From *meningitis*, by the fact that in meningitis there is fever, great restlessness, delirium, photophobia, pain and spasm in the muscles, especially at the back of the neck. An *extradural abscess* is always accompanied by fever. In *lateral sinus thrombosis* there are rigors and profuse sweats, and there may be a hard tender cord in the situation of the internal jugular vein. Chronic abscess and tumor are often indistinguishable in their symptoms, but the presence of chronic otitis media suggests abscess.

8. A *thrombus* is a clot formed within the lumen of a blood vessel during life.

Causes of thrombosis: (1) changes in the walls of the blood vessels, due to the presence of infection or foreign bodies; (2) changes in the blood, whereby its tendency to coagulate is increased; (3) diminished rate of the blood flow, due to weak heart action or obstruction.

Phlebitis is inflammation of the wall of a vein. It may be *caused* by injury, pressure, thrombosis, gout, septic wounds, inflammatory lesions outside the vein. It often accompanies varicose veins.

Varix or *varicose vein* is a dilated or tortuous or elongated vein. For *causes*, see Question 5.

9. *Septic traumatic fever* is the fever which accompanies an ordinary septic wound. It is most marked when the wound is closed. The temperature rises to 101° to 103° F., often with a rigor. It falls rapidly when the wound is opened, and is at an end when the layer of granulations prevents further absorption. *Sapremia* is caused by the absorption of a large dose of toxin. A large or virulent infective focus exists (*e. g.*, a septic placental remnant in utero, or a localized appendicitis), and from this toxins (but not bacteria) enter the circulation. A rigor with rapid rise of temperature to about 104° F. is the first symptom. In the worst cases the temperature remains subnormal. Vomiting and diarrhea, delirium or coma, dyspnea, or albuminuria may occur, according to the organs which react most to the toxins. Dry tongue, quick pulse, scanty urine, and headache are the rule. All the symptoms subside rapidly when the infective focus is freely opened and cleared out. *Septicemia* is caused by the absorption and development of bacteria in the blood of the patient. Local inflammatory signs may be of any degree. Temperature rises to 104° to 105° F. with a rigor, and remains fairly high without marked intermissions. The temperature becomes subnormal, while the pulse rises, in fatal cases. The symptoms are the same as those of sapremia, but of a further intensity. In sapremia and septic traumatic fever there are three points to help in the distinction: (1) The presence of an inflamed wound or local infective focus in which the local signs are in proportion to the constitutional; (2) the rapid amelioration of the symptoms on freely opening the infective focus; (3) the fact that repeated blood examinations give a negative bacterial result. *Pyemia* is distinguished by the repeated rigors, the intermittent temperature, and the local abscesses.—(From Grove's *Synopsis of Surgery.*)

10. *Prolapse of rectum in children.—Causes:* In most cases several factors contribute to the production of the prolapse, the most important and constant of which are undue laxity of the perineal and rectal tissues, including the sphincters and levator ani muscles, and some cause of repeated and excessive straining. In young children, for example, after any exhausting illness the perineal muscles become weakened and relaxed, and the pads of fat that surround the rectum disappear, and the bowel is thus deprived of its natural support. If, under these conditions, the patient suffers from constipation, diarrhea, rectal polypus, worms, phimosis, stone in the bladder, or any other condition that induces severe straining, prolapse of the bowel is very liable to develop. The violent muscular efforts caused by whooping-cough or bronchitis may also determine prolapse in a weakly child. The condition has also been attributed to the pernicious habit of allowing the child to sit at stool after the bowel has been emptied.

Treatment—The *reduction* of a prolapse is best effected by raising the pelvis—a child may be held up by the heels—smearing the protrusion with vaseline, and applying gentle pressure over the apex of the cone. After the mass has slipped through the anus, a soft pad is placed between the nates and fixed securely in position by a T-shaped bandage, or the buttocks may be pressed together and held in this position by a strip of adhesive plaster passed from one trochanter to the other. The patient should remain recumbent for an hour or two after reduction. Constipation or any other existing cause of straining must be corrected, and means taken to ensure easy and regular movement of the bowels. The child should be made to defecate while lying on the back or on the side. Injections of ice-cold water, or of solutions of alum or sulphate of iron, are sometimes useful. In children it is seldom necessary to operate.—(Thomson and Miles' *Surgery.*)

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Original Articles.

INFLUENCE OF THE MALE ON THE PRODUCTION OF TWINS.*

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ABOUT 1 per cent. of all human births are plural births. As is well known, twins are of two types: namely, those which are derived from two eggs ovulated simultaneously or nearly so, and those derived from a single egg which has formed two embryos. In the former case, each embryo is enveloped in its own chorion; in the latter, both embryos are enveloped in one and the same chorion. Frequently a mother will have more than one pair of twins. This condition may be called repeating. The statistics given in this paper are largely derived from families of repeaters. The existence of repeaters indicates that the production of twins is determined in part at least by the constitution of the mother, since she must have an ovarial structure that readily permits double ovulation. It is easy to understand how such a structural idiosyncrasy of the mother might reappear in her own daughters and thus that the tendency to twinning should show itself as an hereditary trait.

If now the close relatives of repeating mothers be taken as a population for study, it is found that in them the ratio of twin production rises to 4.5 per cent., which indicates that such mothers belong to strains in which the factors that make for twinning are four times as effective as in the population at large. If, on the other hand, one considers as a population the close relatives of fathers of twins, then one still finds that the incidence of twins in this selected population is much above that in the population at large, namely 4.2 per cent.—a ratio nearly as high as that found for the relatives of the mothers. It appears then that, in twin production, the paternal inheritance is real and nearly as potent as the maternal. The question at once arises—how can this be? We can understand inheritance of a tendency to double ovulation, but why do the fathers also of twins so generally belong to twin-producing stocks? It may be added that this phenomenon seems to occur both in the case of binovular and uniovular twins. It has been alleged by some that there is no inheritance in the production of uniovular twins, but our family statistics give the rate of twin production in the families of either father or mother of identical twins at not far from 13 per cent. Though the rate is based on only 30 families, yet it indicates that inheritance is even more marked in uniovular than in binovular twins.

But to return to our problem of the possible rôle of the male in twin production. The frequently denied possibility of such influence depends on a tacit assumption which seems never to have been challenged by students of twin inheritance. This assumption is that the determining differential fact in twin production as contrasted with single birth production is the constant double ovulation in the first case and the constant single ovulation in the second. Whenever two eggs are simultaneously ovulated at a period when fertilization occurs, there will be twins. Under such an hypothesis, it will be difficult to understand how the results are influenced by any tendency toward twin production from the father's side of the house.

If, on the contrary, the hypothesis were formulated (false as it would be) that in women two eggs are always simultaneously ovulated, then the frequency of occurrence of single births would be accounted for on the ground of some peculiarity in the male, and it would be recognized that the mother had little or nothing to do with determining the deviation from two in the observed number of young at a birth. Now, the hypothesis just proposed is, as stated, false and the facts which I shall offer in the present paper demonstrate that the first hypothesis (that the number of eggs ovulated by the female determines the number of births) is no less false. The facts lie between the two hypotheses. Double ovulation is far commoner, proportionately, than twin births, and here we see the opportunity for the influence of the male.

We have all too inadequate statistical data concerning the frequency of double ovulation. The most extensive series of statistics is that obtained by Leopold and his pupils. To this collection additions have been made from the more scattered observations of others. Taken altogether, it appears that probably between 5 and 10 per cent. of ovulations are double, as proven by the fact that, in ovaries of women of child-bearing age which have been carefully examined, relatively recent corpora lutea of the same age have been found in between 5 and 10 per cent. It appears that the proportion of twins actually born is less than one-fifth as great as the proportion of double ovulations.

The question now arises—what has happened in the 80 per cent. or more of the cases in which potential twin production has not been realized? The answer to this question is to be secured by comparative statistics on the number of corpora lutea

*Read before the Section on Obstetrics and Gynecology of the New York Academy of Medicine, February 24, 1920.

in relation to the number of embryos in mammals which regularly produce many young at a birth. Accordingly a study has been made of the pregnant uteri of swine and a comparison made between the number of embryos in the course of development and the number of recent corpora lutea. The result of a number of observations is given in the following table:

Observation number	Number of recent corpora lutea	Number of embryos found	Average length of embryos
1	3	3	15.0 cm.
2	6	3	10.0 cm.
7	8	7	6.5 cm.
12	9	2	2.5 cm.
13	8	7	2.0 cm.
	34	22	

From this statement it appears that there is a regular deficiency of from 1 to 7 embryos as compared with the number of corpora lutea. The reason for the deficiency in the number of embryos is no doubt complex. One element becomes very clear when an examination of uteri reveals some embryos that are 20-30 mm. long and, in the same uterus, those which lag far behind their fellows and may be only 5 mm. long, have stopped developing, and may even be undergoing a secondary degeneration. This is a fairly common phenomenon in the series of embryos to be found in the horns of the uteri of swine and other multiparous animals. Similar blighted fetuses have doubtless been found by every obstetrician of experience. Scores of cases of blighted twin fetuses are recorded in the literature, and if only the placentæ and envelopes of supposed single births were systematically scrutinized, it is certain that such blighted fetuses would be much more commonly observed than at present. Also among humans we have the phenomenon of miscarriages. These occur in all embryonic stages, from one in which they are recognized only as a disturbance that is followed by the resumption of the interrupted menstrual series to the stage of premature still birth. Such miscarriages are due to a large number of causes, but doubtless one cause is that of sheer inability to continue development because of internal weakness of the embryo. The causes of still births are numerous, and there has long been recognized a category of still births for which there is no sufficient external cause of the nature of infection, traumatism, or constitutional disease of the mother. The fetus simply dies through a lack of sufficient developmental impulse, very much as a marasmic baby dies after birth, despite the best of care. We must recognize as a regular phenomenon the incapacity for development on the part of certain zygotes which have been implanted in an apparently healthy environment.

Such incapacity for development has been observed by geneticists in a large number of cases and they recognize the category of lethal factors which, brought in by one or both parental germ cells, inevitably prevent full development. Such lethal factors correspond to gross variations in essential visceral organs and run parallel to such gross variations of external organs as cleft palate, microphthalmia and absence of appendages. One of the earliest described cases of lethal factors was that which prevents the development of yellow-haired mice which get the yellow factor from both parents. Earless sheep (apparently) and numerous cases in the fruit fly, *Drosophila*, are other examples of bearers of lethal factors. Lethal factors may kill at any age—at the second, fourth, or sixth month, at the time of birth, or in the first month or two after birth. It is time that gynecologists and obstetricians recognized the great importance of lethal factors in human development. These factors help to explain many cases of physiological sterility and repeated tendency to miscarriage, still birth, and marasmus.

Now lethal factors may be brought into the zygote by the egg alone, by the sperm alone, or by both. They are not found in all the germ cells; it may be, in only a small proportion of them. When they occur in the gametes of both consorts, small families with some feeble children may be expected. But when they are absent in the germ cells of both parents, then, in a good environment, the fertilized egg will develop vigorously with good prospects of reaching maturity. Now it is in such families that any tendency toward double ovulation will be expressed in the production of healthy twins. It may be noted in passing that statisticians have long recognized that the proportion of twins is larger in highly fecund families than in those that produce few offspring, and this is now seen to be because in such highly fecund families the germ cells contain few lethal factors and there is a larger chance that double ovulation will result in twins.

In addition to lethal factors one must recognize that there is probably a frequent failure of fertilization of the egg, even when conditions would seem to be propitious. This is indicated by the fact that in swine one practically always finds more recent corpora lutea than embryos in any state of development. One or more of the eggs have probably not been penetrated by active spermatozoa. We must conclude, therefore, that in a certain proportion of double ovulations one of the two eggs may fail of fertilization, while the other goes on to development.

The preceding considerations make it clear where the male factor comes in in twin production, for the father can, as much as the mother, determine whether both of a pair of simultaneously ovulated eggs shall be fertilized, and whether or not they shall receive lethal factors.

A word may be added concerning one-egg twins, which are always of the same sex and are sometimes called identical twins. The theory of identical twins has varied from time to time. Some years ago it was shown experimentally that the two first cleavage spheres of sea urchin eggs might be more or less completely shaken apart and each sphere develop into a complete individual. This result was applied to man as an explanation of identical twins and double monsters. Within the last ten years, however, through the observations of Newman and Patterson on the armadillo, an animal which regularly produces four embryos from one egg by a process of budding, the theory of budding has been applied to the explanation of identical twins in man; and some fragmentary observations of very early human embryos support the view. Meanwhile attention is called to the fact that it has been several times observed in

human quadruplets that three fetuses are enveloped in a common chorion. It is difficult to explain this result on the hypothesis of mechanical pressure on the developing egg, since this would separate three cleavage spheres from the group of four or eight. It is known from the work on armadillos that the number of buds, though usually four, is not absolutely fixed, but there are sometimes three and sometimes five. Apparently in man the typical number of buds is two, but there may occasionally be three.

Attention is called in passing to the exceptional interest which attaches to multiple births in man. Twins occur in other ordinarily uniparous animals, such as sheep, cows, and horses. The examination of a large amount of statistical data shows that in these animals twins of similar and dissimilar sex are equally numerous, so that one concludes that all these twins are derived from two eggs and that uniovular twins rarely occur. In the armadillo, on the other hand, we have a species in which binovular twins are unknown and uniovular plural births are the universal type. Each fertilized egg ordinarily produces quadruplets.

In humans both types of plural pregnancy occur, the method of twin reproduction found in the armadillo, and the method found in the sheep, carnivora, herbivora, and rodentia in general. Moreover, these two types are both fairly common, since out of every four pair of twins three are of the binovular and one of the uniovular type. Thus, man seems to have a double heritage and through him runs a double strain of twin production. It would be interesting to learn whether in all races of mankind the relative frequency of the two types is the same as it is in Europeans.

Finally, I would like to make a plea for more careful observations of afterbirths by obstetricians. Too often the afterbirth is thrown away without inspection. When possible, it should be rinsed in water and then placed in a basin of clear water and the fetal aspect of the placenta examined for a possible blighted fetus. If found, its presence should be recorded, and when possible, it should be carefully measured. Also a plea is made for more exact observation of the afterbirth in the case of twins. I find that, admirable as are the records of lying-in hospitals in this city, they are frequently unreliable in their statement as to the number of chorions. Thus, not infrequently twins of different sex are said to have one chorion. The criterion of double chorions is, of course, the presence of four membranes (though they may be extremely thin and stuck together) separating the two amniotic cavities. On the other hand, when a chorion is single, the partition contains only two layers. Also, in this case, a triangle may be made out at the point where the two amnions leave contact with the common chorion to come together to form a common partition.

The importance of an accurate statement on record as to whether the twins were binovular or uniovular is two-fold. First, it will, in common with the racial data, tell us whether the two types are equally common in different countries. In the second place, adult twins may want to know, and have the right to know, whether they are identical twins or not. Repeatedly I have been asked by intelligent twins if there were not a test that could be applied that would enable them to decide to which category they belong. There are occasions when such knowledge might be of more than social, indeed of important medical, interest. Obstetricians owe that much to the twins which they help bring into the world to leave an accurate record of their findings as to the true nature of the twins. Finally may be urged the real need there is for further observations on the relation between the number of recent corpora lutea of the same age in ovaries. They will not merely give us improved statistics as to the frequency of occurrence of double ovulation; they may serve to identify races characterized by an unusual tendency toward double ovulation—bloodlines in our population which are especially apt to be producers of twins.

MEDICAL ASPECTS OF ENDOCRINOLOGY.

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Our modern conception of internal secretions begins with the doctrines propounded by Claude Bernard (1857). It was not, however, until 1889 that Brown-Séquard assumed that the endocrinic glands, as the glands of internal secretions are known, supply principles to the blood which have a selective action upon certain organs, whether adjacent or remote. He suggested that interrelationship between the various cells of the economy affected by a means other than that of the nervous system. It is interesting to note that although in organic diseases in the human being extracts of animal organs were used by the Isopaths, forming a branch of homeopathy, for a good many years. Brown-Séquard at the age of 72 in experimenting upon himself with solutions of testicular extract initiated our present organotherapy. At about the same time G. Vassoli in Italy and E Gley in France showed that thyroidectomized animals could be kept alive with injections of thyroid extracts.

The endocrinic glands owe their properties to certain substances which have a remarkable power of stimulating activity in cells situated at a distance from the secretory gland itself. These substances have been called "hormones" by Professor Starling. Sir E. A. Shaefer suggested the name chaloms for substances which have an inhibitory function.

A number of classifications of the internal secretions have been attempted; one division is into: (1) Nutritive glands which include hypophysis, thyroid and thymus. (2) Regulatory and stimulating glands as the adrenals.

The changes in the skin, bones, etc., in diseases of the hypophysis and thyroid indicate plainly enough the effects upon nutrition exerted by these internal secretions.

The hormones are divided into acute and chronic. Adrenalin and the extract from the posterior lobe of the hypophysis are examples of the acute type, while thyroid extract and extract of the anterior lobe of the hypophysis are examples of the chronic type.

The hormones of the acute type are available to produce rapid and immediate results, and their actions are of short duration. This can be seen, as T. R. Elliot and B. Cannon have shown, in cases of fright or fear where adrenalin is rapidly discharged into the adrenal veins and general circulation. There is, however, a constant stream of very small quantities of these hormones passing into the circulation.

Those of the chronic type produce no apparent effect until some time has elapsed but by appropriate spacing of the doses their action may be kept up continuously for as long as necessary, even a whole life time.

The symptomatology of the organs of internal secretion depends upon: (1) Whether there is a hypo- or absent secretion; (2) whether there is a hyper-secetion; (3) the effect upon the other organs of internal secretion; (4) the fact that a hyper- and a hypo-function may be alternating.

The Thyroid Apparatus.—This consists of the thyroid and the parathyroids.

The function of the thyroid gland, which is probably the best known of all the endocrine glands is concerned; (1) with the development of the cells of the body, *i. e.*, the formation or growth of tissue which is evidenced in cretinism; and (2) with the development of the sexual organs. (3) It regulates the destruction of the albumin molecule and governs the removal of waste material resulting from incessant regeneration; the retention of such waste products causes the hard non-pitting edema of myxedema.

The thyroid gland may show an absent, diminished, or increased secretion. When we have an absence of secretion the resulting condition is called myxedema.

A slight or medium insufficiency is attended by a reactionary hyperfunction on the part of the gland, expressed by symptoms of hyperthyroidism. It may also be associated with derangement of other glands which may obscure the pure symptoms. Accordingly we classify these cases as: (1) Uncomplicated slight thyroid insufficiency without associated symptoms. (2) Slight thyroid insufficiencies with concomitant hyperthyroidism. (3) Slight thyroid insufficiencies associated with other endocrinic symptoms.

In the uncomplicated case the symptoms in each individual may be slight and few. These patients may have slight hard non-pitting edena of the upper lids, forehead, cheeks, or feet, which may be transitory and come only under the influence of worry, fatigue, or menstruation. The hair may fall out prematurely. The outer third of the eyebrow may thin out or fall out completely; this is a fairly characteristic sign. The patient may complain of coldness, especially of the feet, the temperature may be subnormal, constipation is a fairly constant symptom. Fatigue on arising in the morning but passing off during the day is sometimes noted. Obesity and dry hard skin may be present. These patients are usually short in stature. They also suffer from muscular and articular pains. They are usually apathetic and depressed and pass small quantities of urine.

In the treatment of these mild cases it is advisable to give one or two 2½ grain tablets of thyroid extract daily; or one may begin with a 1/10 of a grain t.i.d., and gradually increase the doses. In the cases of simple parenchymatous goiter of puberty and adolescence a single dose of from 2 to 5 grains of dried thyroid each day, may be of service. In cases of obesity thyroid will cause more or less decrease in weight. There are some cases in which the reduction is very marked while in others it is very slight. I believe that those cases in which the results are marked are probably related to hypothyroidism. One should begin with small doses—gr. 1/10 to ½, and not reduce the patient more than two to three pounds in a week. Those cases in which large doses are necessary are probably due to other conditions.

In hyperthyrodism the symptoms are almost the direct antithesis of those of hypothyroidism. The extreme nervous excitability, sleeplessness, tachycardia, excessive vasomotor changes and accelerated metabolism are produced in hyperthyroidism and in the condition artifically produced by the administration of an excess of thyroid extract. Even exophthalmos has occasionally been produced. Tolerance for glucose is lowered so that glycosuria may occur. The widening of the palpebral fissure with protrusion of the eyeball can be produced by stimulation of the upper end of the sympathetic ganglionic chains. The sensitiveness of the sympathetic to adrenalin is increased in excessive thyroid secretion and it is possible that some of the symptoms may be due to the former secretion.

A number of preparations for the relief of hyperthyroidism have been used, based on the principles that the blood of animals whose thyroid has been removed would do some good. Amongst these we have antithyroidin (Mœbius) hematoerythroidin (Carrion and Hallion), and thyroidectin. The efficiency of these, however has not been proven. Beebe's serum is also of negative value.

The *parathyroid glands* in the human being consist of four small bodies usually situated along the posterior border of the thyroid near the inferior thyroid arteries. They are concerned with the metabolism of calcium. When the secretion is deficient there is a loss of calcium from the tissue as shown by an increase of calcium in the urine. We know that calcium moderates the activity of the nerve cells, an excess shows itself in the form of tetany which is improved by the administration of calcium.

In infants a form of tetany is seen in which on post mortem examination, hemorrhages or traces of the same with blood pigment have been found in the parathyroids. In Escherich's clinic they were able to demonstrate hemorrhage in the parathyroids of all children under 1 year of age who during life showed hypersensibility to electric stimuli. Escherich holds the view that infantile tetany is due to disease of the parathyroids. Those cases of tetany of gastrointestinal origin and certain forms of poisoning, judging from analogy, are probably due to some influence exerted on the secretion of the parathyroid.

There are a number of conditions, such as myotonia congenita (Thomsen's disease), paralysis

agitans, and myoclonia, which are probably due to the diminished function of the parathyroids. On the other hand, myotonia periodica and paralysis myasthenica are produced by a hypersecretion or perverted function of the parathyroids.

Von Eiselsberg implanted parathyroid gland in the obdominal rectus muscle of a woman who twenty-seven years previously had her whole thyroid removed and was suffering from tetany. The graft healed in, the tetany was reduced to isolated spasms of the glottis, and the electrical stimuli became normal.

Haltead and Putnam obtained favorable results in postoperative tetany with parathyroid extract given by mouth or subcutaneous injection.

That there is an interrelation between the thyroid and the parathyroids is shown by the hypertrophy of the one on removal of the other. The administration of parathyroid extract is followed by increased intestinal peristalsis muscular contraction of the uterus, and marked diuresis. These symptoms are very similar to those following the administration of petuitrin.

Thymus.—Concerning the internal secretion of the thymus very little is known. In cases of sudden death supposedly due to enlarged thymus, the individual was probably suffering from a general lymphatic hyperplasia as shown by the skin pallor, hyperplasia of the glands of the neck, axilla, mesentery, and intestinal wall, enlarged follicles of the nasopharynx and spleen, and enlarged thymus. This organ does not seem to be essential to life.

Adrenals.—In 1855, Thomas Addison published the first account of the disease known by his name and showed the relation of disease of the adrenals to the same.

The adrenal consists of two parts, the cortex and medulla, which morphologically and histologically are entirely different.

The medulla or inner part consists of chromaffin tissue, which is a tissue composed of cells derived from nerve cells of the abdominothoracic sympathetic system, which stains brown with chrome salts, and produces a physiologically active substance called adrenalin, which is not present in the cortex. These tissues are also found at the branching of the carotids and at the branching of the aorta. Adrenalin, the active internal secretion of the chromaffin system, is a true hormone and is one of the few internal secretions of which we know the chemical composition. The adrenalin acts by stimulating the endings of the true sympathetic nerves. The secretion of the adrenalin into the blood stream is under control of the splanchnic sympathetic.

Concerning the internal secretion of the cortex or outer layer, which consists of cells which contain a lipoid substance related to cholesterin, not much is known. It forms about 90 per cent. of the gland. That the cortex of the adrenal may have some relationship with the nervous system is suggested by the fact that in encephalic children, it is absent or markedly diminished.

The functions of the adrenal, according to Swale Vincent, are: (1) It helps to maintain the muscular tone, especially of those supplied by the sympathetic. (2) It raises the blood pressure and increases the action of the heart while slowing the pulse. (3) It increases carbohydrate metabolism. (4) It destroys toxic substances produced by muscular activity. (5) It decreases fatigue.

In Graves' disease the blood content of adrenalin is increased from four to eight times. It is strange there is no increased blood pressure.

Nuesser and Wiesel suggested that conditions which demanded an increased consumption of adrenalin (and of these the most important is forced muscular exertion) may produce hypertrophic processes of the adrenal system. This increase may cause permanent vasoconstriction. They lay stress upon the fact that in chronic contracted kidneys the etiology of which is obscure, hyperplasia of the chromaffin tissue is marked.

In *Addison's disease*, the characteristic symptoms are coldness, atony, and weakness of the muscles, low blood pressure, vomiting, diarrhea, and bronzing of the skins. All the symptoms except the pigmentation can be produced by extirpation of the adrenals. The administration of extract of the adrenals does not seem to influence the disease.

It has been claimed that cats have been kept alive after extirpation of the adrenals by daily intraperitoneal injections of cholesterin. This may be tried on man by giving a 4 per cent. solution in olive oil, as much as 1 gram of cholesterin being given daily if necessary.

Adrenal extract is used a good deal in nose and throat work to prevent bleeding. It may be used in combination with local anesthetics.

It is harmful in pulmonary hemorrhage because by raising the blood pressure it drives a faster current of blood through the lung.

Adrenalin should not be used in chloroform narcosis because it may cause sudden death due to complete ventricular fibrillation.

Probably one of the greatest therapeutic uses of adrenalin in medicines is in *asthma.* One should begin with small doses, 5 to 10 minims of 1-1000 solution. The results are immediate and startling at times.

Pituitary Gland.—This consists of three distinct parts: (1) Anterior or glandular, which is derived from invagination of the buccal mucosa. (2) Posterior or nervous part, derived from the thalamencephalon midbrain. (3) Intermediary portion.

In animal experimentation Cushing showed that complete extirpation caused death, but partial extirpation of the anterior lobe is compatible with life. In some cases it leads to increased deposit of fat, polyuria, transitory glycosurea, falling of hair, reduction of sexual activity, and atrophy of the testes or ovaries. There is also acute thyroid hypertrophy. The physiological effect of extract of the posterior pituitary lobe is shown to be a prompt and marked increase in blood pressure and slowing of the pulse rate, which lasts longer but is not as marked as that following adrenalin. After a second injection there may be a reduction of blood pressure.

It causes a constriction of the coronary artery and dilatation of the renal vessels, the opposite of that produced by adrenalin. Its effect upon

the intestine, observed by Bell, is to restore peristalsis to a paralytically distended gut, whereas it has no effect on the normal.

It has a galactogogue effect, as was discovered by Ott and Scott. The diuretic action was discovered by Magnus and Schaefer. Hoskins and Means believe that the diuresis is probably due to direct stimulation of the renal cells, aided by concomitant vasodilatation in the kidneys.

Acromegaly, which was first described by P. Marie, is regarded by Benda to be due to an increase of the glandular epithelium of the anterior lobe, especially of the chromophile and eosinophile cells. In the majority of cases the tumors of acromegaly are true hypophyseal tumors—adenoma, adenocarcinoma, sarcoma. With regard to these malignant forms, Hanau and Benda found that tumors which at first sight appeared to be sarcomatous contained cells derived from the hypophyseal epithelium, and they described these tumors as hyperplastic malignant adenoma. The weight of evidence is in favor of acromegaly being a hyperpituitarism of the anterior lobe. Extirpation of tumors of the anterior lobe, as shown by Hochenegg and Cushing, has been followed by disappearance of symptoms.

That there is an interrelation between the hypophysis and other internal secretory organs, namely, the thyroid, thymus, superenals, and especially the sexual glands, has been proven beyond doubt.

Rogowitsch showed that thyroidectomy is followed by hypertrophy of hypophysis. In myxedema and subthyroid conditions there is enlargement of the hypophysis. Pinelles has shown the frequent coexistence of myxedema and acromegaly and also the similarity of many of the symptoms.

The preparations of the posterior part are sold on the market under various trade names, namely, pituitrin, hypophysin, and infundibulin. Of late pituitary extract has been used instead of adrenalin in cases of shock. It is used intravenously in doses of 7 to 15 minims, diluted. It may be used in vasomotor paralysis in typhoid fever and pneumonia. It has been recommended in the persistent vomiting in gastric crisis of Graves disease.

In the latter stages of acromegaly, where the condition of pituitary insufficiency is established, the administration of the dried whole glands, 12 grains t.i.d., has been of service.

Secretin.—When the acid chyme reaches the duodenum it stimulates the cells of the mucous membrane to produce a substance called secretin, which is absorbed into the blood and stimulates the secretion of the pancreas. Starling has shown that it is useless to administer this hormone by mouth, as it is destroyed by the gastric juice. The dry duodenal extract may be given in doses or 1 to 3 grains repeated every 20 minutes for an hour.

Pancreas.—Many theories have been advanced concerning the pancreas in relation to diabetes. I will simply narrate proven facts. (1) In animals if the entire pancreas is removed a severe form of diabetes is produced, followed in a few weeks by death. (2) When more than 1/10 of the gland is left diabetes does not ensue. When less than 1/10 is left a slight form of diabetes develops. (3) In dogs, at any rate, the action of the pancreas in relation to sugar content is specific. No other gland can take its place. (4) The external secretion has nothing to do with the characteristic disturbances of the sugar content.

This brings us down to two theories: (1) Some substance accumulates in the blood after removal of the pancreas which is detrimental to carbohydate metabolism. (2) Some substance is lacking which promotes carbohydrate metabolism.

The second theory is the one usually accepted. The pancreatic hormone has not been isolated.

There is an intimate relation between pancreas and thyroid and pituitary. Extracts of the thyroid and pituitary to a certain extent inhibit the action of the pancreas. Hyperthyroidism and hyperpituitarism are associated with diabetes. The thyroid and pituitary have an inhibitory action upon the pancreas.

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ORAL SEPSIS AND THE RÔLE IT PLAYS IN CERTAIN ORTHOPEDIC CONDITIONS.

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THE relation of focal infection to systemic disease has attracted attention within the past few years. The common sources of focal infection are usually found in the tonsils, sinuses, and in or about the teeth. Chief among the infections within or about the teeth are:

1. Infections about the teeth producing pyorrhea pockets. 2. Abscesses and necrosis in the jaw, usually at the tips of the roots, with or without sinus formation.

Bacteriology.—The mouth is the constant habitat of many bacteria, by far the largest number of which are harmless saprophytes; but there are some that possess pathogenic properties, which they display, either in the mouth or elsewhere, when suitable conditions obtain. If the care of the mouth is neglected, the number and variety of pathogenic and nonpathogenic bacteria increase. The bacterial flora of the mouth is, of course, derived chiefly from without, from the air, food, and drink; but when infective processes are active in the organs or parts communicating directly or indirectly with the mouth, the bacteria concerned in them may find their way to the oral cavity. Thus in pulmonary tuberculosis, tubercle bacilli may be deposited by the sputum in the mouth. It has been shown that the salivary glands are capable of eliminating bacteria that are circulating in the blood in cases of general sepsis; such bacteria may then appear in the saliva.

Despite the fact that the oral cavity teems with bacteria, wounds about the mouth usually heal by first intention. This is to be explained by the fact that the saliva is, after all, not a good culture medium for bacteria, although its bactericidal power is extremely weak.

Aside from the individual differences, there is a natural difference between the saliva of the submaxillary and that of the parotid gland. In most animals the first furnishes a secretion that has only a slightly deleterious action upon the bacteria; while parotid saliva is capable of inhibiting the growth of several species of organisms, mainly those of the pathogenic group, especially if the secretion is artificially stimulated. When abundantly secreted, the saliva may become sterile.

The organisms usually encountered within the mouth are divided into two main classes:

1. Protozoa, represented by the ameba, a unicellular animal organism.

2. Bacteria, unicellular vegetable organism, represented by (*a*) Cocci, such as the streptococcus, staphylococcus, pneumococcus, etc.; (*b*) Bacilii, such as the subtilis and pneumobacillus; (*c*) Spirilla, such as the spirochete.

1. Protozoa: That the ameba occurred in the mouth has been known for the past fifty years. Gross, in 1849, described the *Entamœba gingivalis;* Grassi, in 1879, described the *Entamœba dentalis*, both probably identical with the *Entamœba buccalis.* It was very doubtful at this time whether they had any etiological significance, so far as producing caries was concerned. Even at the present date there is a doubt in the minds of a great many as to whether the *Amœba buccalis* really plays the rôle in oral sepsis that is assigned to it.

A very interesting report on the results of the examination of the mouths of sixteen hundred and seventy-eight children was recently published. In one hundred and thirty children with apparently normal gums, thirty-eight or twenty-nine per cent., showed the ameba. In two hundred and ninety-two, with normal gums and decayed teeth, one hundred and nine, or thirty-seven per cent., showed the ameba. In two hundred and seventy-eight, in which there were tartar and receding gums, one hundred and eighty-two, or sixty-five per cent., showed the ameba. In two hundred and ninety-six in which the gums were spongy and bleeding, two hundred and sixty-eight, or ninety-one per cent., showed the ameba. From this analysis one would be led to believe that the amœbæ in the mouth are accidental invaders, that they are not pathogenic, and do not produce any reaction in the mouth. The reason for this conclusion is that the ameba occurs in normal mouths and that other organisms are present in diseased conditions of the mouth. Against these arguments it is said that the amebæ are found so much more frequently and in larger numbers in the lesions than in the normal mouth.

Another group of investigators claim that the ameba may be pathogenic only in connection with certain other organisms. This is borne out by the presence of other organisms in cases of infection.

One can readily appreciate how varied and complicated are the opinions regarding the status of the ameba in the production of oral infection, after reading the preceding remarks. Still there is no doubt that in a certain proportion of cases the ameba does play a very important rôle in the production of pathological lesions. Whether it produces this lesion alone or in conjunction with other orgnisms is a question which is very difficult to determine.

The following methods are very simple ones for obtaining material for examination of the ameba.

1. A warm, clean glass slide upon which a drop of physiological saline is placed; some of the material obtained from the pathological lesion is mixed with this solution. The mixture is then examined under the microscope.

2. The other method at our disposal is one in which we stain the specimen. The technique follows: In bad cases the teeth and gums are cleansed with a cotton swab dipped in fifty per cent. alcohol; with the flat end of a hard-wood sterile toothpick, the material is scraped from the margin of the gums and stroked lightly over a clean glass slide, three or four streaks being made. The smear is then fixed while still moist by dropping methyl alcohol on it. A second toothpick is used to obtain material from beneath the margin of the gums from which another smear is made and fixed in a similar manner. The smears are then stained with Giemsa's stain.

The reticulated cytoplasm of the ameba stains clear blue; the nucleus appears as a rounded or irregular mass of red granules and threads with a central light blue staining karyosome which sometimes contains a vacuole-like body. Red blood cells, leucocytes, vacuoles, and dense masses formed by undigested material are very often present.

2. *Bacteria:* Regarding the bacteria isolated in pyorrhea, opinions and the variety of organisms are numerous and varied. The general consensus of opinion, however, tends to center on one group of organisms—namely, the streptococcus-pneumococcus group.

The predominating organisms found are the *Streptococcus viridans* and *hemolyticus;* occasionally the *Bacillus fusiformis*, the *Staphylococcus aureus* and *albus, Micrococcus catarrhalis*, and a diphtheroid bacillus are isolated.

A very interesting series of findings were reported by Ulrich. In an anlysis of six hundred cases suffering from systemic disease, he found by Röntgen ray examination: eight hundred and twenty-seven teeth were abscessed, one thousand seven hundred and twenty-two were dead teeth with root canal fillings, five hundred and ninety-eight abscesses on pulpless teeth due to caries or accident. There was a total of one thousand four hundred and thirty-five abscesses. The findings of this analysis are startling as well as significant. A little over 68 per cent. of all artificially devitalized teeth were found with apical abscesses. The total number of abscesses was 83 per cent.

One hundred and fifty-nine cases had had bacteriological review: one hundred and seven cases gave *Streptococcus viridans,* and fifty-two gave *Streptococcus hemolyticus.* In another series in which he analyzed seventy-six cases clinically, he isolated the streptococcus from apical pockets.

Almost without exception the alveolar abscesses were found in devitalized teeth, devitalization having occurred either through caries with involvement of the pulp canal, or through artificial devitalization by the dental operator in preparation for crowning or bridgework. The Röntgen ray showed fillings in the pulp chamber were imperfect in the majority of cases. This, with imperfect dental asepsis, probably accounts for subsequent infections.

A striking feature of this analysis is the diversity of clinical manifestations for which streptococcal focal disease is responsible. For convenience they are classified into:

1. A rheumatoid group in which the special features of the cases consisted of rheumatoid arthritis, arthritis deformans, neuritis ,and myositis with or without cardiac involvement.

2. A cardiac vascular group exhibiting, as the main feature, heart lesions or hypertension without any appreciable rheumatoid manifestations.

3. An asthenic group closely allied to Group 1, showing joint and periarticular pains, nerve or muscle pains, but in which the main feature is one of asthenia, mild anemia, albuminuria, and occasionally myocardial weakness. Visceroptosis is a common finding in this group.

4. A gastrointestinal group exhibiting gastrointestinal ulcers, gallbladder or pancreatic symptoms, and acute enteritis.

5. A genitourinary group allied to Group 1, in having at times rheumatoid pains with renal, bladder, prostatic, or vesicular involvement.

6. A streptococcus focal infection superimposed upon tuberculosis, syphilis, primary anemia, or vice versa.

Rosenow has isolated the streptococcus not only from focal infections, but also from joints and neighboring glands in the region of the affected joints, showing the close relationship existing between focal infections and arthritis.

Goadby probably was one of the first to demonstrate the relation of dental infections to joint affections. He reported three chronic joint cases which he cured by the removal of infected teeth. He isolated an organism which he called the *Streptobacillus malæ* and which he succeeded in growing upon egg agar. He also produced disease in the joints of rabbits by inoculating these organisms, thus showing the selective action of these organisms for joint structures.

In some cases spirilla have been isolated. In these cases associated with syphilis the *Treponema pallidum* has been frequently found. Noguchi describes two varieties of organisms which he has succeeded in isolating in pyorrhea. They are both spirochetes. He calls them *Treponema mucosum* and *Treponema microdenticum*. These spirochetes develop rapidly in tissues found in a disturbed metabolic state, exerting a pyogenic action. They are not pus-producing organisms. They belong to the same class of infectious granulomata as the causative organisms of leprosy and tuberculosis.

From the foregoing one can readily appreciate the tremendous effort which is being expended in these conditions; also that the consensus of opinion centers about the streptococcus in some form or other as the commonest offender.

Symptomatology.—A, *Local*: As you all are undoubtedly familiar with the local manifestations of oral infections, I need not burden you with a description of them. Just a few words to caution you against overlooking two very common affections, namely, blind abscesses and imperfect root canal fillings. To rule out the presence of either of these conditions, a Röntgen ray picture is essential. It is a good plan where possible to *x*-ray every case subsequent to the drilling of the root canal. Were this to be accomplished one would be surprised to find how many imperfect root canal fillings really existed. It has been proved beyond a doubt that these imperfect fillings eventually give rise to a large proportion of the blind abscesses which we meet.

B, *Systemic Manifestations*: Caries of the teeth, alveolar abscess, and various forms of stomatitis being bacterial processes, often lead to disease at a distance from the mouth in one of two ways: (*a*) by the absorption of toxins and bacteria into the blood stream; (*b*) by the swallowing of pus containing toxins and bacteria.

For convenience the symptoms will be discussed under the various systems which are attacked. Only those systems which are commonly affected will be dwelt upon fully, the others will be reviewed very briefly.

1. *The Digestive System.*—The symptoms which we encounter in the gastrointestinal tract are undoubtedly the result of the enormous number of bacteria which are swallowed during and between meals. The common manifestations are dyspepsia, flatulence, indigestion, septic gastritis, and gastric and duodenal ulcers. In addition there may be gallbladder and pancreatic symptoms and also acute enteritis.

2. *The Arthritic Group.*—This group of cases has been thoroughly investigated and studied. It is these cases that the orthopedic surgeons are often called upon to treat. They generally migrate from physician to physician, from clinic to clinic, until finally they give up hopes of ever being relieved of their distressing symptoms. As a last resort they come to the orthopedist, with well advanced deformities and nervous wrecks, the result of prolonged suffering. An early diagnosis with the institution of early treatment would undoubtedly obviate the tortures and agonies which these poor unfortunates endure. The longer the diagnosis and treatment are delayed the less can we hope to do for them. The pathological changes in the various joints become progressively worse, until there is destruction of the joint structures. Those of you who have had the opportunity to observe these cases in the advanced stages can readily appreciate the impossibility of influencing the deformities so far as obtaining a cure is concerned. Take these same cases in the early stages and you have a different proposition to contend with. You can, by instituting proper treatment, prevent these incurable deformities and invalidism.

The special features of this group of cases consist of arthritis deformans, rheumatoid arthritis, neuritis, and myostitis, with or without cardiac involvement. In some cases the symptoms are so severe that the patients are bedridden. Especially is this so in the acute cases. The chronic cases are usually ambulatory, the duration of symptoms varying from a few weeks to a few years. The common sites invaded are the muscles of the neck, particularly the sternocleidomastoid; the mandibular joint, the fingers, the shoulders, the knees, and the metatarsophalangeal articulation of the big toe. This is in the order of their frequency. The disease is characterized by exacerbations and remissions, especially when of dental origin.

Weeks or months may intervene between the at-

tacks. Each exacerbation is worse than its predecessor. Fever is rarely present. The joints and the tissues about the joints usually show connective tissue hyperplasia, which eventually may lead to exostoses. One of the constant features is the partial disarticulation of the phalangeal joints of the hands and feet. Finally destruction of the articular surfaces of the joint occurs.

3. *Nervous Manifestations.*—These may manifest themselves as choreic and epileptic seizures; tic, stammering, stuttering, insomnia, mental derangement, irritability, neuralgias, and restlessness.

4. *Cardiovascular Symptoms.*—These are symptoms of endocarditis, myocarditis, and arteriosclerosis. Anemia is occasionally produced.

5. *Cutaneous Manifestations.*—These may consist of erythema, urticaria, purpura, acne, eczema, herpes and seborrhea.

6. *The Respiratory Symptoms.*—These may manifest themselves as an acute or chronic bronchitis and septic tonsillitis.

7. *Miscellaneous Manifestations.*—These may be retropharyngeal abscess, otitis media, mastoiditis, and septicemia.

From the enumeration of these systemic manifestations one can readily appreciate the many ailments that oral sepsis may be associated with. When any of these symptoms exist, especially when they resist the usual treatment, the mouth should be carefully examined for evidence of infection. Not only should an examination be made by inspection, but the Röntgen ray should be employed where possible.

Before proceeding with the treatment, the writer would like to review two conditions which are of interest to both the physician and the dentist. These conditions are "foot and mouth disease" and mercurial stomatitis.

The "foot and mouth disease" is prevalent in certain parts of New York and Pennsylvania. It is primarily a cattle disease which can be transmitted to the attendant. The organism isolated is a short Gram negative, non-motile bacillus. It was described fully by Siegel. The infection is followed by swelling and severe pain, manifesting itself in the form of an ulcerative stomatitis.

An 8 per cent. solution of zinc chloride acts almost as a specific in bringing about a quick resolution of these infected surfaces. It can be applied with a swab. A warm 2 to 3 per cent. solution of bicarbonate of soda can be recommended in conjunction. Salvarsan, in the form of a 10 per cent. solution in glycerin, has also been applied locally with a swab with satisfactory results.

Mercurial Stomatitis: Mercury, as you all undoubtedly know, is excreted in the saliva; when the resistance of the mucous membrane of the mouth is lowered the constant excretion of the mercury irritates it, in that manner opening a path for microbic infection. To obviate this, treat all foci of possible attack in the oral cavity before administering mercury; cavities should be filled, and a rigid oral hygiene should be practised.

Treatment.—The treatment will be discussed under (*a*) Prophylactic, (*b*) Curative.

A. Prophylactic: 1. Education of the Patient: Proper brushing of the teeth is very essential. Teach the patients the proper way to brush the teeth, namely, to employ a slightly moistened brush, covered with any mild powder and in a rotatory manner remove the gelatinous plaques. At night a dental cream can be used to great advantage. The last step consists of the proper use of dental floss. One must observe proper care of the brush, namely cleansing after using, and in the intervals placing in a closed tube containing alcohol or formalin; frequent renewal of the brush when the bristles become irregular and begin to fall out.

Discourage against the use of strong antiseptic mouth washes and tooth pastes. They are absolutely unnecessary in a normal mouth and in a vast majority of diseased mouths. Where there is an inflamed condition of the mucous membrane a physiological saline solution is very beneficial; where there is extreme sensitiveness of the tooth structure at the gingival margins milk of magnesia is very helpful in allaying this sensitiveness. Strong antiseptics are not necessary and at times may prove harmful.

The importance of periodic visits to the dentist should be strongly impressed upon the patients; in this way incipient caries can be detected and proper treatment instituted early.

2. Aseptic Dentistry: In an interesting report published in *The Bulletin* of the Hygienic Laboratory, Hasseltine discusses the importance of sterilizing dental instruments and not only describes in detail the best method of effectively sterilizing different instruments, but gives valuable suggestions relating to dental asepsis which, while not strictly within the subject of sterilization of instruments, are nevertheless contributory factors in improving office sanitation.

Moist heat is our best disinfecting agent for the sterilization of all metal instruments. For the destruction of nonsporebearing bacteria, moist heat at 80° C. is nearly as efficient as boiling, and for all practical purposes can be used in place of boiling.

Instruments constructed of metal, whose complicated mechanism has heretofore caused them to be considered as nonsterilizable, can be sterilized by moist heat, provided the water is removed from them by immersing in alcohol subsequent to the sterilization. Instruments, whose construction does not permit of boiling can be sterilized by chemical disinfectants.

Dentistry, which is a highly specialized branch of surgery, should use asepsis which has made possible the wonders of modern surgery, with skill and precision equal to that of surgeons. All instruments and appliances should be rendered mechanically clean by washing in water with a brush or sponge. Instruments and boilable appliances and material should be boiled in a one-quarter per cent. solution of sodium hydroxide, or submitted to 80° C. Instruments whose mechanical construction makes it difficult to remove the excess of water should be placed in 95 per cent. alcohol for ten minutes, then removed and permitted to dry.

Instruments with metal handles only should be used by dentists. Mounted stones, mirrors, nonmetallic instruments which cannot be replaced by metallic instruments should be sterilized by immersion in 5 per cent. phenol for at least sixty minutes. After using instruments, place them in a

fluid medium, preferably clean water, so as to avoid drying of infectious material and to facilitate their mechanical cleansing.

B. Curative: (*a*) Local: The importance of local treatment in pyorrhea alveolaris is well known. Many authorities claim cures by simply employing thorough local measures. The usual routine recommended follows:

(1) Careful expression of the pus from the pockets. Massage is very essential. Teach the patients to massage the gums every night, not simply to rub one side of the gum and then the other, but to squeeze in a direction from the apex of the root towards the gingival margins, pressing both sides at once. The treatment of pyorrhea pockets by evacuation of dental abscesses and curettage confers a double benefit. First, it inoculates the patient with a number of organisms, inducing an effect similar to that of an efficient vaccine, with the added advantage that the constant supply is shut off from the focus disturbed. When there are many abscesses or pockets it is important to permit three to six days to intervene between treatments in order to gain full advantage of what might be called surgical autoinoculation.

If sudden complete extirpation of all foci is practised, as for example, extraction of all teeth at once, the end result will do positive harm. If such dental foci of infection are recognized early and eliminated, systemic conditions are easily controlled. On the other hand, if not recognized early, the disease becomes firmly fixed so that the elimination of the primary focus does little in the way of repair, though it may limit further progress of the disease.

2. Thorough removal of calcareous deposits and tartar wherever found.

3. Extraction of hopeless teeth and roots.

4. Polishing of the tooth structure followed by the application to the margin of the gums of equal parts of the tincture of iodine, tincture of aconite, and chloroform, continued every other day.

(*b*) General: Vaccine therapy certainly has its place in the treatment of pyorrhea alveolaris and other oral infections. The main difficulty lies in selecting the proper vaccine and in administering the proper dose. How are we to determine which organisms to select in preparing the vaccine? Goadby and others have attempted to isolate the bacteria by a determination of the opsonic indices to the germs isolated. Of course this procedure has not proven very successful in a great many cases. Still it may prove of value in the near future. The general consensus of opinion at present is to use a mixed vaccine, that is, one made from all the organisms present in the lesion. Many prefer a sensitized vaccine, that is, a vaccine made by macerating the bacteria in a homologous immune serum; this serum being obtained from the blood of an animal immunized against the disease of the same kind as that produced by the living bacteria.

It is best to begin giving the vaccine in small doses—one-fifth to one-quarter c.c. at five to seven day intervals. Increase the dose gradually and shorten the intervals gradually. In order to obtain satisfactory results with vaccines, local measures must be instituted in addition.

As many dentists have sent me specimens of pus improperly placed upon culture media, I feel that a few words regarding the same will not be out of place. The error commonly made was the failure to spread the pus over the surface of the culture medium. A very good way to obtain a specimen is as follows: Cleanse the mouth, lightly scar the margin of the gum and tooth with a red hot metal instrument of suitable size and shape. Then heat a spear (Head's is very satisfactory) to redness, allow to cool and plunge directly through this area, retaining it there for a short time and withdrawing it straight outwards, guarding against touching any of the surrounding tissues. Spread some of this on the surface of an agar medium containing red blood cells and some of the remainder on a clean glass slide. The smear on the glass slide is for immediate examination. From the growth on the culture medium the vaccine is eventually made.

Emetine Therapy. When emetine was first introduced for the treatment of pyorrhea alveolaris, like every new drug introduced it created the erroneous impression that it was a "cure-all" for every case of pyorrhea. With this idea in mind every pyorrhea patient that presented himself to the dentist was immediately injected with emetine. Even the quack advertised extensively in the daily press, "new discovery, sure cure for pyorrhea, a boon for those who have long suffered from pyorrhea," and many other false claims. The result was self-evident. Every case injected was not cured and the vast majority of the profession and the laity were disappointed and condemned emetine.

The reason for this failure is obvious. Any one who has had any experience with emetine will agree with the writer that it is useful both as a curative agent and as an adjunct in those cases of pyorrhea alveolaris in which the *Entamœba buccalis* can be isolated, and only in those cases can results be expected. It certainly is a specific for the ameba; this has been proven time and again in the treatment of amebic dysentery.

The ameba may occur alone or in conjunction with certain bacteria. Where it occurs alone, emetine should be employed; if other organisms are present emetine and vaccine therapy should be combined. Emetine can be used locally, hypodermically, intramuscularly, or orally. Locally, a one-half of one per cent. solution of emetine hydrochloride is injected into the pockets and applied to the interdental spaces and around fixed appliances. This is to be repeated daily for five days and every other day thereafter for about ten treatments. At home the patient is advised to employ a mouth wash of the fluid extract of ipecac, two or three drops to a half tumbler of water.

Hypodermically or intramuscularly it is used in doses of one-quarter to one grain for six to eight doses.

Orally, alcresta tablets can be administered, two tablets three times daily. This is of especial value in those patients who display an idiosyncrasy for the hypodermic injections.

Mercurial Therapy. This treatment is based on the theory that mercury is a cure for all diseases of vegetable parasitic origin.

Wright and White report 100 per cent. cures in a series of sixty cases. G. H. Reed, U. S. N., reports twenty-eight cures and one improvement in a series

of twenty-nine cases. S. T. Ladd reports eight cures in a series of eight cases. All these cases were cases of pyorrhea alveolaris with or without systemic complications. There is no doubt that mercury does benefit pyorrheic patients who also are syphilitic. This is seen time and again in our daily practice.

The method, as elaborated by B. L. Wright, is a very satisfactory one. The preparation used is the succinimide of mercury. For males one grain is given deep intramuscularly, every seventh day, until the discharge of pus has disappeared and the gums have regained their normal condition and appearance. In women, one-fifth to two-fifths of a grain less than in males is given. Mercurialism of any marked degree should be met with smaller dose at succeeding injections, or if the symptoms are severe, the mercury should be discontinued until they disappear. Strict hygiene of the mouth and the teeth must be carried out while administering mercury.

Summary and Conclusions.—1. The early recognition of focal infections and removal of the same, will often obviate many incurable arthritic conditions.

2. Where arthritic symptoms fail to respond to ordinary routine treatments, focal infections should be looked for.

3. Before a diagnosis of "rheumatism" is made, one should eliminate the presence of a focal infection accompanied by arthritis.

1051 Boston Road.

FEET, AND REBUILDING BROKEN ARCHES.*

By CHARLES CROSS, M.D.,

SAN FRANCISCO.

As the result of several years' experience in the treatment of ailing and distorted feet before the great World War, and from an extensive experience gained while teaching scientific examination of feet and shoes in the Military Service of the United States (S. O., 17, Par. 3, W. D., Jan. 24, 1918) a plan of treatment to rebuild the broken

Fig. 1.—Normal feet.

arch, while the feet are in daily use during the process of rebuilding, is reported here.

The results from treatment of this common affliction have proved so satisfactory in my hands that the method is reported for the consideration of those who are interested in their feet.

The plan consists of a system of exercises on specially designed exercising appliances, massage, manipulation, mechanical force, static and dynamic

Fig. 2.—Ulcerated papilloma of the sole.

force, support, and then gradual removal of the support.

On leaving the Army and returning to civilian status a number of colleagues advised that I specialize in the treatment of feet. The insurance service, which I had rendered to various organizations for many years, and which, during the period of hostilities was looked after by my colleague, Dr. V. E. Putnam, was awaiting me, but almost all other practice had vanished. It had "gone where the woodbine twineth," where it went for so many others. It was at this period I harkened to the advice and counsel of colleagues and friends who were familiar with my work on feet. Some of them had attended my lectures and clinics and observed the methods of examination and diagnosis and the results of treatment, and some had been treated.

We held a sort of counsel of war to determine a plan of action, and how to make a drive to get back on the battle line of practice. At the suggestion of a fellow officer, Captain James H. Parkinson, of Sacramento, with whom I spent almost a year in the field, and for whose opinion on questions, ethical, gastronomic, strategic, and diplomatic, I have a deep and profound respect, an announcement was published in the *California State Journal of Medicine*, that I would "specialize in the treatment of distorted feet, by modern nonsurgical orthopedic methods." Subjoined to that announcement was a list of army officers and colleagues, who were referred to by permission.

From the number of colleagues and members of their families who have appeared for treatment as a result of that announcement, and from the number of cases referred by colleagues of this city and other parts of the State, and the cases they continue to refer, the drive was successful. From letters and words of appreciation, I believe the service is satisfactory and that there is a great demand for this specialty. (Fig. 2.)

*Read before the Surgeons of the Santa Fe R. R. Medical Department in San Francisco, September 3, 1919; and before staff of Temple Sanitarium, Temple, Tex., December 8, 1919.

At this point it may be well to add that in the Army there was very little serious foot trouble in the organizations under my command. From their words of appreciation, expressed after parting from me, I believe that every officer trained in those

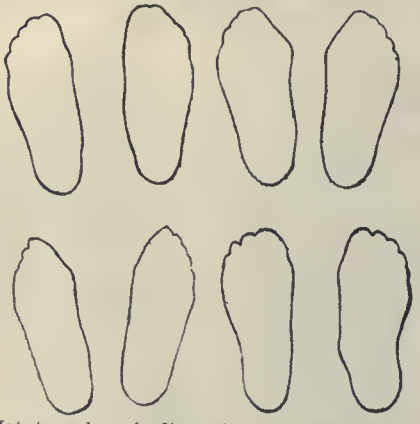

Fig. 3.—Metatarsal arch distortion, causing back, knee, and leg pains.

organizations acquired much valuable information about feet, which he was able to make use of later in his commands. The same statement applies to the men. As one of them expressed it, "Sir: You sure did kindness to me when you ordered me to take off those 6 E's and put on a pair of 9 A's; I have never had a moment's foot trouble since."

As a souvenir of Army experience I have a bound volume of the podograms and diagnosis records of the feet of almost every man who served under me, also of many officers who volunteered to act as subjects for clinical lectures given to their organizations.

While in the Army, and in the field, when a man of my command appeared complaining of pain below the diaphragm, unless the cause was visible, or the symptoms very pronounced to the contrary, his feet were examined. In about ninety per cent. of the cases the cause of the pain was located in the feet, and a little treatment directed to the offending area saved a man for duty and relieved the hospital of a patient, and in many cases a broken arch was prevented.

Rebuilding Broken Arches.—In rebuilding broken arches the aim of this system of treatment is to reconstruct the arch and so strengthen the foot that it will stand ordinary usage, without the aid of arch support. Arch supports at best are but splints and should be used only as such. Constantly wearing any kind of a rigid splint weakens the muscles because free action is restricted. This is especially true when metal splints, in the form of arch supports, are worn under the feet, and the general results from their use is a degree of atrophy of some muscles and weakening of others.

The process of rebuilding broken arches by this system aims to follow the same lines followed by engineers to replace a bridge span, or a house foundation, that is out of alignment. A careful drawing is made of the foot and this is surveyed to determine the degree of distortion or displacement. Then begins a system whereby the broken arch is blocked up or strapped up by degrees, as rapidly as possible with comfort, until normal function is restored.

In the process of rebuilding it is sometimes necessary to apply a considerable force to replace bones which have long been distorted. In some cases an anesthetic may be required to bring about the necessary relaxation to permit replacement. Following the manipulation, the feet are strapped in the new position and again put into service as soon as the anasthetic wears off. If properly handled there is little or no distress following this procedure. (Fig. 4.)

After the desired elevation is reached the foot is maintained at that point until the process of adjustment and strengthening is completed, and is kept in that position until it is thought advisable to begin the process of "building down" or removing the temporary support. This part of the treatment is very important and requires much care. Bit by bit the foot structure is tested, the supports are removed by degrees and the foot left to perform its normal functions.

The degree of recovery which can be expected from this system of treatment, and the duration of treatment, depend upon several factors. The factors are: the degree of distortion, the duration of the ailment, the patient's physical condition, and the ability of the patient's muscles to "come back"; also a correct diagnosis and the patient's intelligent co-operation in the treatment. In some cases reconstruction occurs in a very few weeks, while in others a much longer time is required. In the cases which cannot "come back," so as to eliminate the use of supports, it is usually possible to restore normal function, with increased comfort and increased efficiency, which follows from the beginning of treatment. Another of the very acceptable features of this system of treatment is that clumsy and freak shoes are not a part of it. Any shoe the patient selects which is long enough and wide enough can be worn.

Many patients come wearing metal arches. In such cases it is necessary to ascertain the degree of muscle weakening, or atrophy, which has followed the use of such rigid splint material. For this purpose a temporary pattern pad is used. On this pad, after it has been worn a few days, is registered the pressure points which indicate what

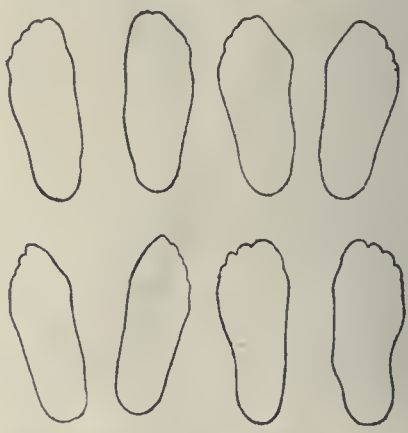

Fig. 4.—Variations in outline caused by longitudinal and metatarsal arch distortions.

part of the foot carries the greatest portion of the burden and what part carries no burden.

From this it is possible to estimate where elevation is required and to what degree. In my experience this plan is far superior to the mucky,

messy, sloppy process of the plaster-of-Paris cast. It also appears more accurate in that it is a record of the foot in action, which is not the case when the plaster cast is used. Patients who have worn metal arch supports require longer treatment, but the results are generally satisfactory.

Most patients who present themselves for treatment, at this time, have been the rounds; some to orthopedists, some to chiropodists, some to shoe clerks, and others to family physicians. From the amount of hardware that some of them bring in, it seems that they have been referred to blacksmiths, also. For this there is no criticism. As it is my aim to do the very best I can, I give the same credit to others. But when it is more generally known how easy it is to prevent broken arches, when the feet begin to ail, also repair them when they are beginning to break, the great mass of chronic sufferers from this affliction will be lessened.

Specialists to Treat Feet.—There are prominent specialists for various parts of the anatomy, so why not specialists for that part of the anatomy which everybody sees, which everybody needs, which everybody uses every day in the year—the feet?

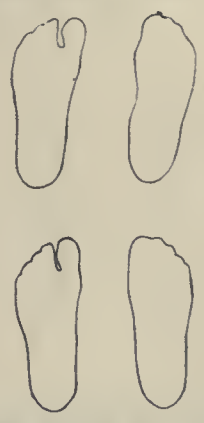

FIG. 5.—Changes in the right foot; in the upper figure at the beginning of treatment; the lower figure shows complete recovery three weeks later.

While lecturing at one of the Army camps, I was requested to give a special course of lectures to Medical Officers, with the view of their specializing in this branch of practice. Most of the officers who were enrolled for that course have returned to civil practice and are located in different parts of the country. If any of them will communicate with me, I will arrange to continue the course of instruction.

The feet are such very important parts of the human economy that the unskilled should not be permitted to tamper with them, nor with other human ailments. This is not the claim of a medical trust. It is just plain, ordinary, uncommon common sense. The man who has an automobile to be repaired does not seek a watchmaker, nor a stone-cutter. He seeks the skilled mechanic, one who knows the position and purpose of each intricate part. The importance and ability to render expert and skilled service is recognized. Is as much intelligence displayed when the delicate and efficiency-maintaining human machinery of locomotion, the feet, are concerned? Not so, and especially is this true when the ailment begins. Here the business man, careful about every detail of his complicated enterprise, is likely to go the rounds mentioned above and patronize the blacksmith, or other incompetents, when he himself, a member of his family, or an employee develops evidence of ailing feet.

Such procedure only prolongs their suffering, makes it worse, and necessitates longer treatment when they finally reach the right place. As a specialist in this branch of practice I should not complain. But I do complain, because it entails a useless economic waste. To recognize promptly and positively, and make a correct diagnosis of the most insidious and common ailment of the feet, requires a skilled diagnostician who understands the use of scientific methods of examination and diagnosis, and who also understands feet.

With the aid of an outline tracing of the feet, properly made with a podograph, and a notation on the tracing of the location of visible blemishes, and a record of the symptoms complained of or elicited, I believe it is possible to assist the attending physician to make an accurate estimate of the degree of distortion and a correct diagnosis without seeing the patient. That statement is made because of successes from surveying tracings which have been sent in by colleagues, and aiding them in the diagnosis and treatment of cases remotely situated. (Figs. 3, 4, 5.)

Broken arches can and should be prevented. The earlier the diagnosis, and the more prompt the treatment, the better the result in all foot ailments. If they do not come in time to be prevented the plan described above has given such satisfactory results that it is recommended.

There are applicable to every individual case details which cannot very well be covered in a printed article. Something definite may be added by a review of the symptoms presented. For that reason, and in the hope of being able to aid in the care of cases remotely situated, correspondence is invited on any subject pertaining to feet.

This report is confined to rebuilding distorted longitudinal arches. Rebuilding the anterior metatarsal arch and preventing Morton's toe, Golfer's foot, and Automobile foot, will be made the subject of another paper.

4263 CALIFORNIA STREET.

SACCHARIN.

BY STEPHEN H. BLODGETT, M.D.,

BOSTON, MASS.

THERE has been so much written in the lay press during the past year or two concerning the effects of saccharin that I think it may be of interest and also useful to record some experiments I made several years ago.

Saccharin is present in a Brazilian plant, but as this source is so very limited that the cost to produce it in practical amounts would be enormous, therefore for commercial use it has been manufactured from toluol. By some writers it is classed as a drug, but as far as experiments show, it has no effect *per se* on the human body. Therefore it can only be considered as a condiment, in the same category as salt, pepper, ginger, etc., and its particular use is to make palatable, food which otherwise would be unpalatable.

Where sugar is contraindicated, or where its use is impracticable on account of scarcity or high price, saccharin may be used as a perfect substitute for sugar to produce the sweet taste desired.

And right here I would like to suggest a thought about the use of sugar. The per capita use of sugar (a most concentrated carbohydrate) in this country has increased from less than 20 lbs. per year in 1864 to over 90 lbs. per year at present, and during the past fifteen years cases of so-called diabetes, or inability properly to take care in the system of the amount of carbohydrate ingested, have very markedly increased. Whether this is partly the result of the large increase in the amount of concentrated carbohydrate (sugar) ingested, cannot as yet be answered with certainty, but many of the men who are experimenting in this particular field are already feeling that if the per capita ingestion of sugar was somewhat lessened, it would be to the advantage of the average person. And this brings before us the question: How, if advisable or necessary to lessen the intake of carbohydrate, can we satisfy the rapidly increasing taste of the average person for sweets, and yet limit the amount of carbohydrate ingested?

In 1907, as very little of a practical nature was known about the use of saccharin as a sweetener of food, I employed a trained nurse to make experiments and work out definite formulas for the substitution of saccharin in the place of sugar as a sweetener of various kinds of food. Then, that I might learn the effect of its use on the normal adult, I arranged with two men that they should take such amounts of saccharin daily as I chose. The men were of ordinary physique: A weighed 144 lbs., and was 50 years old. B weighed 129 lbs., and was 42 years old. Both had been well for years. A was a clerk, being on his feet from 8 A.M. until 5:30 P.M., and B a bookkeeper, sitting at a desk all day. However, B walked to his work every morning, about one mile, and usually walked home in the late afternoon.

The lungs and heart of each were normal, and the examination of the urine of each showed no abnormality. As far as could be discovered, they were just ordinary average human beings, both men working indoors, one on his feet nearly the entire day, and the other sitting during the entire day, with only a one mile walk in the morning, and sometimes (probably two-thirds of the year) also in the evening.

They were allowed no sugar or food containing sugar (as such) during the course of the experiment. The saccharin used was the "soluble saccharin" so-called, the sodium salt. The subjects did not know what was being used to sweeten their food during the early part of the experiment.

I saw the men on an average of four to five times a week, and would ask them as to any symptoms, taste of the food, appetite, feelings as regards energy and zest for work, etc., headache, sour stomach, or "heartburn," so-called. They ate two meals each day at the table with the trained nurse, and were thus under her observation more particularly as to appetite, etc.

The amount of saccharin was increased and decreased without their knowledge. The urine was examined at least once a week, and always the second day after the amount of saccharin had been increased, in order to make sure that they were taking the amount ordered.

The nurse prepared the articles of food and drink that contained the saccharic, and it was her province to see that the amount of saccharin ordered was taken daily.

The feces, sweat, etc., were not examined, as I felt that if excessive amounts were given to ordinary human beings during an entire year, we would be able to discover by ordinary methods of examination any deleterious effects which might be produced.

The amounts given daily to each subject, also the average weight during the two week period, are recorded below:

Period.	A		B	
	Daily Amount, Gr.	Weight.	Daily Amount, Gr.	Weight.
1st and 2d week....	1.5	144	1.5	129
3d and 4th weeks....	4.5	144	4.5	128
5th and 6th weeks...	4.5	145	5th, none 6th, 4.5	126
7th and 8th weeks...	9.0	144*	9.0	127
9th and 10th weeks..	.....	143	9.0	128
11th and 12th weeks.	1.5	145	9.0	128
13th and 14th weeks.	15.0	145	15.0	125
15th and 16th weeks.	15.0	144	15.0	124
17th and 18th weeks.	3.0	146	3.0	126
19th and 20th weeks.	3.0	147	3.0	125
21st and 22d weeks...	23.0	146	23.0	125
23d and 24th weeks.	23.0	142	23.0	124†
25th and 26th weeks.	15.0	143	.....	123
27th and 28th weeks.	15.0	143	3.0	123
29th and 30th weeks.	3.0	145	6.0	125
31st and 32d weeks...	3.0	144	6.0	126
33d and 34th weeks.	.....	143	15.0	125‡
35th and 36th weeks.	23.0	145	15.0	124
37th and 38th weeks.	23.0	143	15.0	125
39th and 40th weeks.	15.0	143	15.0	126
41st and 42d weeks...	15.0	143	15.0	125
43d and 44th weeks.	6.0	144	15.0	126
45th and 46th weeks.	6.0	145	15.0	125
47th and 48th weeks.	6.0	145	1.5	126
49th and 50th weeks.	6.0	147	1.5	128
51st and 52d weeks...	23.0	146	23.0	127

*During eighth week bitter taste following some meals; disappeared wit hin one hour.
†Twenty-fourth week persistent bitter taste; lasted one week.
‡Diarrhea.

They were weighed twice each week, and the weight given is the average of the weights for the two weeks period given in even pounds:

Weight of A, maximum.....147 lbs.
minimum.....142 lbs.
Weight of B, maximum.....129 lbs.
minimum.....123 lbs.
(Except diarrhea 3 days, weight 118 lbs.)

There were many times when they told me that some particular article of food was bitter, but only in the case of B was there a persisitent bitter taste. This occurred during the 24th week, after he had taken 23 gr. daily for nearly four weeks. He described the taste as a bitter and metallic taste, which was constantly present. All saccharin was stopped and after eight days the bitter taste had disappeared.

Subject A had a "cold" twice during the course of the experiment, lasting five days and thirteen days respectively.

Subject B had a diarrhea lasting three days, at the end of which time his weight had dropped from 125 lbs. to 118 lbs.; from this it increased and in five days was 123 lbs.

With the exceptions above noted, there did not occur during the year that they were under con-

stant supervision, or during the following year, when they were seen as often at least as once a week, any untoward symptoms, and of course the colds and the slight diarrhea could not be attributed to any action of the saccharin, because the saccharin was not discontinued, and the colds and diarrhea got well.

It was noticed that when the daily amount of saccharin was much over 5 to 7 grs., some of the articles of food in which saccharin had been used would have a bitter taste, and with the consequent result that if the men had been left to their own inclinations, they would not have partaken of any more of that particular article of food. This agreed with my experience in regard to the use of saccharin as the sole sweetener of the food of diabetics, which was that where saccharin was the sole sweetener and the person was allowed to use as much as he wished, the daily consumption usually amounted to 5 grs. or less.

In talking with patients who have been compelled to use saccharin as a sweetener for all food and drink (and allowed unrestricted amounts) for in some cases twenty years, I find there is no tendency to increase gradually the amount of saccharin used daily. This has seemed strange to me when I realized how the per capita consumption of sugar has increased during the past twenty years.

Following this experiment, I gave to a bull dog (weight 51 lbs.) before his morning and evening meal 15 gr. soluble saccharin dissolved in 2 oz. water (30 grs. saccharin daily). This was given by means of a syringe with a rubber tube on the end and the tube placed inside his lips, the lips being held tightly together and the head raised. As soon as the dog had swallowed this, he was given his meal, which consisted as had been the custom for years, of meat scraps, bread scraps, and oatmeal from the table, and enough added dog biscuit to give him a sufficient quantity. The dog at first rebelled against the injection, but before two weeks, he became so accustomed to it that he expected to receive the saccharin injection into his mouth before he was given his food, and when I took up the syringe he would run to me, wagging his tail, and as soon as it was over, he would begin to dance about, expecting his breakfast or supper.

After thirty-five days of this, as there was no diminution as regards his appetite, and no other symptom that I could discover, I stopped the experiment.

Now just a few words as regards the continuous use of saccharin by human beings. A former patient who, because of the presence of large amounts of sugar in the urine, was put on a carbohydrate restricted diet, but allowed to use saccharin without restriction, has been using it continuously since 1896. He uses on an average between 7 and 8 grains a day, and never has he had any symptom that could be attributed to saccharin, and I have among my records several cases where the patient has been placed on a carbohydrate restricted diet, but allowed the unrestricted use of saccharin for over fifteen years without any untoward results.

My experience in the treatment of diabetes during the past twenty-one years is that a too restricted or badly balanced diet may cause headache, heartburn, etc., but when the diet is properly regulated, these symptoms disappear, and saccharin, by making more articles of food palatable and by satisfying the patient's craving for something sweet, allows us to add needed articles to his diet, and this makes possible a properly balanced diet and also makes the diet palatable, and the headache, heartburn, etc. promptly disappear.

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THE MEASURES OF INTELLIGENCE DIAGNOSTICALLY REMEASURED.

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NEW YORK.

(*Concluded from page* 475.)

Test (e)—repeating of a story: This test is one for the *context* of memorial matter, or "logical memory," as contradistinguished from verbatim recall. It also serves as a test of report (or fidelity of memory) and so for deferred recall.*

Binet originally had a "report-test" in the *eighth* and *ninth* years. This was the account of the fire, which was *to be read by the child,* who then had to tell all it remembered. The passage was divided into so many remembrances or "details," of which two were required *at eight* and six *at nine.* Binet dropped the test later, as did also Goddard; nor does Yerkes use it. Terman, however, makes a plea for it and retains it in the *tenth* year, requiring at least eight "memories," and allowing no more than two errors.

This test given in the above manner is partly a test of reading ability, partly of attention—or grasp-span (and if poorly done, may mean two very different things—poor reading ability or poor attention-span). Save that this passage was read by the child itself, the test is not dissimlar to the sentence test just discussed—in which the sentences extended beyond the attention-span for verbatim recall; and no little of what we noted in our comment on the foregoing could be applied here. In Binet's test and also in the form Terman employs it, exact word for word recall is not expected, slight changes in phraseology and even slight substitutions, being permitted. Nevertheless, the individual items or "memories" into which the passage is divided are required.

Bobertag retains the test, but does not speak favorably of it, and points out that the scoring and evaluating of the performance is very difficult, if not problematical. Much, he says, depends upon the kind of passage used and its length, and what one wishes to designate as "single memories." Bobertag makes a very interesting suggestion for its change, proposing that the passage (and he substitutes one of his own choosing) be divided, not into its individual ideas, or detailed memories, but rather into its contextual elements (*Einheiten*), the rating to be computed on these. The seven elements (instead of twenty-five single memories) of the story employed are as follows (and the story itself may be intimated from these elements without giving it in detail):

*The same story is also again used under Combination in testing the child's "grasping the *point* of a story."

1. There was a man and a child.
2. The man showed the child the Christmas tree (went around the tree with him).
3. He carried a lamp.
4. He (tripped and) fell.
5. A fire started (they were both burned).
6. The neighbors put it out.
7. The man and child were taken to the hospital (and died).

The story test as we employ it eliminates the reading element, and so remains wholly one of *recall for context of a story heard.* After presenting it to the child but once, one requests its repetition: "Now tell me the story again."

One would think that this test might have very real value, for the hearing and recounting of stories is the very commonest occurrence in childhood. Yet one must conclude, judging from the work of many experimenters (see the general summary of these given by Whipple,[9]) that the test in this form* has but little significance for us, partly because of the difficulty in evaluating and rating the performance, partly because of the wide individual variations possible, and finally, because it correlates but indifferently ("unexpectedly low" in several experiments) with intelligence as guaged by class standing or in collation with other separate subjects. It has value, however, as a qualitative test, but even as such, the Meumann test of building a story out of a series of "stimulus" words is much superior. (See under Combination.) On the other hand, Goddard found the test to be especially good in separating idiocy from milder feeblemindedness.

The test might be used as a supplement to the sentence test, and then after a period—and this is our only reason for telling the story at this point—brought up again by having the subject relate the story to note his fidelity of report (under test (i)).

The following story (again used under Combination, (f) may be employed:

"Once upon a time there was a little girl who had lost her mother and father, and was all alone, and so poor that she had nothing more than the clothes she wore and a piece of bread in her hand. But she was a very good and pious child, and thus wandered forth into the world without any fear. Soon she met a poor old man who was very, very hungry, and begged for food; so she gave him her piece of bread and went on. Soon after this a little child came along shivering, with nothing on, and who asked for clothes; thereupon our good little girl gave her own clothes to the child and continued on her way, herself now trembling with cold. And so, finally, when night came, she had nothing at all left, having given everything away; then suddenly the stars began to fall from Heaven, and as she picked them up, she found they were beautiful, bright dollars, and as many as she wanted."

Test (f)—carrying out of commissions: This test is for the most part a memory test. Thus Bobertag comments, "If one has listened attentively, then the rest is but memory-matter." However, there is something in this test beside, namely, an element of action, of practical doing, which lends particular interest to it. Binet pointed out the fact that retarded children, though they can be trusted to perform one commission, cannot be given several at the same time. The reason for this seems to me to be found in their inability to defer recall (cf. test (b)). In this test two commissions must be deferred and borne in mind while attention busies itself with another performance, and then the third commission be still deferred until the second is accomplished. It has somewhat similar significance as Ziehen's test of deferred recall, and, indeed, might even be combined with that test, the three actual commissions being carried out instead of the "make-believe" ones (in which case the test, however, becomes more difficult).

It seems to us a good test and one that might be serviceable in spotting defect. It is not absolutely *defect diagnostic,* however, for there are defective individuals, who will mechanically carry out commissions; on the other hand, disturbed attention, even where there is normal intelligence, might jeopardize the outcome. The test, when accomplished, therefore is not especially *intelligence diagnostic.* Nor is its achievement decisive of a special age level. Binet at first had the test in the sixth year, but in the revision placed it in the seventh. Goddard gives it in the sixth year, while both Terman and Bobertag think it properly placed in the fifth. Terman thinks it an excellent test; Bobertag, on the other hand, scarcely thinks well of it, believing the intelligence but little involved in its accomplishment, and declaring the test easier for feebleminded than the "patience" test in the fifth year. Yerkes does not employ it at all.

Terman expresses the opinion that a test of this same type, though more difficult, ought to be developed for some later age level. There is no reason, if this test is employed, why it should not be given at *every* age level. Indeed, this is one of the greatest failings of the Binet method (and Terman's and the various revisions) that a certain type of test is given at one age level and then never again or but once again applied, or one function tested twice in the same age level and entirely ignored at another.* We give the test, therefore, at each age level,† and believe that five commissions may be asked in the ninth,, certainly in the tenth, year (though this has not yet been standardized on any special group). We give the commissions in the usual way: "Do you see this key (pencil)? Go put it on that chair (indicating the chair), then shut the door (in our office the command of opening the door is more feasible, as this is usually closed—but opening is more difficult than closing, necessitates more work and attention), and after that bring me the box which you see over there (point clearly to it). Now, remember, first put the key on the chair, then open the door, and then bring me the box. Now, go ahead." To this series one might add one commission when giving the test in the seventh or eighth years (namely, straightening a pillow lying on the couch) and two commissions in the ninth and tenth (the one just men-

i.e. an immediate memory test for context of ideas. The *story-test* has very great value, on the other hand, when it comes to probing the child's ability to grasp the "point" or theme of a story, the ability to see the moral or motive underlying the context. This, however, belongs to Combinational ability, and is taken up under that caption. (See test-sheet.)

*For a fuller discussion of this point see Nos. 2 and 4.

†The test is also given at each age level by Treves e Saffiotti.[10]

tioned, and that of getting the Dictionary from a group of books on a nearby shelf).

Test (g)—Copies a square, triangle, diamond, etc.: In this, immediate *visual* memory is tested, more exactly, visual memory of simple outline-figures. The figures employed are the square, triangle, diamond and a more complicated figure suggested by Ziehen.

Binet's tests of copying the square and diamond were not memory tests, but tests of execution, the child having the model placed before it. The drawing was carried out with pen and ink, and but a minute was allowed for its completion. Copying the square was required *at five*, the diamond *at seven*. In 1911 the latter test was placed in the *sixth year*. Binet's drawing designs test in the *tenth year*, however, is a memory test. Terman placed the test of drawing the square in the *fourth year*, and more sensibly had the child use a pencil. A crayon at four would seem still more logical. Indeed, we do not see why any of the drawing tests should be carried out with pen and ink, as such are not employed for drawing lessons in the schools. Copying the diamond (but using pen and ink) Terman keeps in the *seventh year*, the model, in both tests, being placed before the child, who is told to make one just like the one shown.

Terman *at four* allows three tests with the square, and requires one satisfactory execution. Of the diamond test *at seven*, two of three trials must be satisfactory. Terman intimates that the test would be warranted at six only if pencil were used and one success required in three trials. Binet at five gives but one trial. Drawing the diamond, he states, is accomplished by but one-half at six years (why then place it in the sixth year?), and even a fifth fail at seven. Goddard keeps the tests respectively at five and seven, also permitting but one trial. Kuhlman at five asks two trials of three. Bobertag gives the test in Binet's fashion; advises, however, that one ask the child's criticism of its own accomplishment. A child's satisfaction with a poor drawing augurs badly, while dissatisfaction with a fair, even if not entirely good, drawing, augurs propitiously for the child's intelligence. Only 32 per cent. of his six, and but 61 per cent. of his seven-year-olds passed. (An *eight-year* test, therefore.) The intelligence factors in this test, Bobertag holds, are: 1. The drawing must be comprehended and firmly held in mind. 2. The execution must be controlled through (observance of) the original.

Bobertag in this test made an interesting observation, which may be mentioned here (we will come upon it again as a consequential factor, but in a different connection, and on the authority of another observer—under comprehension of pictures), which makes it evident that a child's mental associations "abstracted" from geometric figures must be rather inexact and often faulty. He asked his children what the drawing (square) was, *i.e.* represented, and the answers were: Window, picture, letter, room, card, circle, "round," a four-cornered circle; and as to the diamond, it was a star, cross, zig-zag, "slanting," etc.

The test of drawing the triangles—in the manner of Binet—was suggested by Saffiotti (l.c.) and placed by him in the sixth year.

Meumann used these drawing tests as *memory tests* ("mit Abdecken"), keeping them, however, in the same age levels. Ziehen also uses drawing tests as memory tests, employing various angles, and more complicated figures (shown below). He exposes the figures 15 seconds,* than covers them, waiting 15 seconds, and then has the child draw what it has seen. Ziehen, however, has not standardized his drawings for exact ages.

Ziehen's test figure.

Trying out the Ziehen drawing (as a memory test) on sixty children between the ages of 8.5 and 14, at one of our best schools, and comparing the technical execution with the teacher's class rating of the individual children, one was led to infer that, on the whole, there was no definite correlation between drawing ability and grades of intelligence. Some of the best students were execrable draughtsmen, while some of the very poor ones made an excellent showing. The very poorest students of the class, however, did badly in the execution.† It is probable enough that talent is a real factor in drawing, and such talent and intelligence show no especial correlation. In fact, it is astounding, all in all, how little our powers of graphic reproduction are developed—though drawing was one of the earliest practiced of the arts—how primitive our ability, for instance, whether as child or adult, whether as cultured or uncultured, to put on paper even in the crudest form, even in outline, a recognizable likeness of the familiar memory of horse, cat, dog, pig, etc.

The majority of the children made their drawings smaller than one would have expected. The size of the drawing did not in any way correlate with the performance of the test or the intelligence (class standing) of the child.

As to giving this test as a memory test, there seems no reason why a combination of lines should not be definitely retained in memory just as well as a combination of sounds (words and sentences), and no reason why memory for forms should not be included in mental tests, as well as memory for familiar colors, sounds, etc. In determining corre-

*Instead of 10 seconds, as Binet does, Yerkes also allows 15 seconds for the drawing of design test.

†Through the kindness of Miss Gillingham, one of the principals and a teacher in the art department of the school, I was given the drawing class rating and I.Q. of a group of 19 children, the result of which paralleled my own findings testing with the Ziehen drawing. The eight children with the highest I.Q., and 7 with the lowest, rated as follows (rating with "superior," "above average," "average," "below average," "poor"):

I.Q.	Class Rating	I.Q	Rating
130	Above average	117	Below average
130	Above average	114	Superior
131	Above average	112	Average
131	Below average	107	Poor
133	Superior	106	Average
139	Below average	100	Above average
142	Superior	*99*	*Superior*
142	*Poor*		

I was also told that many of the more intelligent children evidenced motor-incoordination as seen in poor penmanship.

Meumann,[15] commenting upon such incoordination—more strictly on manual dexterity in drawing—says

lations with intelligence, however, we must first decide just which functions are herein exercised.

To this purpose we may advantageously draw upon the conclusions of some highly interesting studies of Meumann with tests of *drawing from memory, i. e.,* drawing objects or designs exposed a brief time and then shut out from view. Meumann (No. 15, Vol. III, p. 719-760) first pondered the question, "What are the causes of poor drawing in individuals who draw badly?" Of course, in some observational powers are defective—their vision does not *see;* in others manual dexterity is wanting—their hands will not, cannot execute. Yet there are such who, in spite of good observing ability and motor adroitness, nevertheless cannot draw. A series of test-persons were thereupon requested to sketch from memory some object quite familiar to them. After this was done the object had to be carefully described. In the event of this falling out poorly or proving impossible, a picture of the object was placed before the test-person, who then had to describe the picture. From this series of procedures one could easily determine whether the poor draughtsmanship was due to shortcomings in seeing, understanding, or ideo-motor elements. Meumann concluded from his findings (and this should be remembered in connection with our later tests of *fidelity* of memory) that most people see things very imperfectly indeed. Many prominent details are even overlooked, though the thing pass before their eyes a thousand times (a coin, a stamp, their pocketbook, a landscape, etc.). Their *seeing* is not an *analyzing* and *remembering* seeing, not a seeing intent upon really recalling form and color of things, but merely a seeing, chiefly for the purpose of either again *recognizing* things, or in order to become acquainted with their practical traits, facts indispensable in everyday life, or in order to derive an indefinite æsthetic pleasure from them. And people haven't the slightest idea of the vagueness of their observations of forms and colors.

In some this vagueness is due to the fact that the intention of observing analytically, *i.e., analytical seeing,* has not been awakened in them. In others such intention has been developed, but they *cannot* observe correctly. The first group may be trained and with a little practice do exceptionally well in *describing* the thing to be drawn—hence, show good analytical observation and memory of the observed—yet, nevertheless, cannot draw it. Here the ideo-motor elements need not be defective.

Meumann finally summarizes the various possibilities of causes for disability in drawing from memory as follows:

1. The intention of analytical seeing and recalling of forms and colors of things may not have been awakened.

2. In cases where such intention has been awakened, the ability to see analytically may nevertheless prove difficult (be defective).

3. The optic memory-pictures may be defective (especially show presence of gaps and indistinctness) and be particularly defective for form and color. There may also be defect of memory for spacial relations.

4. There may be an inability to hold (with the attention) the optic memory-picture, especially during the act of drawing itself.

5. There may be defective co-ordination between the optic memory-pictures and the drawing-*movements.*

6. Disturbances may be caused by the incongruence noticed by the individual, between the actual drawing he is making and the intentions (differing so from the drawing being constructed) hovering before his eyes.

7. In certain drawings (especially such of tridimentional type—in perspective) we need the knowledge of schemata of construction. The lack of such acquired drawing-schemata may be the cause of failure.

8. There may be lack of understanding for the projection of tridimentional space on a plain.

9. There may be defect of manual adroitness or skill.*

10. In higher tasks there also comes into account the absence of *artistic sense.*

Of these Meumann surmises that 2, 3, 4, and 5 are matters of innate endowment-defects. The remaining causes depend upon lack of training, although 8 appears to occur also as an innate defect.

On the other hand, individuals are found who have no distinct memory-pictures and nevertheless draw well. Of such there are two types: individuals of the one depend upon their knowledge and *reflection*: such think, "How must this thing have been?" and supplement their defective or fragmentary memories with analogies and scientific reflection anent the make up of things—and so work out their drawings tolerably well. Individuals of the other type have likewise imperfect memory-pictures, but happen to possess a highly developed ideo-motor co-ordination and facility of hand, and eke out such memory-images as they may have to exceptional advantage.

The results of still another series of investigations (of Meumann, together with Albin) are of importance for us. Simple drawings yet of quite unusual design, were presented to a group of trained adults, and 45 children of the Real-school ranging from 9 to 18. The drawings were such as had no resemblance or reminders of anything seen by the test-person before (were chosen with this intent, not to call up former memory-images), and when exposed, had to be *fixed* (the gaze being riv-

*To test this have the child (a) draw several parallel lines, (b) a straight line from one point to another, (c) a horizontal line from right to left, then from left to right, (d) a vertical line from above down, then from below up, (e) a line from corner to corner, first from below up, then from above down, (f) a set of curves, one tangent to a horizontal line, one tangent to a vertical, etc.

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that such dexterity and drawing ability do not cover one another. However, the especially poor draughtsman has often also an "uncertain" hand, and vice versa, the best draughtsmen give a good showing in dexterity; but it also happens that wholly untalented draughtsmen at times have very great manual adroitness, and good draughtsmen a mediocre ability. (Vol. III, p. 754.)

As to correlations between intelligence, as rated by the teacher, and drawing ability, Meumann (p. 742) found that the better endowed children on an average showed better accomplishment in drawing than the unendowed. Kerschensteiner,[20] in his study of the drawings of 300,000 school children, concluded that children with good intelligence regularly have good ability for graphic expression, but that the reverse was not true.

eted to a certain point marked with an asterisk) in order not to allow moving of the eyes, and a *sizing up* of the design. The exposure lasted 10 seconds, whereupon the design was immediately drawn. The point at issue was to suppress all construing seeing, and have the test-person draw the design as blankly noted, *i.e., as merely perceived.* The task proved impossible, and, in fact, for all ages and all degrees of endowment. The skilled engineer and architect succeeded no better than the child of 9. Only on repeated exposures, only as the design began to be *grasped* and *understood,* or as Meumann puts it, only when *analytical, construing seeing* took place, was the task accomplished. To copy something from memory (something first seen, but then withdrawn or no longer within vision), therefore one must first have *en-scoped* it, grasped the idea—and this is accomplished through *analytical and construing observation.*

And now to return again to our test problem: After consideration of the above, it seems that we might apply our drawing tests in a manner that would make them more *intelligence-diagnostic* than as hitherto given. Thus one might offer the test in three parts (1), *as a memory test,* the child looking at the model 15 seconds, then after this has been removed, drawing it wholly from memory*†; (2) *as a test of execution,* the child drawing the figure again with the model before it (one telling the child to look carefully at the model and copy it exactly); (3), the model is again removed and the child given its two drawings and asked if they are good or not, and to judge which is the better and why (*autocriticism*). At this point the original may again be shown and the child asked if it still maintains its criticism, or wishes to alter it or amplify. A lead pencil is used for all the drawings. Especial dexterity, that is, the graphic correctness of the execution itself, must not be accounted a factor in the test under (1) and (2); one will expect the child merely to get the *idea* of the form to be drawn, lines, angles, position, *i.e.* the general *build* of the models shown. Under (3), however, the child's opinion of the execution as such also comes into play.

Binet's copying of designs (two complicated designs) in the *tenth year* is given by him wholly as a memory test. Ten seconds we think is too brief a time of exposure for this test, and the instruction, "Examine both drawings carefully and remember that you have only ten seconds, and ten seconds is a short time," etc., which Binet gives, most disconcerting, for it may produce a panicky feeling or confusion in the sensitive child, and lead to inhibition. The test is pronounced passed if one drawing is correctly reproduced, and the other half-correctly.‡ In the one drawing the inner rectangle must be off center to count as all correct, only half credit being given if this is not so (Terman).

As to the evaluation of Binet's test, this does not appear simple. There seems to be a difference in the performance (less errors) if the design (a) is placed to the right of (b), as Terman has it, instead of to the left, as Binet placed it (Terman). Likewise, according to whether the grading is rigid or lenient, Terman notes, it may be placed in the tenth or eleventh year. Levistre and Morlé, however, placed it in the twelfth.*

Miss Town, in her authorized translation of the Binet tests, speaks of one of these designs as a "prism." Surely this is not meant to be a drawing in *perspective.* If so, then its accomplishment ought to be expected only at a more advanced age, for according to Meumann (No. 15, p. 286), Kerschensteiner (l.c.), and the exceedingly interesting studies of Schrenk,[21] knowledge of perspective in a drawing develops late indeed. The first, testing sixty children of the ages of 13 to 14, found but seven had any idea of perspective distance in a picture, while Schrenk, employing two very simple pictures, concluded that perspective is first understood at the average of 13.6 years. He inferred that at the age of 10 but 50 per cent of boys have developed feeling for perspective, this becoming manifest in girls only at 13. The *drawing* of a design in perspective must, therefore, be impossible at these earlier ages. One can even understand how an older child, *seeing* this drawing in perspective, might be greatly puzzled in reproducing it (an utter impossibility if it has not had special training in the technique of tridimentional drawing).†

The irregular figure of Ziehen is, in our opinion, a far better model than those of Binet, to employ as a visual memory test of a difficult design. It is neither too simple nor yet too difficult, and affords little occasion for "associative anchorings" (quite the contrary being the case with Binet's designs). Most ten-year-olds will be able to reproduce the *idea,* or *plan,* of this. It is passed if the right salient is larger—is broader and extends higher—that the left. As to the base line, if this is reproduced tilted, as in the model, the performance must be considered an exceptionally good one. In the try out mentioned above I found the technical execution itself very poor indeed, up to the age of thirteen. One may stimulate the attention when placing this drawing before the child by saying, "Now, look very carefully at this, and get the *idea* of it."

That a special *memory type* in a child might influence these tests negatively (and it makes us again bear in mind *memory types,*[5] is seen in the following instance: Meumann[16] once observed a boy of thirteen trying to draw an outline map of Greece. "Although the boy had made an accurate study of the map, his drawing did not show the characteristic outline, but only a shapeless form, which bore no resemblance to the map of Greece. I surmised at once that he belonged to the motor type and had him trace the coast line with his finger, at first in sections, and then as a whole. He was then able to make the drawing accurately and without any difficulty." Meumann mentions that Binet also determined that certain persons must trace a drawing with the finger if they are to remember it.

And now let us note the essential facts to be deduced *en resumé* from our consideration of the foregoing test. We find there is much more in question here than visual memory; in fact, visual memory is the least important element contained. The drawing process entails seeing (eyes and visual centers), the imprinting and retention of distinct (visual) images, their association (and cortical

*If the child is satisfied with the drawing just made, one goes on with (2); but if the child is not satisfied or wishes to try again, it is permitted to make a second drawing and to choose one of the two. Under (2) but one drawing is made and one minute is allowed.

†Memory for form, by the way, varies greatly in different individuals. Cf. (No. 11), p. 229.

‡Terman says "correctly means that the *essential plan* of the design has been grasped and reproduced. Half-correctly means that some essential part of the design has been omitted or misplaced, or that parts have been added.

*Cited by Meumann.[15]

†(No. 15, Vol. III, p. 750.)

interassociation) in the act of enscoping and comprehending the thing to be drawn (analyzing and construing vision), finally association and co-ordinations with the motor aria, and from here with the eyes on the one hand and the muscles of the fingers and hand on the other. Or one might more briefly segment the process into three links, *seeing*, *understanding* and *dexterity*.

An individual may have an unschooled, undeveloped way of seeing—this is remediable; or there may be an innate defect of form-memory, *i.e.*, the visual images imprinted are not distinct, are but vague or fragmentary (or the visual association tracts poorly developed?). In individuals of strongly acoustic or acoustic-motor ideational type, such deficiency or defect in visual centers may be particularly noted, at times even severe enough to influence their "visual understanding" in general. In spite of these innate abnormalities (defects) intelligence may be intact. The defect may also, as we have seen, be camouflaged through reflection, etc. The passing of part (1) of the drawing test is therefore in no wise *intelligence-diagnostic*, its failure in no wise *defect-diagnostic*. But failure in the test may also be due to manual disability, to incapacity in graphic expression, visual memory and understanding being normal. This would be shown if the test-person could recognize pictures of the thing, and especially could verbally describe it. Such manual disability is more often found in the less endowed than the better endowed, but *may* exist in even the very best endowed. It is, therefore, not even remotely *defect-diagnostic*, nor is especial adroitness *intelligence-diagnostic*.

Understanding, "analytical and construing seeing," is not so easily disposed of. It entails intercortical associations (cf, the remarks on comprehension in our *foreword*). It will be discussed more carefully under comprehension of forms, objects, etc., in the rubric on Comprehension. Here we may say that empirically it has been shown that the square is grasped earlier than the triangle and diamond;* simple, symmetric geometric forms earlier than assymmetric, these earlier than forms *in perspective*. In the graphic reproduction of the designs—and we consider now merely the reproduction of the *idea*, the general *build*, of the design, omitting the element of technical execution, the child must gage its own drawing, in the process of construction through comparison (repeated comparison) with the original, must pass upon (and carry in mind—here the element of optic memory enters strongly) the length, proportion and tilt of the lines, angles, etc., correct errors, suppress irrelevancies; in short, exercise critique and maintain a purposed direction. Such power of purpose is largely a matter of tenacity of attention. Here autocriticism is added, or rather superimposed—and the power of critique correlates high with intelligence. In the test the actual drawing may do but little justice to the child's *intention*. As Meumann pointed out, the very incongruity between the intention and the drawing in progress may disconcert, may mar the performance. Hence, its verbal opinion is of greater importance. Indeed, in these drawing tests we must conclude that the child's verbal crticism of its performance is of greatest importance—is, in fact, the real element of importance. When well done, this is decidedly *intelligence-diagnostic*, and when badly done—vision, etc., not being defective—is significant of poor endowment (at times, of defect).*

As to standardization, nothing has been done regarding this part (3) of the drawing test, aside from which, as we have seen, the test (the test as hitherto given) has very questionable value. From the data on hand on part (2), the age norms may be approximately placed as follows:

Drawing the square.....at 4-5
Drawing the triangle.....at 6-7
Drawing the diamond .....at 6-7-8†
Drawing Binet's designs.....at 10-11-
Drawing Ziehen's design.....at -10-‡

Tests (h)—the learning test: Several of our tests have involved momentary impressibility, *i.e.* infixing (on hearing the memorial matter just once) for immediate repetition. In such tests, verbatim recall is only possible if the material is within the memory span, and when accomplished, means no more than that the impression (really the perceptional after-image) has lasted long enough for just immediate reproduction. It does not mean that the matter has been *memorized*, has been impressed for extended or permanent retention. Very little, if anything,¶ on one presentation, can be impressed for exact recall that is lasting. To that purpose it must be *re*-impressed, must be *learned*.

When we come to material that is longer than the memory span, that cannot be exactly reproduced on one presentation, we find that if repeated often enough—if *learned*—it is soon reproducible for one or more correct renderings. But even here its reproduction does not mean that it has been really *memorized*, that it has been impressed for deferred or permanent recall. Thus it has been shown that senseless material learned in this way is never reproducible on the following day, and that even sensible material at one sitting will rarely stick (No. 16, p. 269). *Learning* and *relearning*, then, are of fundamental importance, psychologically and pedagogically, for real retention, and the acquisition of knowledge depends upon these factors.

The *infixing* and *learning* processes should therefore, be distinguished and separately examined. A special admonition to this effect comes from the domain of psychopathy, in which it was found that certain individuals, in spite of an inability to reproduce much (within the memory-span) on one pres-

*The circle earlier than the square.

*In young children, however, criticism will be found of a very simple nature and given with very few words. The paucity of words may make such criticism difficult to evaluate.

†The children on whom this test was tried (see above) were a high-typed group, so that for average children this test may also fall into the 10-11th year.

‡Remembering Bobertag's statistics. But 61 per cent. of his 7-year-olds passed.

¶Such lasting impression may occur, however, when the matter is associated with very great or intense tonal feeling. Ordinarily, however, as learning material is constituted in the school, in the home, and in everyday life, repetition is necessary for real infixing. The innumerable *psychoreflexes* which are established in childhood and which in such large measure determine our ideation and behavior, likewise originate through repetitions, though some are also forged on single incidence through strong tonal feeling (affects). See No. 1.

entation, could do so after several presentations: their infixing ability was impaired, yet they could make good through their capacity *to learn* (Cf. No. 3, part 3).* But pedagogics itself points the way in its differentiation of the slow and the rapid learner. The former can retain little on one presentation. He must go over and over a thing before it soaks in and holds. The difference between both types is striking where mechanical memory is involved, less marked, however, for retention of significant material (Meumann). The slow learner is so because his infixing is poor, his memory span narrow, his accommodation of attention labored. But after the learning task is once accomplished, his *retention* is good, is possibly superior to that of the facile learner. Each type has advantages, yet the slow learner, the child which must repeat, is not inferior in intelligence to the other (though intelligence tests which do not take these diagnostic points into consideration might make it appear so). On the contrary, he may be superior. Thus Pyle writes, "If a slow learner has the habit of going over a lesson or task several times, and a fast learner the habit of giving a lesson but one hasty reading, other things being equal, the slow learner will have the better scholarship (Cf. No. 9, p. 583), while Meumann, Radossawljewitsch, and Höffding have intimated that the rapid learner also forgets the more rapidly.

All tests of immediate memory, or let us say, rather, all tests of one presentation, must be evaluated with an eye on this learning test. When the former fall out poorly, possible this latter will offer an explanation and extenuations. Here in connection with the relearning and saving computation we may diagnose the poor infixor, the slow learner, yet after all, the good retainer. Here again we may spot the rapid learner, who is likewise a good retainer—the most propitious type of learner. Finally, the out and out poor scholar, poor in infixing, in learning and in retention, may here come into evidence.

As to the learning capacity itself, without being able to standardize norms (for significant material), we know that it increases with the years (well into the forties—and need not lose its edge, even in the fifties).[22] On the other hand, retention, contrary to what we would expect, *decreases* with the years, is less in the adult than in the child, less in the older child than in the younger (at least, up to 6 or 7). Or to put it reversely, the child, though learning less ably than the adult, retains better what it once has learned, and the younger the child, counting from the sixth or seven year on,† the firmer the retention.

The test procedure itself is as follows: One presents sensible material*—a sentence half again as long as the memory span—to the test person, and after two presentations has the sentence repeated, then presents it again, and has it repeated, etc., etc., until it can be recalled without error. One then makes note of the number of repetitions necessary for one correct rendering. On the following day (24 hours later) one repeats the experiment and determines how many fewer presentations (reproductions on part of the test person) are necessary for the correct recall. The difference between the number of repetitions of the first and second experiments is the *saving* in repetitions—*i.e.* the index of the retention.

Ebbinghaus (l. c.) elucidates as follows: "If a person takes 50 repetitions to learn a 12-syllable line for one correct repetition, and after eight days takes 25 repetitions, the saving is 25 repetitions. This 25 is the absolute saving; the relative saving is ½ or 50 per cent. If a line is learned with 50 repetitions, and 30 days after is learned with 40 repetitions, then the absolute saving is 10, and the relative 1/5, or 20 per cent. These values are at the same time measurements of *forgetting*. The measures of forgetting are the complements of the figures of retention. In the first instance, the retention was 50 per cent., so also the forgetting; in the second, the retention was 20 per cent, the forgetting 80 per cent."

But how does this second relearning compare with the original learning? It has been claimed (Meumann) that the child who learns slowly also relearns with difficulty. Some doubt is thrown on this fact—at least upon its universal application—by Müller and Schumann (Cf.[22] p. 686), who had three test persons learn lines of twelve senseless syllables. This was accomplished with 11, 14.8 and 19 repetitions respectively. Twenty-four hours after the same were relearned with 7, 8.2 and 8.7 repetitions. Here it was found that the *saving* was 4 (37 per cent.), 6.6 (or 45 per cent.), and 10.3 (or 54 per cent.). The interesting point here lies in the *relearning* feat, for in this the rapid learner hadn't by any means much advantage over the slow learner. And Ebbinghaus intimates that his own results, as also those of Ogden, seem to corroborate these facts.

This lifts the *relearning* phenomenon into significance of its own*, and it might be well to consider this rate itself in comparison with the rate of the initial learning, besides using it to determine the *saving* and percentage of retention.

Here it might also be pointed out that the experiments of Ebbinghaus, Meumann, etc., show that the first repetition or relearning, after the initial acquisition (*i. e.*, the "freshing up" on the following day),

*Interesting in this connection is the report of Gregor (l.c. No. 13) that in using four pairs of one-syllable words with one presentation, on a group of mental patients, he got 24 per cent. of correct associates, but on employing two presentations he obtained 62.5 per cent. As to repetitions, however, Hawkins, on normals, found two hearings less effective than one or three. Smedley's test of 38 ten-year-old pupils with auditory digits gave for the first hearing 47 per cent., for the second 55 per cent., and for the third 59 per cent. correct reproductions. But in some of Smith's tests, 12 presentations did not double the efficiency attained in one presentation. (Cf. No. 9, p. 558).

†Earlier than the sixth year retention appears to be very unstable.

*An immense amount of experimental work has been done with this learning test, really the cornerstone in experimental memory psychology, and from the results many of the fundamental laws in pedagogics have been derived. The experiments have been mostly with senseless, far less so with significant material. For the learning test, as we wish to apply it, significant material should be used, as that is the kind the child is concerned with as a learner in the school, as well as out in daily life. (Cf. No. 15, Vol. I, p. 452, who states that he does not see how the conclusions derived from senseless material are to be applied to the child whose learning is of significant and never of senseless material.) The learning test comprised of a set of symbols and key numbers, a long series of symbols then to be rapidly numbered (frequently employed among army tests) may be criticized from the same viewpoint. It is difficult to see just what it has to do with intelligence.

is the all-important factor for real retention; subsequent repetitions serve only to intensify its effect. (No. 16, p. 334.)

Our paper has grown too long to include a study of the Reliability of Memory, (i). These tests are separated from the remaining memory tests, it will be seen (cf. test-sheet), they being qualitative tests and not intelligence indices in the stricter sense. Under (i) I. The story (same as test (c)) is recalled at the end of the test session, and on the following day. The same procedure is undertaken, II, with the Christmas-picture (likewise used under *Comprehension* (g)). Under III a cardboard with two small pictures and four small objects pasted upon it is exposed, then covered, etc. (see Whipple on Fidelity of Report). IV. Certain misleading questions are applied to tests I, II, III, in order to bring out the test-persons' suggestibility.

Among the nine tests under the rubric of Memory, only one is of prime importance as an *intelligence endowment* test (i.e. test of especial intelligence) and that is (d) II. It may be applied at all ages; on the other hand, it cannot be used as an index of a special age norm. Nor does test (d) I, serve very accurately for this latter purpose. Among this group of tests, test (a) does this best. If one knows how to make proper allowances and deductions in using test (g), the drawings accomplished may aid in this matter. The autocriticism in this test will also serve as an index of *intelligence endowment.*

Test (c) is probably the most important test as yet at hand in "borderline" diagnoses.

For the substantiation of normality (or abnormality), of infixing, retention and recall, and of immediate and deferred recall, tests (a), (b), (d) I, and (f) will serve.

When tests have fallen out poorly, *and in all cases of psychopathy,* the attention span must be especially studied, and the *learning,* relearning and saving estimated. Thus, for abnormal (psychopathic) cases, test (h) is the most important test. For pedagogical diagnosis this test may also be used to decided advantage.

As to the remaining tests in our series—which will be discussed in detail in subsequent publications—some will be found evident enough, as given on our test-sheet, to apply without further explanation; others will be familiar from the Binet series. Under *Comprehension,* test (a) is such. The test immediately below this is Meumann's. Test (b) under Comprehension is Bobertag's and will be found explained in our earlier study, No. 5. This test differs materially from Binet's and the change is of decided importance. Test (c) is Meumann's. This and the remaining Comprehension tests up to the age of fifteen are also described in No. 5, though not as thoroughly as with our present knowledge we should wish this to have been done. The picture used under (g) is a most excellent picture for intelligence examination, as are also the three employed by Bobertag—all of which are contained in our set (the five obtainable from A. T. Beals, 228 West Twenty-third Street, New York).

Under *Combination* the age norm for test (e) is given by Bobertag, likewise the special method "with the aid of questions." Test (f) is Ziehen's. Test (h) is De Sanctis' (*l. c.* No. 5). Test (i) is Meumann's (see *Zeit. f. Pād. Psych.* 13 Jahr. H. 3, p. 145, etc.). In this study of his will also be found the excellent test of composing a story out of a set of stimulus words.

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60 WEST EIGHTY-FIFTH STREET.

The Genus Epidemicus of Influenza Pandemics.—No one doubts that in the recurrence of vast waves of influenza, some third cause is concerned beyond a germ and the human organism. This is usually taken to be some climatic or meteorological condition. Magelssen, a Scandinavian has studied the weather conditions in Christiania for over eighty years back or beginning with the epidemic of 1847 and has compared the weather of influenza years with weather in general. Before the pandemic of 1918-19 and all other epidemics an intensely cold winter was followed suddenly by a hot dry summer. Now there can be no line of demarkation drawn between common colds, winter epidemic catarrh, and the pandemics, so that climatic conditions alone must decide on the incidence of these affections. Winter alone is sufficient to render colds prevalent and when a very severe winter passes without transition to a hot summer the resistance of the individual must be greatly affected. There is the same lack of adjustment as is seen when an individual goes suddenly from a cold to a hot climate. The author shows by graphics that this vitiation of the resistance tends to persist for about three years at least. The young and robust are attacked wholesale because they are the very ones who draw most on the reserve by a life of physical exertion displayed in games, dancing, overwork, etc.—*Office International d'Hygiène Publique.*

Medicolegal Notes.

Practice of Neuropathy Is Practising Medicine Under Pennsylvania Statute.—In a proceeding for practicing medicine and surgery without a certificate of licensure from the Pennsylvania Bureau of Medical Education and Licensure, the principal questions contested were: (a) Is the practice of neuropathy the practice of medicine? (b) Is it the practice of a branch of medicine or a separate science? and second, Is the Pennsylvania act of 1911, as amended, requiring a certificate to practice medicine and surgery constitutional? The treatment given by the defendant to his patients consisted of manipulation around or about affected parts of the body, no drugs or medicine being used. The Pennsylvania Supreme Court said that the determination of the questions raised must depend on the proper understanding to be derived from the words of the statute involved. Of controlling importance was the word "medicine," a word susceptible of distinct meanings; one indicating nothing more than a remedial agent that has the property of curing or mitigating diseases, or is used for that purpose, while the other indicates an art of healing or science which has for its province the treatment of diseases generally. The latter has much the wider and more comprehensive significance, of course, and while, as so used, it may be in a sense technical, yet unquestionably the wider is the popular sense in which it is employed and understood. Furthermore, whatever is technical in it has so far been popularized by common usage and understanding that no one, however unlearned, can fail to observe the true distinction between medicine as a drug and medicine as a science or profession. It is in the latter sense that the word is employed in the Pennsylvania statute. Manifestly, to construe it otherwise would be to defeat the object and purpose of the legislation. The legislative purpose with respect to it is expressed in the preamble to the act, as follows: "Whereas, the safety of the citizens of this commonwealth is endangered by incompetent physicians and surgeons, and a due regard for public health and the preservation of human life demands that none but competent and properly qualified physicians and surgeons shall be permitted to practice their profession."

The one danger provided against was, not the promiscuous sale of drugs or other remedial agents, but the unrestricted and unregulated practice of medicine or the art of healing; medicine here being used to denote an art or science having for its object the cure of diseases and the preservation of health, whether with the aid of drugs or any other remedial agencies whatever. The manifest and only purpose of the statute was to confine the right to invite public confidence in the skill and efficiency of those who would hold themselves out to the public as medical doctors to those only who have had an examination by an impartial board of examiners created by the statute and acting for the state, and have been accredited by that board as having met the requirements of the law and received its license. The policy of the law in enforcing such regulation under its police power is not questioned; no more is the wisdom of the enactment. Giving the act this interpretation, the defendant was held to have brought himself within its terms; he engaged in the practice of medicine, that is, he held himself out to the public as one instructed and skilled in the healing art. The distinction that was sought to be made between neuropathy and medicine could avail the defendant nothing, in view of the legislative meaning of the latter word, which, when used in the expression "practice of medicine," covers and embraces everything that by common understanding is included in the term healing art. The defendant held himself out to the public and invited its confidence and patronage as a "practitioner of neuropathy." The use of this term necessarily implied that he was skilled in the science of pathology, a science unquestionably which has for its province the treatment of diseases, their nature, causes, progress, manifestations, and results. This to the lay mind, no less than the professional, would import that neuropathy was a branch of medicine. What more could be said of allopathy, homeopathy, or any other science of healing with such termination as its adopted designation? The terminology, in neither instance, indicates to the general public what remedial agents are employed by those practicing the particular science, nothing beyond the fact that, whatever else it might mean, it does certainly mean that the art or science practised in this instance has for its object the cure of diseases and the preservation of health. To assume that it is not such science is to classify the practice of it with empiricism. It was not pretended that the defendant violated the statute by healing diseases by the use of medicine, that is, drugs; but it was specifically charged against him that without a license he had held himself forth as a practitioner in medicine and surgery. On the evidence adduced the judgment was affirmed. The statute was held constituional.—Commonwealth v. Seibert (Pa.) 105 Atl. 507.

Representations as to Health and Consultations in Insurance Application.—In an action on a life insurance policy, applied for and payable in Colorado, where the defense was misrepresentation in the application as to consultations with physicians and the existence of disease, a number of physicians testified as to consultations with the insured and the results thereof. While some of these consultations were for minor and temporary ills, others tended to show, and all of them might be regarded as showing, that the insured was suffering with chronic nephritis and that he knew it. It was held that a secret, insidious disease like Bright's disease might be wholly unknown to the applicant, and, if so, even if he did have it, his answer that he did not would not entitle the defendant to rescind, unless the applicant had warranted that he did not. But the applicant was bound to know whether he had consulted any physician and would be able to give the names of the physicians consulted, or, if he could not recall their names, to state that fact, and then the company would be in a position to determine for itself whether or not it would enter into the contract. The applicant ought not to be permitted to withhold such information and yet nevertheless the beneficiary be allowed to recover on the ground that the fact of such consultations and the ailments for which they were had were immaterial and had no influence on the question of whether the contract should be entered into, or did not result in causing the insured's death, since that would be depriving the company of the right to decide for itself whether it would take the risk of the applicant's insurance. That would be permitting the applicant to decide for the company the important question of whether it would insure the applicant's life. Mere failure to recall and state that a doctor was spoken to for some simple trifling matter, having no significance either to doctor or patient, might not in all cases justify a rescission of the contract. But where there has been a continuous and repeated consultation of physicians extending over a period of time, with circumstances likely to cause apprehension to the mind of a reasonably prudent person that perhaps there might be some reason for suspecting unfavorable conditions, and possible grounds for not accepting the applicant as a risk, then a failure to make full, complete, and true answers ought to afford ground for rescission if not otherwise waived and such failure is acted upon promptly. For these reasons judgment for the plaintiff was reversed.—Lewis v. New York Life Ins. Co. (Mo.) 209 S. W. 625.

Statements to Physicians as Hearsay.—Declarations made by one injured to his attending physician are admissible when they relate to the part of his body injured, his suffering, symptoms, and the like, but not if they relate to the cause of the injury. Under this rule, where an employee died from an infected wound in his arm, it was held that evidence of his statements to his physician and his wife that he suffered the wound while in the service of his employer was incompetent in a proceeding under the Illinois Workmen's Compensation Act.—Spiegel's H. F. Co. v. Industrial Commission (Ill.) 123 N. E. 606.

Dying Declarations.—The Alabama Supreme Court holds that in a homicide case, the statement by the deceased after he was shot that "C. killed me, but he has not scared me," and "I am not afraid to die," was sufficient preliminary proof of the deceased's consciousness of his impending death to permit the admission, as a dying declaration, of a statement by him concerning the difficulty which led to his death.—Carden v. State (Ala.), 82 So. 423.

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THE PATHOGENESIS OF CONGENITAL CYANOSIS.

THE pathogenesis of congenital cardiac defects has been variously explained. Some observers have regarded an interventricular communication a paramount condition of congenital cyanosis and place cardiac malformations among the anomalies of reversion. But an interventricular communication rarely exists alone and when it is associated with a stenosis of the pulmonary artery, which is a common occurrence, this explanation cannot be invoked. Then the theory of fetal endocarditis was put forward, having for a basis the frequency of stenosis of the pulmonary artery, which, for some, should be the starting point of various other lesions. This theory might explain the interventricular communication since the septum becomes occluded the last. The deviation of the origin of the aorta is the consequence of the forcing back to the left of the interventricular septum which projects into the left ventricular cavity.

The theory of embryogenic disturbance originated in Germany, where it was maintained that the stenosis of the pulmonary artery was due to an abnormal division of the bulb. When this division does not take place a single arterial trunk results or else the division is unequal, resulting in stenosis of the pulmonary artery. It may happen that the arterial septum, by approaching the anterior wall, acts in such a way that the aorta is deviated to the right and backwards, while the stenosed pulmonary artery is to the left. Poirier maintains that the septum dividing the arterial trunk develops from above downwards and that its formation is independent of that of the interventricular septum. It unites with interventricular septum forming the upper portion of the septum known as the "membranous portion," thus resulting in a complete separation of the two ventricles. An interventricular communication might be explained by a displacement of the septum to the right, the lower part therefore being unable to unite with the upper part of the septum.

The objections to fetal endocarditis are: (1) Cases have been observed without any macroscopical or histological evidence of endocarditis. (2) The inflammatory theory cannot explain the absence of any division of the arterial bulb and transposition of the arteries. (3) It has been pointed out by Moussous that the stenosis of the pulmonary artery should exist during the early weeks of intrauterine life in order to provoke an arrest in the development of the ventricular septum; yet more, the dividing off of the arterial bulb takes place only a few days before that of the ventricles, so that an endocarditis in the early days of intrauterine life should involve both the aorta and pulmonary artery. To involve merely the latter, it would have to appear at a precise date, at the end of the sixth week, for example, and cause a stenosis in the course of a few days. Now, stenoses in general, even of a duct of small caliber, are not formed in a few hours or days. (4) It seems too one-sided to regard all cardiac defects as depending upon a stenosis of the pulmonary artery. In point of fact an interventricular communication may exist alone, being the pathological characteristic of Roger's disease; and the same is true of a patent Botal foramen. Yet more, a stenosis of the pulmonary artery is not a permanent condition in cases of congenital cardiac defects.

The theory of embryogenic disturbance cannot be sustained. To this theory the objection has been raised that pathological examinations reveal the inflammatory nature of the cardiac lesions; for some it is secondary, while Moussous maintains that congenital cardiac defects predispose to eudocarditis, this process attacking the most vulnerable points, namely, those which are the seat of a defective embryogenic development. It has been maintained by competent pathologists that the changes arising in the endocardium and pericardium are more important in older children and adults and are rare or little evident in very young children, infants, and the still born. The persistence of the pulmonary trunk after stenosis of its initial portion has taken place has been denied, being a notion hardly comprehensible in the case of arrested development. In opposition to this objection it is pointed out that the pulmonary artery arises from the fifth aortic arch, the aorta from the fourth, and that the formation of the trunks is independent of that of the bulb.

It has also been maintained that the lesions are more frequent on the right, but other observers believe that this is only apparent because the lesions on the right are the only ones compatible with life; those on the left would cause death during the early phase of embryonal life. It would therefore seem that in the present state of our knowledge a congenital cardiac defect resulting from some embryogenic disturbance is the most likely pathogenesis of congenital cyanosis.

ENCEPHALITIS LETHARGICA.

A RECENT number of *Il Policlinico* (xxvii, 4, 1920) is devoted almost wholly to this interesting disease, or syndrome. The first paper is by Sabatini and is devoted to clinical manifestations. There is a triad of symptoms, he says, comprising somnolence, ocu-

lar pareses, and the constitutional reaction, and he suggests the name epidemic encephalitis as an analogue to epidemic poliomyelitis. There are a number of special clinical types which do not interfere with the triad of symptoms. They depend for their individuality on the order of evolution of the symptoms and of superadded phenomena. Thus we see patients with somnambulism and with disorientation. In some cases herpes febrilis accompanies the temperature rise. The author isolates these types: lethargic in which this symptom dominates the picture; hyperkinetic in which the subject is restless, complains of neuralgic pains, shows heightened reflexes and in general many phenomena of muscular excitability; a paralytic form which is the antithesis of the preceding, and a mental form in which affects are common with motor automatisms. Giuseppe discusses the bacteriology in three cases, but despite the thoroughness of his study and the numerous partial finds he does not make out any case for a causal bacterium. Oggero reports 4 cases in full. These appeared to be of the irritative type suggesting meningeal involvement and there are a few similarities in incidence to epidemic cerebrospinal meningitis. The mortality in the local epidemic was also high 35 per cent, which fatality suggests the other malady. Leopoldo writes of the affection as it occurred in Trent, but reports only a single case. Fornara also reports one case of the irritative type—violent agitation, delirium, etc., with neither fever nor ocular troubles at the outset. The muscles were hypertonic, with myoclonic movements. It is suggested that the infectious disease known seventy-five years ago as electric chorea was of this nature, somnolence having been a symptom of that malady. Several other papers are found in this number and in one by Modena the name "polioencephalitis infectiva" is proposed for the affection.

Writing in *La Riforma Medica*, xxxvi, 4, 1920, Montefusco gives a concise summary of our knowledge of the affection since the influenza pandemic of 1889-90. There first appeared during the decline of this pandemic a mysterious malady in the province of Mantua which received the name of nona. A few cases came to light during the nineties, but not until 1900 did Bozzolo term it acute polioencephalitis of influenza. During the recent appearance of the malady cases occurred in Lombardy, Piedmont, Naples, and elsewhere in the Italian provinces. Most striking is the appearance of the disease almost simultaneously in most of the countries of the globe, including Africa, Australia, South America, etc., as well as in Europe and North America. This global incidence suggests that the disease occurred in the wake of influenza although it is now said to have appeared in force in 1917, not alone in Austria but in Australia, thus long anticipating the pandemic as we know it, though not necessarily negativing a relationship between the two. It has certain features in common with three other infectious maladies, viz., epidemic meningitis, acute anterior poliomyelitis, and cerebral influenza. Like the former it shows weak diffusibility and—at times at least—high mortality; but the fact that the cerebrospinal fluid is normal in lethargic encephalitis is final even if there were not plenty of other convincing proofs, such as the known cause of meningitis. Its minute anatomy suggests that of the cerebral form of infantile paralysis, while the chief suggestion in connection with influenza is the incidence in the wake of the pandemic. At present the evidence that the disease is autonomous seems to be increasing, and until we learn more of it, it can only be said that it belongs to a common group with the three other maladies and that it may eventually prove to be more a syndrome than a disease.

SUBSIDIZING THE DOCTORS.

CERTAINLY nobody is better versed in the difference between trades and professions than is the man engaged in medical research. He spends his life in acquiring information from grudging Nature, instead of in acquiring dollars from grudging competitors. He has no wares to sell. Even his language is all his own. His results may be merely negative, disproving this or that. Or he may get no results at all,—that highest of crimes in the world of trade. More rarely, years of "no results" may end in a brilliant discovery which relieves much suffering—witness Pasteur's work on rabies. Now there is little doubt that in the end society wants this sort of work done for it. Society knows very well that it is to be congratulated on the discovery of diphtheria antitoxin and of vaccination against smallpox—even more than on the negations of the Christian Scientists and the antivaccinationists. The more intelligent can be got to admit that they owe a great deal to scientists who spend their lives in research on disease. But so far as society in general is concerned, the debt goes unpaid.

It is all very well to say that we can never repay the man who has saved so many thousands of children from smallpox, or so many thousands of soldiers from typhoid fever. But we forget there are no short cuts to such splendid results. We forget that money, as well as time and industry, is required; that at the present moment work is being done which is bound to lead to advances just as remarkable; that the people's responsibility is to pay such debts in advance. Scientists are much more interested in meat and potatoes during life than they are in statues and memorial hospitals after they have gone to their often obscure death. But for the enlightened charity of a few rich people, only that *rara avis*, the congenitally or matrimonially wealthy investigator could indulge in the expensive vocation of scientific research.

Consider also the common garden variety of doctor, the man who engages in private practice. Here is an individual in whom the much-rebuked public takes a far more active interest. He too is not a tradesman with wares to sell. But he is a man whose advice and treatment they must often

seek, and whose bills they should, at least, pay. The practitioner is also a financial hanger-on, but only a temporary one, that is, until he gets to the bill-sending stage. And that may be a long time. In spite of the fact that there is probably no harder working group of men, professional or otherwise, it seems to have been decreed that they should be members of the "leisure class" in order to pursue the study of medicine to the best advantage. (A tendency to celibacy is also advisable, though often lacking.) The financial balance of the recent medical graduate favors output rather than intake to so great an extent that only an adequate family exchequer or a remarkable ability to make money during off hours can tide him over the necessary years of training. And even then, though chances to do free work abound, remunerative work is painfully scarce, and usually of little scientific value.

The points which we have been considering would seem to add several important reasons to the many already clear, for the establishment of a National Department of Health with a representative in the Cabinet. One of the functions of the Department should be the correlation and centralization of the efforts of medical investigators. Eventually it should be possible for the Department to finance such research through appropriations. This of course is in the nature of prophecy. Research financed by private individuals has certainly proved its value. It has had the added virtue of being free from politics. To date "State Medicine" has not distinguished itself; and attempts at it have usually left the medical men "out of luck." The principle, however, should be kept in mind. Those who are qualified to engage in medical investigation should be regarded as public servants. They must continue to be the objects of private charity until the State shows itself equally qualified to support and encourage work of this kind. Meanwhile Government clinics should be opened in increasing numbers, offering pay positions to the younger men, together with opportunity to carry on special work on various diseases. In other words there are many ways in which the Government could assist and encourage medical men, through such an agency as the National Department of Health. There are many ways in which the Department could facilitate the work of representative medical organizations. If the growing tendency to socialization of medicine could follow these lines rather than those indicated by lay politicians, the outlook for the profession would be bright both financially and scientifically.

Mild Botulism with Multiple Eye Symptoms.

In the cases reported of late we note much fatality in cases with ocular symptoms as ptosis and internal strabismus, but Caussade at a recent session of the Société de Médecins des Hôpitaux de Paris reported in behalf of a Toulouse practitioner four cases in soldiers who seemed to have recovered but who had suffered from a number of eye symptoms which were very slow in receding. (*La Presse Médicale*, January 21, 1920, xxviii, 6.) The vehicle for the poison was smoked trout. The initial gastrointestinal and nervous symptoms were typical and the eye symptoms were in part those which have usually been seen, including ptosis, mydriasis, diplopia, accommodation paralysis, and amblyopia, but with the addition of intense congestion of the optic nerve and retina and contraction of the visual field. These two symptoms are rarely found in literature but are doubtless responsible for the amblyopia which is so often present. Authors who mention the resemblance between botulism and wood alcohol poisoning state that ptosis is the only approach to loss of vision, but the author's cases show that in both the nerve and retina suffer. In addition botulism resembles other kinds of food poisoning, including that from poisonous mushrooms, and also various affections in which ophthalmoplegia occurs, such as meningitis and syphilis.

Causes of Sterility.

The causes of sterility necessarily vary much with the material and stand out most pointedly in those women who normally rear large families and use no preventives of conception. In *Il Policlinico*, for December 7, 1919, xxvi, 49, Brun of Trieste gives an analysis of 300 cases seen in Trieste during the past ten years. Of this number 230 were examples of primary sterility and in 107 of these anatomical defects were present in the genitals, while in 102 sterility was attributed to inflammatory affections. In 13 women no causal factors could be found, while 8 others owed their sterility apparently to fibroids. Of defects of the genital apparatus the most common types were infantile uterus, pathological and extreme anteflexion and ovarian insufficiency with obesity. Retrodeviation was represented in but 10 cases. The most common inflammatory affections were chronic salpingitis and perimetritis, other types being poorly represented. Of the 70 cases of secondary sterility the chief cause is the same—chronic salpingitis and chronic perimetritis—with 44 cases, the other causes being scattered.

News of the Week.

Women's Medical Society of New York State.—The fourteenth annual meeting of the Women's Medical Society of New York State was held at the Hotel McAlpin, New York City, March 22, under the presidency of Dr. Elizabeth Burr Thelberg of Poughkeepsie. The morning session was largely devoted to official reports and other executive matters. The following scientific papers were presented: "Recent State Laboratory Work in Vaccines and Serums," by Dr. Mary B. Kirkbride, Bacteriologist of the State Department of Research; "Dr. Mary Jacobi, a Medical Pioneer," by Dr. Annie S. Daniel of New York City (by invitation); "Report of the American Women's Hospitals," by Dr. Esther P. Lovejoy of New York City; "Industrial Fatigue," by Dr. Winifred Cullis of London, England; "Relation of Gynecology to the Glands of Internal Secretion," by Dr. Lillian K. P. Farrar of New York City; Discussion of

Dr. Farrar's paper by Dr. Emily Lewi of New York City (by invitation); "Diabetes," by Dr. Helen Baldwin of New York City; and "Technique of Diagnosis of Visceroptosis," by Dr. Eliza M. Mosher of Brooklyn, N. Y.

At the banquet in the evening Dr. Cullis told of the work of English women in the war and of the early attempts of women in England to study medicine; Mrs. Henry Villard spoke on the influence of medical women; Dr. Esther P. Lovejoy discussed the International Medical Women's Association which was organized last fall; and Dr. Rosalie Slaughter Morton told of her recent trip to Serbia. Dr. S. Josephine Baker was toastmistress. Among other speakers were Dr. Martha Walstein, Dr. Grace N. Kimball, Dr. Elizabeth Burr Thelberg and Dr. Lois L. G. Gannett.

The following officers were elected for the ensuing year: . *President*, Dr. Lois L. Eastman Gannett, Adams; *First Vice-President*, Dr. Florence I. Staunton, Utica; *Second Vice-President*, Dr. Maihilda K. Wallin, New York City; *Third Vice-President*, Dr. Louise M. Hurrell, Rochester; *Secretary*, Dr. Harriet M. Doane, Fulton; *Treasurer*, Dr. Elizabeth L. Shrimpton, Syracuse.

A Demand for Amendment of Certain Objectionable Laws.—The following is the substance of an open letter sent to the House of Delegates by Dr. Davin of this city, on behalf of a number of the members of the Medical Society of the State of New York. In it attention is called to (1) The Medical Fee Bill of the Workman's Compensation Law, (2) Compulsory Health Insurance, and (3) the State Narcotic Drug Laws. It is stated that at an investigation in this city of the Workmen's Compensation Law, a medical witness testified to receiving fifty cents for each service rendered. At the same time the statement was placed upon the record that, under this law, the injured workman was receiving the poorest and cheapest form of medical service, due to the fact that physicians and surgeons of standing, according to their own declarations, were refusing to treat compensation cases. Nothing, however, has been done by the Society to secure a change in the medical provisions of this bill. Although the State Society is now on record as unanimously opposed to Compulsory Health Insurance, in order to make this stand effective it should present this attitude of the medical profession on this question to the people and Legislature in a manner which would compel attention. A repeal of the present Narcotic Drug Law should be demanded, as under its administration it has proved to be inhumane, oppressive, and unscientific.

Government Takes Over Speedway Hospital.—The long controversy over the Speedway Hospital, Chicago, said to be the largest of its kind in the world, ended when the hospital finally became the property of the Government. The total appropriation for the project by Congress is $3.500,000. The contract taking the hospital over from Edward Hines, who says it represents an expenditure of at least $5,000,000, was signed by Secretary of the Treasury Houston, and the first payment is to be $1,400,000. The name of the institution is to be changed to Broadview Hospital. The hospital is to be used for rehabilitation work. The building is 2040 feet long, five stories high, and is fireproof throughout. The main building will have accommodations for 2500 patients, and four more buildings are to be constructed as a part of the plan.

Convalescent Camps for Soldiers.—Special arrangements have been announced by the New York Community Service for the establishment of summer camps at Bear Mountain and Fire Island for the benefit of convalescent service men and other former soldiers and sailors who are taking vocational training in New York City.

"Healer" Attracting Crowds in New Orleans.—"Brother Isaiah," a kindling peddler, said to be a Canadian, 73 years old, who lives on a ramshackle houseboat off the Mississippi River levee at New Orleans, is attracting crowds of halt, maimed and blind, as well as the perfectly healthy, desirous of testing or witnessing his alleged cures by the laying on of hands. State and municipal authorities have refused to disturb the peddler. Dr. Oscar F. Dowling, President of the State Board of Health, said no legal action could be taken against the "healer," because he was "accepting no money, prescribing no medicines and violating none of the rules of religious practice."

Hospital Society Seeks Literature.—In its forty-fifth annual report, the Hospital Book and Newspaper Society reports the distribution, between December 5 and April 19, of 670 books, 10,225 magazines, and 13,720 illustrated and weekly papers. The society was originally organized to provide reading matter to inmates of hospitals, prisons, and other institutions in New York City. Its activities have been extended to the sparsely populated sections of the South and West. The Society reports especial need of juvenile literature, children's books, magazines and papers, novels of wholesome character and school books and histories.

Self-Administration of Drugs and the Law.—In a report dealing with the classification, treatment, and general condition of drug addicts in New York City, Dr. S. Dana Hubbard, Acting Director of Public Health Education of the Health Department, holds that tht self-administration of narcotics should be forbidden by law. He deprecates the practice of some physicians of prescribing drugs for addicts to be self-administered. The clinic for drug addicts, which was opened by the Health Department following the arrest of a number of physicians for violation of the narcotic law, thus cutting off the source of supply of drugs from addicts, was found, according to the report, to possess all the objectionable features characteristic of the so-called "ambulatory" treatment, as practised by the trafficking physicians.

Course in Radiology.—The Post-Graduate Medical School and Hospital announces the inauguration of a course in radiology, covering all the modern developments in the use of radium.

"Department of Public Welfare."—Bird S. Coler, Commissioner of Charities, New York City, has started executive machinery moving toward changing the name of the Charities Department to the Department of Public Welfare. The Commissioner holds that women about to become mothers whose husbands cannot afford to pay for

high-priced specialists and who are finding accommodations in hospitals under his supervision, will be far less embarrassed in making application for such accommodations under the new designation.

Women "Railroaded" to Insane Asylum Released.—Two elderly spinsters, sisters, claiming to have been kidnapped and "railroaded" to the Kings Park State Hospital, at Kings Park, L. I., in June, 1910, were released recently through the intervention of one of the women attendants. The much needed thorough investigation has been called for to ascertain the facts in the case and to discover how it is possible, even in the event of incarceration without proper commitment procedure, for persons thus illegally committed to be detained for ten years.

Asylum Inquiry in Jersey.—Burdette G. Lewis, State Commissioner of Institutions and Agencies of New Jersey, at the instigation of Governor Edwards, will investigate charges of brutality at the State Village for Epileptics at Skillman.

Drive for Maternity Nurses. — The Visiting Nurse Service of New York City is conducting a city-wide campaign for a fund of $1,000,000. Additional day and night maternity centers are to be established with part of the fund. The center now maintained at 234 East Seventy-second Street is taxed to the utmost.

Plague-Control in Esthonia. — The Esthonian Government has given the American Red Cross Commission, under command of Lieut.-Colonel Edward Ryan of Scranton, Pa., authority to adopt any measures, political or economic, which may be deemed necessary to stamp out the epidemic of typhus. The country has been put under the strictest quarantine rules. Travel from one point to another by all persons not provided with a Red Cross permit is forbidden, and no Esthonian living in an infected region can board a train or leave the limits of his home district without permission of the American authorities.

Child Relief in Hungary.—Since August, 1919, American child relief workers in Hungary have distributed 170 tons of sugar, 414 tons of milk, 290 tons of peas, 146 tons of fats, 37 tons of soap, and 613 tons of flour. One meal daily is being given to 105,000 children by this American relief organization.

Smith College Relief Unit Decorated. — The French Government has bestowed the silver medal of "Reconnaissance Française" on the Smith College Relief Unit for work among the civil population in the retreat from Montdidier.

Church Hospitals for Incurables.—The Interchurch World Movement proposes to establish at least four hospitals for incurables to be conducted under church control, one each in Massachusetts, Missouri, Ohio, and Virginia.

Cracow University Honors Hoover.—The degree of Honorary Doctor of Medicine has been conferred upon Herbert Hoover by Cracow University for services rendered to Poland.

Dr. Walter H. Brown has been appointed Associate Director of the Department of Health Service in the American Red Cross with headquarters at Washington, D. C. Dr. Brown is a graduate of Jefferson Medical College, 1906, and of the School for Health Officers of the Massachusetts Institute of Technology, and Harvard University in 1915. During the past three years he has served as Health Commissioner in Bridgeport, Connecticut, as a member of the Connecticut State Board of Health, and as a lecturer on public health at Yale University.

Dr. George A. Blumer has resigned as dean of the Yale School of Medicine. The resignation has been accepted, to take effect at the close of the present academic year. Dr. Blumer has served as dean since 1910, and as professor of medicine since 1907.

Dr. George L. Richards of Fall River, Mass., has returned after ten months of service in the interior of Turkey.

Obituary Notes.—Dr. Fred Swartzlander, veteran of the Civil War and practising physician until two years ago, died at his home in Omaha, Neb., Feb. 22, at the age of 72. Born in Pennsylvania, he enlisted in the Sixth Pennsylvania Cavalry at the age of 17,2 serving throughout the war. He was graduated from Jefferson Medical College, Philadelphia, in 1872, going to Nebraska in 1887.

Dr. Albert F. Koetter of St. Louis, Mo., died February 28, after a prolonged illness, at the age of 49. He was graduated from Missouri Medical College in 1892, specializing in oto-laryngology. He was a member of the American Medical Association, the Oto-Laryngological Section of the St. Louis Medical Society, and other organizations.

Dr. Hosea B. Burnham of Manchester, N. H., died February 29, after a prolonged illness. Dr. Burnham was born in old Chester, now Auburn, in 1829, and was graduated from Vermont Medical College in 1853. He was active in professional and civic matters in his state.

Dr. Charles H. Wagner of Minneapolis, Minn., died March 1, after a long illness. He was 67 years of age, and was graduated from Cleveland University of Medicine and Surgery in 1873. He had practised in Minneapolis twenty years.

Dr. William R. Buchanan of Washington, D. C., died March 5, at the age of 50. He was graduated from the Hahnemann Medical College and Hospital of Philadelphia in 1902, specializing in pediatrics.

Dr. Henry Carey of New York City, died March 6. He was graduated from the Eclectic Medical College of the City of New York in 1894, and was for fifteen years a member of the Department of Charities as examining physician for tuberculosis.

Dr. Leonard F. Schmauss of Alexandria, Ind., was killed February 27, when an automobile in which he was riding was struck by a passenger train. Dr. Schmauss, who was fifty-eight years of age, was graduated from Rush Medical College in 1897. He was a member of the American Medical Association, and was actively identified with the Madison County Medical Association and other local organizations.

Dr. Sheldon B. Hewitt of Girard, Kan., died February 26, at the age of 42. He was graduated from the University Medical College, Kansas City, Mo., in 1904, and was a member of the American Medical Association and state and local bodies.

Dr. Edward Melville Whitney of New Bed-

ford, Mass., died after an illness of two years, on February 27, at the age of 64. He was graduated from Jefferson Medical College, Philadelphia, in 1879, specializing in ophthalmology. He was a member of the American Medical Association and of other societies.

Dr. PELEG FRANCIS WALKER of Providence, R. I., died suddenly from cardiac disease February 27, at the age of 61. He was graduated from the Boston University School of Medicine in 1881, and had been a member of the Providence school committee for thirty years.

Dr. JOHN B. DRAPER of Oswego, Kan., died recently at the age of 77. He was graduated from Rush Medical College in 1868. At one time Dr. Draper was surgeon of the State Soldiers' Home at Fort Dodge, Kan.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, March 13, 1920.

The Reward of Scientific Medical Research.—In a previous letter attention was drawn to a proposition advanced by several leading scientific medical men that medical research should be compensated by the State. If not adequately compensated, at least, that men who as the result of brilliant and painstaking investigations had benefited the race, should receive certain pecuniary acknowledgment that their efforts on behalf of their fellow men were, to some extent, appreciated. Of course, as a rule, the men who make great scientific discoveries, medical or otherwise, reap little advantage therefrom. They are generally exploited by shrewder or more cunning individuals who take the lion's share of the profits and a good deal of the fame. However, a movement is afoot at the present time in Great Britain to remedy in some degree the existing state of affairs and not only to give honor where honor is due, but to give some tangible material proof that virtue is not necessarily solely its own reward. The other day a deputation of medical men, introduced by Sir Watson Cheyne, M.P., and including among its members Sir Clifford Allbutt and Sir Ronald Rose, waited upon Mr. Balfour to urge upon the Government a proposal for the granting of awards or pensions to persons making medical or other scientific discoveries of general benefit to humanity. As mentioned in a previous letter the method suggested is the annual voting of £20,000 to be distributed in pensions, some of £1,000 a year, others of £500.

In Great Britain, this question is thrown into an especially bright light just now, at a time when large sums of money are being awarded to those who have assisted the country's military effort by inventions which have been used to good effect by the army and naval authorities. It seems a curious commentary on human reasoning, exposing the fallacy of it in a marked manner, when an invention to destroy life will be recompensed to an unlimited extent, while a discovery in healing science which will save far more lives than the most deadly device of war could destroy is not considered worthy of any material recognition. The circumstances in which the greater part of British research is carried on are deplorable or rather disgraceful.

In medicine, for instance, much of the most valuable research work here has been done by men in practice, who obviously have had to contend with obstacles of every kind. Even the man who is paid for research work receives the veriest pittance in most cases. The story of British medical research is generally speaking a pitiful one, and indeed in most countries the path of the scientific investigator has been rough and stony. In America private generosity has rendered the lot of the research worker less strewn with thorns. The American millionaire has given with open-handed lavishness money to promote medical research. In this country, as a rule, the millionaire seems chary of devoting any considerable amount of his gains to further the research for means to fight disease successfully. As Sir Ronald has probably said truly, a medical man who gave to the world the long-sought cure for cancer would get nothing for his pains from his own people. Yet of the British people alone, statistics have stated that 35,000 die from cancer every year upon the average. Money spent on medical research is good sound business, possibly the cheapest national investment. If the comparatively small sum asked of the British Government for pensioning those qualified for medical research is granted, it would provide a great stimulus to the prosecution of research of every kind. It is to be hoped that the proposal of Sir Watson Cheyne and his colleagues will be recognized by the Government as reasonable and will be acted upon forthwith.

The Position of the British Hospitals—It is becoming more evident each day that the position of British hospitals is unsatisfactory and in some cases desperate. All kinds of projects have been set afloat to raise money to enable them to carry on, but none of these has been markedly successful. The cost of up-keep has risen immensely and money has not been forthcoming in nearly sufficient amounts to meet this increased cost. As said before, the financial outlook of British hospitals is very gloomy. Their revenues are obtained from three sources, in the vast majority of instances—endowments, voluntary contributions and workmen's collections—all of which are wholly inadequate at the present juncture. Quite a few make some income from "paying" wards for a limited class of patients, but up to the present time paying patients are negligible factors in the maintenance of hospitals. Indeed taking all facts into consideration it seems fairly plain that there are only two courses open to the hospitals. These are State aid, which signifies the abandonment of the voluntary principle, which by the way the hospitals themselves do not desire, nor is the Government capable now of taking over the hospitals, or the crisis must be met by emergency measures. State aid means State control, and the establishment of bureaucratic supervision is abhorrent to the Britisher. The pay system does not appear to be in favor in Great Britain. Why, it is hard to say.

At the same time, it seems to be the only practicable way out of the difficulty and public opinion is bearing somewhat towards its modified adoption. Many London hospitals are considering schemes of payments by patients. It has been decided in some institutions that in future inpatients shall be asked to pay for their own food and in one or two London hospitals out-patients are asked to pay a small fee for medical treatment. So far as British hospitals are concerned they are mainly devoted to the benefit of the working class and that working class is, owing to its greatly increased earnings, better able to support the hospitals than in pre-war days. The middle class, which is now the poor class, cannot claim the benefits of the hospital. Does not this seem an altogether anomalous situation? And would it not be to the advantage of all if a pay or modified pay system were introduced? Sir George Newman, the chief medical advised to the Ministry of Health, who probably has as thorough a grasp of the subject as any man in Great Britain, has pointed out that there is no general hospital system in Great Britain and that matters would be greatly bettered if organization were introduced. A complete and satisfactory hospital system cannot be provided for many years but a beginning may be made. The writer holds the view that a pay or modified pay system will be introduced and he further thinks that, on the whole, it will be the most sensible solution of the hospital problem.

New Health Insurance Bill.—Dr. Addison, the British Minister of Health, introduced into the House of Commons on March 1 the bill prepared by the Ministry of Health to amend the acts relating to national health insurance. As the first reading was purely formal, no explanation was given of the provisions of the measure, which, affecting as they do many millions of people are of great interest. The bill proposes to increase the rate of sickness benefit for men to 15 shillings per week and for women to 12 shillings per week. Disablement benefit is to be raised to 7 shillings and sixpence, and maternity to £2. As regards the provision made for sanatorium treatment, the Ministry of Health will ask Parliament to agree to its complete removal from the act, as it is desired to deal with tuberculosis as a whole. The bill not only provides for higher rates of benefit, but also for increased contributions, and for better remuneration for panel doctors.

The Joel Chair of Physics.—Physics, especially in the field of electricity plays an ever increasingly greater rôle in medical science. The new Chair of Physics which was established recently at the Middlesex Hospital School by the munificence of Mr. S. B. and Mr. J. B. Joel has now been filled by the appointment of Dr. Sidney Russ, D.Sc. as first occupant. The work of the new professorship, which is the first solid recognition of the importance of physics in regard to medicine, is expected to achieve great things. Dr. Russ was educated at University College, London, and was demonstrator in physics at Manchester University from 1906 to 1910. He was made physicist to Middlesex Hospital in 1913. He is president of the Röntgen Society and since last October has been lecturer in physics at Middlesex Hospital School. At the early age of forty, he has already made his name by his contributions to medical physics.

The Middlesex Hospital Chair of Pathology.—Dr. James McIntosh, M.D., Ch.B. has been appointed to the University Chair of Pathology at the Middlesex Hospital. He was educated at the Pasteur Institute in Paris, as well as at Aberdeen. He has been assistant in the Bacteriological Department of the London Hospital since 1910. During the war he carried out valuable researches at the Royal Herbert Military Hospital, Woolrich, on cerebro-spinal fever and on gas gangrene at the London Hospital. For the past nine months he has been a full time investigator on the staff of the Medical Research Committee.

Appointment of Regius Professor of Medicine at Oxford University.—The King has been pleased to approve the appoint of Sir Archibald Edward Garrod, K.C.M.G., M.D., to be regius professor of medicine in the University of Oxford, in the room of the late Sir William Osler, Bt., M.D. Sir A. E. Garrod is a graduate of Oxford University and physician to St. Bartholomew's Hospital, and his name is well known among the members of the English-speaking medical profession for his investigations as to gout.

London's Birth and Death Figures.—A comparison of the births and deaths in London in the eighth week of the present year with those of the eighth week of last year yields some striking results. There were more than twice more births, and there were little more than half of the deaths. The figures as given in the Registrar-General's weekly return issued on March 3, were: Eighth week, 1919, births, 1,201; deaths, 2,654. Eighth week, 1920, births, 2,643; deaths, 1,425. There were more births in the eighth week of 1920 than in any corresponding week for the past eleven years. In the 96 great towns of England and Wales, the figures were likewise highly satisfactory, from the point of view of repairing the ravages made by the war and influenza. During the week the total number of births in the civilian population of these centers was 10,644, and of deaths 5,614, a birth-rate of 30 and a death-rate of 17.7 per 1,000. A curious feature of the figures is that in the last week of 1919 London had only 1,318 births and that in the first week of this year there were 3,308, and the tables suggest no reason for the difference. Nor is it evident why the eighth week of 1919 was so deadly. In that week 1,022 more people died in London than the average for the past eleven years. In the eighth week of 1920 the deaths, with an increasing population were 196 below the average. In the 96 great towns of England and Wales there were 178 deaths from influenza in the eighth week of 1920, against 161 the week before, and 77 in the first week of December.

Plague and Influenza.—Broquet has recently studied in person the Manchurian plague and the bacteriology alone is sufficient for complete differentiation. Antiplague serum is of value in grippe only because it antagonizes the leucopenia and it shares this property with other antisera. Grippe is, however, not plague. —*Gazette des Hôpitaux.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 11, 1920, clxxxii, 11.

1. Malignancy and Radiation. A study of the Relation of the Structure of Cancer Tissue to Radiation. Frederick Bryant. Discussion by Edward Reynolds.
2. Caesarean Section. Nathaniel W. Emerson.
3. The Next Step in the Campaign for Infant Welfare. The Education of the Women of the Nation for Motherhood. Isaac W. Brewer.

1. Malignancy and Radiation.—Frederick Bryant, in this discussion of the relation of the structure of cancer tissue to radiation, first reviews the cancer problem from the point of view of what is and is not known regarding the causation of the disease, accepting the platform of the American Society for the Control of Cancer as employed in its campaign of education. In the discussion of the action of radiation on cancer tissue the writer combines his own observations with those of the leading American, English and French radiopathologists, giving four illustrative sections of an epithelioma of the cervix uteri in which the retrogressive processes are followed by a series of successive biopsies. These show the rapidly growing malignant epithelioma in the successive stages of complete retrogression, under the influence of radiation, into dense connective tissue. The writer does not accept the view that this stimulation of connective tissue presses out or shuts off the cancer cells by constricting bands, because the first changes are noted, as in the ameba, in the cell itself, or, more accurately, in the nucleus of the cell. The connective tissue appears later. He holds the view that radiation acts upon the newly forming cells which are of an embryonic type and therefore weaklings, less hardy than normal cells; that at the same time it exerts a destructive influence upon the fresh sources of blood supply which partake of the same immature nature; that while connective tissue proliferation is undoubtedly stimulated to some extent, its chief advent is in response to nature's call for repair processes to replace the destroyed cells. Such, in a general way, is the accepted view of the action of radiation on morbid tissue, provided the malignant mass is rich in cellular elements and rapidly procreating; that the source of radiation can be brought into adequate contact, and that its intensity is wisely regulated. Unfortunately, this is not the whole story, for many perils and misgivings beset the path of the radiotherapist in his attempt to bring about the utter destruction of the malignant lesion. Various factors must be considered. Variations of type and locality of the malignant growth are handicaps. The condition of the tissues surrounding the malignant area must be taken into consideration. Every factor which reduces bodily vigor or resistance speeds on the invasion. The age of the growth is another important consideration, for the older it is the less likely it is to submit to treatment, for the cancer cells have long since ceased to execute the reproductive process. In the radiation of these aged and self-limiting lesions there is grave danger of breaking down nature's feeble yet sufficient resistance and thereby give aid rather than battle to the old but comparatively harmless lesion. An infection of the tumor tissue under treatment is a complication much to be dreaded. It has been shown that radiation, acting upon the nucleus, inhibits the reproductive function of the malignant cell. Therefore, in operable cases, its use is advised just prior to the operation to render the tumor less malignant. This radiation should include all possible lines of metastasis to catch any glands already invaded and on beyond to reach the innocent lymphatics that they may become sclerosed and thereby rendered obstructive to any further invasion. After the thorough removal of the malignant mass, the radiations are again advised, at stated intervals, to accomplish the destruction of any scattering cancer cells which may have been left. The writer believes that this procedure, in operable cases, will result in lessening the number of recurrences, and greatly add to the permanence of surgical work. For inoperable cases, the radiations are advised to prolong life, to lessen pain, to check hemorrhage and nauseous discharges. In a small percentage (seven) it has reclaimed the case to operability or permanent relief. The author of the paper is in accord with those who hold that mastery of all the various forms of radiation is the first essential in the treatment of the various forms of malignancy.

New York Medical Journal.

March 6, 1920, cxi, 10.

1. The Psychology of Flying. Hallday G. Sutherland.
2. Somatic Symptoms in Nervous and Mental Diseases. Francis X. Dercum.
3. Varieties of Tremor at the Front. Tom A. Williams.
4. The Problems of Eugenics in Connection with the Manic Depressive Temperament. B. Onuf.
5. Encephalitis Lethargica. Smith Ely Jelliffe.
6. A Neurogenic Study in the Production of Dyspnea. Frank Porter Miller.
7. Gastric Ulcer Treated by Nerve Blocking. E. A. Parker.
8. Use of Relaxation in Hypertensive States. Edmund Jacobson.
9. The Treatment of Tuberculosis in Experimental Animals. (Concluded.) Benjamin S. Paschall.

8. Use of Relaxation in Hypertensive States.—Edmund Jacobson presents a method for the treatment of irritability, excitement and insomnia suggested in part by experiments at Harvard and Cornell universities about ten years ago, which are now being continued at the University of Chicago. The method has been in clinical use for about two years. In principle it is simple; in practice, however, it rests upon so many observations and details in dealing with each individual patient that the present attempt is to give a condensed introductory sketch rather than a complete report. The method described makes use of relaxation—motor treatment of nervousness. The particular form of relaxation required is intensive and progressive. It is assumed that a detailed history has been taken, thorough physical and laboratory examination made, and that proper treatment is being given in the way of surgery and drugs or hygienic measures or psychotherapy. The patient is first shown general relaxation of his whole body, whether his complaint is nervous excitability or insomnia or both. He lies down quietly in a room free from disturbance and begins with the right arm, which he flexes tensely against resistance made by the physician. He is directed to note the sensations from the flexor muscles of his right arm, the position of which is indicated to him. Then he relaxes his arm until these sensations disappear. For a single attempt at this, five to ten minutes are allowed. Drill is given until he is able to note the dwindling sensations many minutes after he has begun to relax, and until it is clear that he is using these sensations as a guide to relaxing. It is often useful to make clear that at this stage extreme relaxation of a part may require at least fifteen minutes of progressive inactivity. After he has been fairly successful, he extends the forearm against resistance, noting the sensations, then relaxes both flexors and extensors. Practice is next given with flexion and then with extension of the hand. Finally the patient is instructed to relax the right arm completely, "further and further each minute" until no feeling of tenseness remains. In this way the patient practises at relaxing one muscle group after another. As he begins to relax a new group he continues at the same time to relax all previous groups, until finally he relaxes the entire body at one time. The physician watches closely for signs of failure or progress, makes occasional tests and gives simple directions in a quiet way. An excited patient may spontaneously quiet down early in the practice, or it may be necessary to discourage him from speaking and have him close his eyes. The physician estimates the degree of relaxation chiefly by the apparent limpness and by the absence even of the slightest movements during a prolonged time; but rarely also by palpating the muscles or shaking a limb. Unnecessary speech or restless movements of any part whatsoever are signs that a particular part is not being progressively relaxed. Having learned to relax generally at will the patient has at his disposal a means of overcoming a spell of nervousness. Irritability, impulsiveness and excitement may be overcome, in the opinion of the author of the paper, by the maintenance of a relatively relaxed condition whenever one is sitting up or walking, the patient keeping only such muscles active as are needed to maintain his position.

Journal of the American Medical Association.

March 13, 1920, lxxiv, 11.

1. Interpretation of Roentgen-Ray Findings in the Diagnosis of Peptic Ulcer: Some Difficulties. C. W. McClure and Lawrence Reynolds.
2. The Use of Beef-Bone Screws in Fractures and Bone Transplantation. M. S. Henderson.
3. Botulism: Preliminary Report of a Study of the Antitoxin of Bacillus Botulinus. Ernest C. Dickson and Beatrice M. Howitt.
4. Diverticulitis: Report of a Case with Acute Perforation. Clarence F. Ball.
5. Roentgen-Ray Study of the Great Vessels. Charles L. Martin.
6. Encephalitis Lethargica in Pregnancy. Margaret Schulze.
7. Administration of Digitalis by "Eggleston Method." Cary Eggleston.
8. Transfusion of "Antibacterial Blood"; Report of Case. George F. Little.
9. Hitherto Undescribed Sign in Diagnosis of Lethargic Encephalitis. Thomas F. Reilly.

3. Botulism: Preliminary Report of a Study of the Antitoxin of Bacillus Botulinus. Dickson and Howitt report experiments performed during 1917-1918, publication of which they had planned to delay until further experimental data could be obtained concerning certain unsettled points. On account, however, of the present interest in the subject, and because of the expression of various theories and speculations concerning the value of the botulinus antitoxin as a therapeutic agent, they offer this preliminary report. The antitoxin used in their experiments was obtained by inoculating Goats 1, 2 and 3 with Strains III, IV and VI, respectively, of their strains of *B. botulinus* over a period of several months. They were unable to follow out any previously determined plan for inoculating, as the goats reacted so differently to inoculation that they were forced to regulate the dosage and interval by the condition of each animal at the time. The potency of their three antitoxins, and the fact that they will neutralize the effect of the toxin when multiple proportions of the test dose of toxin and of antitoxin equivalent are mixed *in vitro* and injected into animals, are shown in tables. From these it is noted that the potency of the antitoxins may be defined as approximately 3,000, 5,000 and 600 for Strains III, IV and VI, respectively, the number indicating the respective antitoxin equivalents in 1 c.c. of serum, as tested against one test dose of its homologous toxin. The writers investigated the toxins of seven strains of *B. botulinus*, six of them strains that were recovered in their laboratory from various home-canned vegetables and fruits that had caused outbreaks of food poisoning on the Pacific Coast, and one that was recovered by Niven from cheese in New York State. From their experiments the following conclusions are drawn: 1. A true antitoxin may be prepared for the toxin of *Bacillus botulinus*. 2. There are at least two types of *B. Botulinus*, which are distinct so far as their toxin-antitoxin relationships are concerned. 3. Experiments show that in the laboratory the antitoxin may protect against the action of the toxin for at least twenty-four hours after the administration of one test dose of toxin, but that the effectiveness is, to a certain extent at least, dependent on the amount of toxin injected. 4. For therapeutic administration a polyvalent antitoxin should be employed, and it should be given in large amounts and intravenously.

6. Encephalitis Lethargica in Pregnancy.—Margaret Schulze reports in detail a case of encephalitis lethargica which occurred in a pregnant woman of thirty-five. In a review of the recent literature she found only seven other cases occurring in pregnant women. These are analyzed. There was no history of influenza in her own case. The patient, after getting up and walking about the bed without permission, suddenly developed symptoms of pulmonary embolism and died in twenty minutes, twenty-six days after delivery. Postmortem examination revealed thrombosis of both femoral veins and extensive bilateral pulmonary emboli, which occluded almost the entire pulmonary circulation. Microscopically the brain was practically normal except for a few punctate hemorrhages on cut section in the region of the midbrain. The cerebrospinal fluid was normal in appearance and amount. Microscopic examination revealed the characteristic changes of lethargic encephalitis. There was congestion and slight round cell infiltration of the leptomeninges. There were marked perivascular infiltration and a few small hemorrhages about the vessels, especially of the midbrain and pons. There was no degeneration of the nerve cells. The medulla showed much less marked changes; the cerebral cortex was normal.

The Lancet.

February 21, 1920, cxcviii, 8.

1. Lettsomian Lectures on Tumours Complicating Pregnancy, Labour, and the Puerperium. Lecture I. Herbert R. Spencer.
2. Presidential Address on Surgery During the War. Delivered before the Medical Society of London. V. Warren Low.
3. Gas Poisoning. Sir Wilmot P. Herringham.
4. Some Aspects of the Tuberculosis Problem. Thomas D. Lister.
5. Abscess of the Liver Among British Eastern Troops. A. L. Candler.
6. Influenzal Pneumonia: The Intravenous Injection of Hydrogen Peroxide. T. H. Oliver and D. V. Murphy.
7. Anæthesia in Throat and Nose Operations. Felix Rood.
8. A Case of Hirschprung's Disease, Causing Acute Obstruction. I. Tewfik.
9. The Municipal Workshop: A Scheme for the Post-Sanatorium Employment of the Consumptive Ex-Soldier. F. Stanley Tinker.

6. Influenzal Pneumonia: The Intravenous Injection of Hydrogen Peroxide.—Oliver and Murphy used a strength of two ounces of hydrogen peroxide in eight ounces of normal saline solution, three ounces of hydrogen peroxide being used in one case without ill effect. Fifteen minutes was allowed for transfusion and this was checked temporarily every four minutes, or whenever large bubbles of oxygen appeared in the cannula, or if the patient became at all restless. Small bubbles entering the vein did not appear to do any harm. In one case the patient struggled so violently in his delirium that the cannula slipped out and the distal ligature came off. On pressing the vein above two distinct streams could be seen to issue from the wound, the one above bright red and frothing, the other deep blue. From their experience in twenty-five cases the writers hold that hydrogen peroxide can be given intravenously without gas embolism being produced. The anoxemia is often markedly benefited, and the toxemia appears to be overcome in many cases. The mortality (48 per cent.) compares very favorably, they believe, with the 80 per cent. in similar cases not so treated, and more so when it is remembered that they treated only the most severe and apparently hopeless patients.

7. Anæsthesia in Nose and Throat Operations.—Felix Rood endeavors to uphold the safety of ether; the danger of chloroform, as demonstrated, apart from all scientific considerations, by the records of the daily press; the improvements in the methods of administering ether so that the congestion, cyanosis, and salivation of other days have given place to an anesthesia which has all the merits and none of the dangers of chloroform; and the gradual evolution of operative surgery of the mouth, from the rapid operation on coughing patient towards the ideal of a quiet patient free from all risk of suffocation, combined with every facility for a thorough and deliberate operation.

British Medical Journal.

February 21, 1920, i, 3086.

1. Atony and Prolapse of the Large Intestine. Professor J. W. Smith.
2. The Lettsomian Lectures on Tumours Complicating Pregnancy, Labour, and the Puerperium. Lecture II. Herbert R. Spencer.
3. The Effects of Deficient Dietaries on Monkeys. Robert McCarrison.
4. Protective Inoculation Against Influenza. W. H. Wynn.
5. Some Unusual Forms of Dysentery. George C. Low.
6. Ankylosis of the Mandible and Its Operative Treatment. Gilbert Chubb.

2. Tumors Complicating Pregnancy, Labor and the Puerperium.—Herbert R. Spencer discusses in this lecture, the second of the series, the first of which was reviewed in the MEDICAL RECORD for March 13, ovarian tumors complicating pregnancy, labor and the puerperium, giving details of 55 cases. The ages of the patients varied from 20 to 43 years, the average being 30. Nine patients were nulliparæ at the time the ovarian tumor was present, nine had had five or more

children, one had had nine, and three ten. Altogether the 55 patients had had 150 children, an average of nearly three, before the tumors were removed. Information as to the occurrence of abortion was not noted in 7 cases; the remaining 48 women had had 125 children and 33 abortions. The proportion of abortions to pregnancies was therefore 26.5 per cent. Of the 55 cases, 40 were not operated on during pregnancy and 15 were. In only 5 of those not operated on during pregnancy, or 12.5 per cent., did abortion occur in the pregnancy preceding ovariotomy. In 5 out of 6 cases in which both ovaries were affected abortion did not occur; in the sixth case the notes leave the matter in doubt. Of the 15 cases operated on during pregnancy 4 aborted (26.6 per cent.). In 10 of the 15 cases operated on (66.6 per cent.) the pregnancy continued and living children were born, but one died shortly after. As 3 of the patients were operated on at term, when the question of abortion does not arise, the true abortion rate for patients operated on before the child is viable is in this series 4 out of 12 cases (33.3 per cent.). The tumor was cystadenomatous in 33 cases (60 per cent.), dermoid in 15 (27.2 per cent.), ovarian fibroid in 3 (5.4 per cent.), and "parovarian" in 6 (10.9 per cent.). Torsion of the pedicle was found 12 times in cystadenomatous tumors, 5 times in dermoid tumors, and once among the "parovarian" tumors, a total of 18 (32.7 per cent.). The tumor was situated in the right ovary in 23 cases, in the left ovary in 18 cases, in both ovaries in 8 cases, in the right parovarium in 4 cases, in the left parovarium in one case, in the left parovarium and in the right ovary in one case. The tumor was incarcerated in the pelvis in 5 cases. In one case the tumor was mistaken for a uterine fibroid; cesarean section was performed, with a successful result to the mother and child. In the other 4, which were all dermoids, the value of treating the obstructing tumor either by pushing it up out of the pelvis or removing it by operation was illustrated. The danger of delivering the child while an ovarian tumor is in the pelvis is illustrated by a specimen exhibited before the Obstetrical Society in 1898, which showed rupture during version after an attempt at delivery by forceps, with a fatal result to the mother. Adhesions were found in 26 cases (47.2 per cent.). All the suppurating cases were adherent. Dermoid tumors in which the pedicle was not twisted were free from adhesions except in two instances. There appears to be no evidence in the cases observed of specially rapid growth of the tumor during pregnancy. Of the 15 patients subjected to ovariotomy, one died. The children (in one case twins) were born alive in 11 cases, but one of the children died soon after birth; 4 patients aborted; thus, in 5 out of 15 cases the child was lost. The mortality rate for the children therefore was 33.3 per cent.; the abortion rate was 26.5 per cent., or, more correctly, 33.3 per cent. In four other cases seen by the lecturer during pregnancy, and operated on, the mothers recovered and the children survived. In the 40 cases not operated during pregnancy all the mothers recovered from the labor or abortion. In 29 cases (out of 37 in which the fate of the child is given) the child was born alive; in 4 cases the child died as a result of difficult delivery by forceps or version. In 4 (possibly in 5) out of the 40 cases abortion occurred. The mortality rate for the children is 8 out of 37 (21.6 per cent.). The abortion rate is 10 per cent., or possibly 12.5 per cent. The scheme of treatment, first published in 1909 in the *Transactions of the American Gynecological Society*, is given, with slight verbal alterations.

3. The Effects of Deficient Dietaries on Monkeys.—Robert McCarrison, of the Pasteur Institute of S. India, Coonoor, records experiments made on monkeys (*Macacus sinicus*) captured from the local jungles. Ten were fed on autoclaved rice, and four on autoclaved rice *plus* butter. Twelve monkeys, fed on rice, bananas, monkey-nuts, milk, onions, and bread, served as controls. The rice (milled) was autoclaved at a temperature of 130° C. for an hour and a half. An exclusive diet of rice so autoclaved, the writer holds, may be considered to be wholly deprived of accessory food factors of all three classes; it is excessively rich in starch and deficient in proteins, fats, and salts. A dietary of autoclaved rice *plus* butter is lacking in accessory food factors of the "B" and "C" classes, while it is ill balanced with respect to proteins, carbohydrates, and salts. The results of these experiments on monkeys confirm those previously recorded by McCarrison in the case of pigeons fed on similar food. He considers them applicable in kind, if not in degree, to human beings subsisting, as frequently happens, on food similar in composition to that on which the monkeys were fed. From his observations he forms the following conclusions: 1. Dietaries which are deficient in vitamines and in protein, and at the same time excessively rich in starch or in fat, or in both, are potent sources of disease, and especially of gastro-intestinal disease. 2. An excess of fat, in association with deficiency of "B-vitamine" and protein and superabundance of starch, is peculiarly harmful to the organism. 3. Certain dietetic deficiencies greatly favor the invasion of the blood and tissues by bacteria; especially is this the case when deficiency of vitamines and proteins is associated with an excessive intake of starch. 4. Since life cannot be sustained in the monkey, *Macacus sinicus*, for much longer than 100 days on a dietary almost wholly devoid of "B-vitamine," it would appear that complete absence of this vitamine from the food is of less practical importance from the point of view of the production of disease in human beings than its subminimal supply. Complete deprivation of "B-vitamine," especially if there be also imperfect balance in other essential requisites of the food, will lead to rapid dissolution and death; subminimal supply of this vitamine will lead, in like circumstances, to slow dissolution and disease. 5. The results recorded may afford some explanation of the genesis of that great mass of ill defined gastrointestinal disorder and vague ill health which forms so high a proportion of human ailments at the present day.

American Journal of the Medical Sciences.

March, 1920, clix, 3.

1. The Physical Signs of Foreign Bodies in the Bronchi. Thomas McCrea.
2. The Oculopupillary Fibers of the Sympathetic System: Division of the First Thoracic Root in Man. William G. Spiller.
3. On the Epidemic Acute and Subacute Non-Suppurative Inflammations of the Nervous System Prevalent in the United States in 1918-1919: Encephalitis; Encephalomyelitis; Polyneuritis; and Meningo-Encephalo-Myeloneuritis. Lewellys F. Barker, Ernest S. Cross, and Stewart V. Irwin.
4. Pleural Effusion with Inversion of the Diaphragm Producing an Abdominal Tumor; Together with Remarks on Acute Pulmonary Edema Following Tapping. David Reisman.
5. Retroperitoneal Liposarcoma: Report of an Unusually Large Specimen with Chemical Analysis. Edwin F. Hirsch and Gidcon Wells.
6. Vascular Reactions in Vascular Hypertension. James P. O'Hare.
7. The Dangers of Ascariasis. Bowman Corning Crowell.
8. Evidences of Nephritis and Urinary Acidosis. Joseph H. Barach.
9. The Association of Fever with Fracture of the Skull. Abraham O. Wilensky.
10. Subcutaneous Emphysema: A Complication of Influenzal Pneumonia. Report of Seven Cases. Jacob Meyers and Baldwin Lucke.
11. Gross Pathology of Influenzal Pneumonia in France. Harry Bakwin.
12. Chronic Non-Tuberculous Lung Infection. C. G. Field.
13. A Psychological Theory of the Cause of Epilepsy with Special Reference to an Abnormal Muscular Expression of a Strong Emotional Drive. Chester A. Marsh.

1. The Physical Signs of Foreign Bodies in the Bronchi.—Thomas McCrae calls attention to the fact that there may be no disturbance at the time of entrance of a foreign body and no suggestion in the history of such a happening. Certain signs are of value, especially decreased expansion on the affected side, the presence of very fine râles and the "asthmatoid wheeze." Some foreign bodies, such as a peanut, set up a very acute general process which is fairly distinctive. Other structures, such as metallic objects, cause permanent changes, usually in a lower lobe. The chief errors in diagnosis are to mistake the signs for those of pneumonia in the early stages and in the acute cases, and for tuberculosis after the body has been present for some time.

7. The Dangers of Ascariasis.—Bowman Corning Crowell holds that the wide territory covered by the *ascaris*, the number of the population infested by it and the harmful results attending its presence entitle

it to more respectiful attention than is usually accorded it. In practically all places, if not in all, in which examinations are made for parasitic infections, it is found that the *ascaris* is the parasite most frequently encountered. It is also one of the worms that is most easy of recognition, and for that reason very little difficulty attends the diagnosis. Perhaps these facts, he says, have helped to distract the interest of the physician from this homely worm. The average physician who has had any experience in tropical countries where the *ascaris* abounds will say that the treatment of ascariasis is easy, which is probably true in the vast majority of cases, and that its harmful effects are slight anyway, which the writer declares is decidedly not true. He thinks the word of the pathologist is heard only too infrequently on this subject, for which reason he records some of his experiences with this worm as seen in the autopsy room during several years in Manila. The experience led him to look upon the *ascaris* with more respect and fear. A simple examination of the hospital records of tropical countries will show what a large number of cases are admitted to these hospitals for ascariasis alone, aside from those in which ascariasis is found complicating other diseases which are usually considered more serious. If this be followed by an examination of the records of the associated morgues, with their never-ending list of surprises, the case against the *ascaris* will be strengthened. Crowell discusses the pathological effects of the *ascaris* under the following classification: 1. Mechanical effects are prominent and certain from the *ascaris;* these may be exerted when the worm is in the intestine or in the course of its migrations. 2. As a carrier of infection the worm is also of importance in its migrations. Whether through its eggs it may prove a source of transmitting infection is not yet proved. 3. The larvæ cause a bronchopneumonia in experimental animals, and it is not improbable that they may do so in some cases in infants. 4. The presence of a harmful toxic substance is a source of danger and reflex nervous symptoms due either to mechanical or toxic irritation are also frequently encountered. These phenomena are considered in detail and illustrative cases cited. These worms may cause symptoms and even death through toxic, reflex, and mechanical effects either in the larval stage or while adult in the intestine or in the course of their migrations to other parts of the body. Cases of disease of the intestine or other parts may assume much more than their usual seriousness on account of the presence of these worms, and the accidents due to the migratory proclivities of the worm may cause fatal complications of simple surgical procedures that would otherwise have terminated happily. The writer believes that a thorough and systematic examination of the cases of ascariasis would bring to light many cases in the experience of others, and would prove that ascariasis possesses the importance which he has indicated.

La Gynécologie.

xviii, 6.

Ectropion of the Os Uteri.—Doleris, under the title "Errors of Therapeutics in Cervical Metritis," gives an illustrated account of this condition which was formerly spoken of as ulceration and improperly treated. He asks, "What is cervical ectropion?" replying that a long time was necessary to learn that it does not represent a loss of substance. The word should be employed in lieu also of erosion and vegetating or fungoid cervicitis, etc. It is a prolapse or hernia of the mucous lining of the cervical canal, due usually to laceration. It becomes altered as a result of friction or infection and gives rise to hypertrophy, whether of mucosa, glands or stroma of the cervix. But there is also a non-traumatic form which is seen in nulliparæ, independent of laceration. This may be temporary or permanent. The protrusion may be due to intense congestion or muscular spasm. This type may be infected, whether by saprophytes or the gonococcus or tubercle bacillus, and may likewise lead to hypertrophy. This non-traumatic type is common. A cause behind the factors above mentioned is a congenital condition, identical with that encountered at times in the new born. The condition is silent until puberty when congestion, spasm of the sphincter muscle of the os or infection acts as a determining cause. As a rule, the nontraumatic form is circular and when it is of the vegetating or hypertropic type may simulate a tumor. Outside the limits of the ectropion the mucosa of the portio may show an eroded areola and this, the author proposes to call an erosion, which term he also uses for other affections, such as herpetic excoriations. In other words, an erosion has nothing in common with an everted or hernial cervical mucosa, but occurs on the portio as a superficial loss of protective epithelium.

Le Progrès Médical.

February 7, 1920, xlviii, 6.

The Crisis in Acute Infectious Diseases.—Loeper recalls that the ancient crisis of a disease meant literally the "judgment" or that kind of behavior which enabled the medical man to judge of the outcome of the malady; the judgment formed might be in favor of or against the patient's survival. Modern writers, of course, do not use the term in this sense, for by crisis we mean only the turning point of the disease process. In a more technical sense crisis connotes the elimination of the *materies morbi* or its toxic products, which should be followed by recovery (in the absence of complications or permanent damage to some vital organ). This association of the crisis with elimination causes us to speak of critical diaphoresis, diuresis, and diarrhea; the latter being rather questionable and more apt to indicate a complication. Lysis is not antagonistic to crisis but is merely a deliberate form of the latter. The diaphoretic expression of a crisis is apt to precede the latter or usher it in, and bears a relation to defervescence. Our present knowledge ranks critical diuresis as much the more important of these phenomena, for there is a very definite elimination of solids in the first 24 hours—as much as 30 gms. of the chlorides and 60 gms. of urea at times. It has also been shown that the urine of the critical day is highly toxic; in fact a man can eliminate enough poisonous material in one day to kill a man of the same weight in 13 or 14 hours. According to the relative predominance we may speak of chloruric and proteinic crises. In typhoid the subject may eliminate during the critical period as much as 300 gms. of chlorides, or all that he has retained in the three weeks of the disease which precedes the crisis. In infectious icterus as much as 147 gms. of urea have been excreted on the critical day. There are many minor phenomena of interest in connection with the crisis, some associated with blood counts. In speaking again of the ancient idea of the crisis the author gives Hippocrates credit for the statement that the *vis medicatrix naturæ* causes the elimination of peccant humors, but this idea had disappeared completely in later centuries. In the XVIII century the crisis meant little more than the resumption of normal functions.

High Frequency and High Tension in the Treatment of Tuberculous Osteitis.—Without claiming to have cured all or even a majority of a series of cases of this affection observed over a term of years, Doumer of Lille reports at least four cures since 1912, his work naturally having been greatly interfered with by five years of warfare. The patients were all placed in an electrostatic field of powerful oscillations. The voltage was above 80,000 volts and the oscillations varied from 800,000 to 1,000,000 a second. The seances lasted ten minutes and the interval was daily or triweekly. Of the four definitely cured patients one has remained well for the past eight years, and the others for six and seven years respectively. The fourth, after apparent complete recovery, suffered a relapse or reinfection. The duration of actual treatment shows the greatest diversity, for while one cure was obtained in a few weeks, another patient was treated for eighteen months before recovery. The cases which were merely improved or still under treatment receive no discussion, but the author states frankly that in at least two cases the treatment was actually inert. Differences in result appear to be due to site, extent, character, and chronicity of the lesions, so that no law can be laid down for selection of cases. The more superficial the lesion the better the outlook.—*Bulletin de l'Academie de Médecine.*

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting, Held in New York City, March 23, 24 and 25, 1920.

HOUSE OF DELEGATES.

Monday, March 22, 1920.

THE PRESIDENT, DR. GRANT C. MADILL OF OGDENSBURG, IN THE CHAIR.

Annual Reports.—Report of the President.—Dr. GRANT C. MADILL of Ogdensburg submitted this report, in which he stated that during the past year he had attended the meetings, with two exceptions, of all the district branches and many meetings of the county societies, and that in addition to interesting scientific programs, the affairs of the State organization were discussed in a manner showing deep interest in the welfare of the profession. He found, however, that no systematic effort was made by the county organizations to increase the membership, and it was his opinion that the State organization should carry on a propaganda to urge all eligible physicians to join their respective county societies. Dr. Madill spoke of the loss the society and the profession had sustained in the death of Dr. Abraham Jacobi, who was president of the society in 1882, and of Dr. Floyd M. Crandall, who had served for three years as secretary of the organization and for several months as acting editor of the *Journal*. The most important event of the society during the year was the duty performed by the special committee appointed to study compulsory health insurance with special reference to its relationship to the medical profession. The subject had been studied from every angle and in an unbiased manner. The unanimous adoption of the majority report showed the feeling toward compulsory health insurance. The medical profession, after its deliberate study of compulsory health insurance, could not be accused by the proponents of bills of the type of the Davenport-Donohue bill of uninformed prejudice. Of the constructive recommendations of this committee the most important were the fifth and sixth. The Fifth: "Owing to the paucity of accurate and unimpeachable data collected by means of an unbiased investigation, your committee recommends that the Legislature of 1920 be requested to appropriate a sufficient sum of money for the use of the Health Department, and such other departments in association with it, as it requires, for the purpose of making a survey of the State of New York to determine the amount and character of illness in its economical relation to the commonwealth." Sixth: "If additional legislation is to be enacted, it should provide for a greater development of existing agencies for preventive medicine, together with the extension on a large scale of the present county and municipal functions for both preventive and remedial medicine, and it should make further provision for the inauguration of more widely extended utilization of the present institutional clinical facilities for the diagnosis and treatment of disease, in order to facilitate the access of the entire population of the State to modern methods in the practice of medicine." These recommendations and their adoption by the House of Delegates showed that the medical profession of the State of New York was willing and anxious to cooperate with the State in the betterment of public health. During the past year, organizations were formed outside of the State Society to carry on a propaganda in opposition to Compulsory Health Insurance. In order to oppose Compulsory Health Insurance the medical profession in many instances sought, by political means, to influence the public in electing the members of the Legislature. It was his belief that the activities of the State Society on questions pertaining to public health legislation, so far as the relationship of the profession to the public was concerned, should end with the dissemination of information on the subject in question and an expression of an opinion as to what, in the judgment of the profession, was best for the public. With the public thoroughly informed on questions of public health legislation, the medical profession would be in a position to exert greater influence in the Legislature for wholesome and efficient health measures, without resorting to methods savoring of political tactics and asking for class legislation. Dr. Madill suggested that there should be appointed a committee whose duty should be to disseminate, through the officers of the county societies, information pertaining to public health matters. This report also recommended the appointment of an executive secretary. It was pointed out that the extension of the activities of the society demanded increased labor on the part of the officers of the various standing and special committees; that the members of this society were mostly engaged in active practice of their profession, and that it was difficult at all times for them to give proper attention to the duties of their offices. At the special meeting of the House of Delegates, held in Albany December 22, 1919, it was moved, seconded, and carried "That the whole question relative to the establishment of a legislative bureau of information and the report of the special committee be postponed until the next annual meeting of the House of Delegates." This question was therefore to be acted on at this meeting. An executive secretary of the society could, in his opinion, perform the duties as director of the bureau, if such a bureau were established. The report further called attention to the fact that the present income of the society was not sufficient to enable it to carry on any increase in its activities. The small surplus in the hands of the treasurer and the imperative need of extra outlay would soon bring about an exhausted treasury. To economize by curtailing any of the present work of the society would, in his judgment, be bad policy. The work of the society should be expanded and not contracted. He therefore recommended that Article 7, Section 2 of the Constitution be amended to provide for an increase of $2 in the annual dues. He felt that such an increase, together with an aggressive campaign for new members, would provide sufficient income for the employment of an executive secretary and for carrying out the suggested broadening of activities. At the annual meeting of the society, in 1917, a resolution was adopted by the House of Delegates providing that a special committee be appointed to make a revised draft of the present workmen's compensation law, which revised bill should be submitted at the next annual meeting of the House of Delegates, or at a special meeting called for the purpose thereof. There was no record of a report from this committee at an annual or special meeting. He thought another committee should be appointed to consider this resolution.

The House went into a committee of the whole to consider the recommendation to appoint an executive secretary. After discussing the matter they reported that they approved of this step.

Report of the Secretary.—Dr. EDWARD LIVINGSTON HUNT of New York reported that on January 21, 1907, the membership of the State society was 5,857. To-day there was an increase of 2,714. During these thirteen years they had lost through deaths, registrations, and expulsions 1,919 members. During the last twelve years 6,813 new members had been admitted. There were at present 14,446 practising physicians in New York State, of which number only 8,738, or a little over 60 per cent., were members of the State society. This report recommended that a special committee be appointed whose function it should be to devise ways and means of increasing the membership. This report also called the attention of the delegates to an amendment to Section 1, Article 3 of the Constitution, providing for the annual election of a speaker and vice-speaker to the House of Delegates; in other words, it would give to the legislative body a competent and permanent presiding officer. Dr. Hunt thought this step would be progressive and practical; it would save time and tend toward greater harmony and more constructive legislation. This report also called attention to a proposed amendment to the constitution which provided that delegates should be apportioned among the constituent societies in proportion to their actual member-

ship, except that each constituent society should be entitled to at least one delegate. This amendment was based on actual membership and provided an equable and just representation. A new section had been added to the scientific work of the society. For the first time in many years there would be a section on neurology and psychiatry. This was established at the suggestion of Dr. Thomas W. Salmon. In conclusion, this report paid a tribute to Dr. Crandall.

Report of the Treasurer.—Dr. HARLOW BROOKS presented this report, which showed that it had been necessary during the year to draw to the extent of $1,889.10 on the $9,153 surplus of the society.

Report of the Committee on Scientific Work.—Dr. PARKER SYMS submitted this report which stated that the question of making clinics part of the program had been considered and thought not to be advisable, as it broke up the section idea. The question of holding joint sessions was discussed and it was the final decision of the committee that a limited number of joint sessions was desirable, especially if they were so conducted as to bring important subjects before the society in the form of symposiums.

Report of the Committee on Legislation.—Dr. J. RICHARD KEVIN of Brooklyn submitted this report, which, having been written early in the session of the Legislature, was a tentative one. The bill of predominant interest, the Compulsory Health Insurance bill, it was understood would be introduced for "educational purposes" only, since the proponents were aware that it would not pass the Senate or the Assembly this year. The best information suggested, however, that the proponents would continue their efforts to obtain either this bill or one equally obnoxious during this or some subsequent Legislature. The State Department of Health had provided this committee with a memorandum of a skeleton bill which authorized a county, city, or consolidated health district to create and maintain one or more centers and provide State aid therefor. The proposed bill had the following aims:

"1. To provide for the residents of rural districts, for industrial workers and all others in need of such service, scientific medical and surgical treatment, hospital and dispensary, facilities and nursing care, at a cost within their means, or, if necessary, free. 2. To assist the local medical practitioners by providing: (*a*) Facilities for accurate diagnosis by a coordinated group of specially qualified physicians and surgeons, both for hospital patients and for out-patients. (*b*) Consultations and advice as to treatment by medical and surgical experts. (*c*) Clinical, bacteriological and chemical laboratory service and *x*-ray facilities at moderate cost, or free when necessary. 3. To encourage and provide facilities for an annual medical examination to detect physical defects and disease and to discover conditions favorable to the development of disease, and to indicate methods of correcting the same. 4. To provide or aid in securing adequate school medical inspection and school nursing service. 5. To secure or aid in securing better enforcement of the Public Health Law and a more effective administration of public health activities within the area served. 6. To provide a Public Health Nursing Service adapted to and adequate for the community served. 7. To aid in securing the dissemination of information in regard to public health throughout the area served. 8. To aid in securing adequate compensation for medical and surgical care rendered in hospitals and clinics, in order that efficient service may be everywhere available. 9. To provide laboratories, group diagnosticians, consultants and hospital facilities in the smaller cities and rural districts. 10. To provide medical libraries, including books, pamphlets, periodicals, leaflets, exhibits, moving picture films, and kindred educational facilities, with halls for meetings if needed. 11. To provide hospital and other necessary resources for dealing promptly with epidemics. 12. To reduce illness and disability among the industrial workers of the State by providing prompt and accurate diagnosis and efficient treatment for sick and injured workers and the members of their families. 13. To coordinate public health activities within the district." It provided for a grant of sixty cents per day for every three patients maintained in any hospital operated as a part of a health center. It provided for new construction and equipment of hospitals, one-half the cost to be paid by the State, such payment not to exceed $750 per bed, and beds for the purpose of this provision to be in proportion not in excess of one to each 500 of the population. It provided for clinics and annual medical examinations. It provided for out-patient clinics equal to one-half of the initial cost of establishment, the amount to be paid by the State for this purpose, not to exceed $5,000 per clinic and twenty cents for each treatment in such clinic. It provided a grant of fifty cents for each free, comprehensive, annual medical examination made at the health center. It provided for a grant from the State of one-half of the annual cost of maintenance of laboratory of health center, the sum to be paid by the State not to exceed $3,000 per annum for each laboratory, and $1,500 toward the initial installation and equipment of such laboratory. The National Civic Federation, which was consistently and persistently opposed to Compulsory Health Insurance in any form, had evolved a constructive plan to be dealt with by the Legislature. It contended that the immediate problem for consideration was not that of insurance against sickness, but the larger and more important problem of the extent of illness and the methods for its prevention. It had presented to the Legislature of New York facts demonstrating the need for a sickness survey. When these bills were introduced and printed the Committee would give them study and make recommendations. The report then considered the narcotic question. It stated that the present law was very inefficient in its workings and they believed that most of the physicians in the State were a unit in suggesting that the present law should be modified, at least to the extent that it should harmonize with the Federal law. Of the bills introduced the Committee was most impressed by the one introduced by Senator Cotillo. The annual Chiropractic bill appeared this year just as it had done in the past and Senator Carroll had introduced a bill "to define and regulate drugless therapy. It legalized a large number of "pathies." The danger signal of this bill was the grouping together of the various cults which might solicit considerable strength. The Committee was of course vigorously opposing these bills. The Annual Registration bill had been introduced. It was endorsed by the Council last year and therefore had their support this year. They felt that, notwithstanding some objections, the effects that would be produced by the annual registration of physicians in clearing the ranks of all cults and fakirs more than offset any objections which prevailed against the bill.

Report of the Committee on Medical Economics.—Dr. HENRY LYLE WINTER submitted this report which showed that this committee had increased its field of work by studying several phases of medical practice and of medicine and medical education, as well as impending public health legislation. The two most important studies undertaken were a partially completed survey at Chelsea, N. Y., and a special study to determine the amount of sickness among wage earners in proportion to that among their dependents. The original survey showed that 28 per cent. of sick people were not receiving medical attention. While none of the figures were complete, the indications were that this group would be much reduced. About 70 per cent. of the people so far certified as sick and not receiving medical care were found to have adequate means for securing such care should they desire it. Two per cent. of this group stated that they were unable to obtain medical care because of isolation, although they were able to pay for it. After citing the details of the investigation to determine the amount of sickness among wage earners and their dependents, the report concluded that while there was no question but that the conditions at these mills were better than the average, and while the investigations covered a small group, the figures were such as to raise the question as to whether or not the demand for application of alleviating measures to employees was as great as the proponents of health insurance would lead us to believe. This committee had plans under consideration whereby the subject of public medicine would be studied under the following topics: Research work on heredity, prenatal care, post-partum care of the mother, infant hygiene, child hygiene, child labor, control of the hygiene of industry, personal hygiene, communicable diseases, so-

cial medicine. This report approved of the annual registration bill. It advised that the Society record itself as opposed to any further increase in educational requirements for medical college entrance. The report approved of a plan whereby permanent commissions should be established in each judicial district to which all questions affecting the mental status of any person accused of a crime should be referred. Whether questions of sanity or of responsibility arising in habeas corpus or certiorari proceedings should take the same course or not was a question upon which they had had insufficient legal advice. They further urged that where the commission of the crime was not in question the determination of a commission of the irresponsibility of the accused should be final; and that the accused should not be tried but should be committed by the court to the proper institution for the criminal insane. Continuing, the report discussed the question of post-graduate study. The benefits to be derived from post-graduate studies had never been questioned, but they were denied to a large number of the profession because of lack of time and opportunity. It was therefore suggested that a systematic scheme of post-graduate work be undertaken under the auspices of this Society. The following initial plan was offered for consideration: Under the direction of a special committee, or the Committee on Medical Economics, a program should be drawn up which would supply the best teachers of the profession to certain districts throughout the State, at least once, perhaps twice, a year. In detail, the plan included the selection of a sufficient number of centers to enable the attendance of every physician in the State. These centers should be preferably cities having hospital facilities for clinical work. Lectures and clinics covering some special branch of medicine or surgery should be held at these selected points, and continued over a sufficient period each year to enable comprehensive, though intensive, courses of study. The committee further recommended that the Society give its approval to the campaign for National Health Conservation which the United States Public Health Service had begun, and that the Society put itself on record as in favor of amending one phase of national prohibition, namely, the limitation of the quantity of distilled spirits which might be prescribed. Finally, this report recommended that inasmuch as several regulations had been enacted which affected the practice of medicine, and inasmuch as a physician might be guilty of infringement of these regulations without any criminal intent that the subject of furnishing legal defense in these cases should be considered by the Society, and a special committee be appointed to take this matter up with the Counsel of the Society and report at the next regular meeting of the House of Delegates.

Report of Committee on Public Health and Medical Education.—Dr. JOSHUA M. VAN COTT of Brooklyn submitted this report, which recalled that in 1910 this Committee had urged the establishment of county diagnostic laboratories and it was then suggested that these laboratories be centralized in the State Department of Health. While the suggestions of this committee had not been literally realized, nevertheless they had been put into effect in both spirit and fact. As a great medical society they could not endorse too heartily what had been accomplished, and at the same time they pledged their enthusiastic support to all measures which would put all sections of the State on a parity in the point of securing to its citizens the benefits of modern medicine in its various departments. They could not, however, place the stamp of their approval upon any measure involving the expenditure of large sums of money collectible through the assessment of a commonwealth already overburdened with taxation. Compulsory Health Insurance fell within this category and should be opposed as disruptive of the best interests of the community. They were of the opinion that the best success for the State, in its effort to relieve individual sickness and raise the standard of individual health, would be found in the generous expenditure of moneys for the support and progressive development of our State Department of Health, the intensive education of the public in matters of personal hygiene and State sanitation in all of its ramifications, together with a program for the medical profession of the State, calculated not only to maintain a high standard of medical education, but also to avoid discouraging our best and brightest sons from entering the profession of medicine.

Report of the Special Committee on Public Health of the Greater City of New York.—Dr. E. ELIOT HARRIS submitted this report, which gave the results of an extensive investigation of the narcotic drug question. Questionnaires were sent to 2,464 superintendents of State, county, and municipal almshouses; 3,023 State, district, county, and municipal health officers; 4,568 superintendents of private hospitals and sanatoria. After analyzing the data derived from these sources the report showed that the illegitimate traffic nearly equals the legitimate, and smuggling from Canada, Mexico, and along the Atlantic and Pacific coasts was a source of illegitimate supply. Owing to the lack of proper records it had been impossible to do more than guess at the number of addicts in the United States, but taking all the collected facts into consideration the number is somewhere between 300,000 and 1,000,000. The reports showed that there was less drug addiction in the country than in the larger cities. The questionnaires on the narcotic drug situation showed the want of proper records and reliable statistics in a startling way, which the Federal and State governments should bestir themselves to remedy. In the Greater City of New York district, where compulsory registration of narcotic drug addicts has been in force since July, 1919, there have been registered about 9,000 addicts, which is believed to be considerably less than the whole number resident in that district. Of the number of addicts registered, 7,464, 26 per cent had to do with transportation, as chauffeurs, motormen, and drivers, and altogether representing 175 occupations, passed through the Emergency Clinc of the New York City Health Department. In conclusion, the report made the following recommendations: 1. That the ambulatory treatment of drug addiction, as far as it relates to prescribing and dispensing of narcotic drugs to addicts for self-administration at their convenience, be prohibited by law. 2. That heroin be eliminated from all medicinal preparations, and that it should not be administered, prescribed or dispensed, and that the importation, manufacture and sale of heroin should be prohibited in the United States. 3. That the bill introduced by Senator France of Maryland to provide aid from the United States in prevention and control of drug addiction and the care and treatment of drug addicts be approved, and that Senator France, chairman of the Committee on Public Health, be so notified. 4. That the Bureau of Public Health service of the Treasury Department be respectfully requested to continue the compilation of State laws and regulations relating to habit-forming drugs and bring them up to date.

Report of Special Committee on Drug Addiction.—Dr. W. MEDDAUGH DUNNING submitted this report, the findings of which corresponded with those presented by Dr. Harris. The report stated that during the past year there had been an adaptation and coordination between the State and Federal laws. Further experience would increase this harmony as the provisions of the law grew more familiar, and there would be less misinterpretation and friction. The committee recommended the discussion of ways and means to avoid the present delay in the receipt of the necessary drugs for office, clinic, and hospital. In view of the large amount of opium used in the United States, as compared with other countries, this committee recommended stricter government supervision. 5. With reference to legislation concerning veronal, trional, sulphonal and other coal-tar products, the committee deprecated legislation until further investigation gave us more definite facts. At present it would seem that the percentage was small. 6. In view of the lack of uniformity of the various State laws, this committee cordially supported the recommendation of Dr. Harris that there be a collection and classification of all State laws, court decisions, regulations, and methods of administering laws on Narcotic Drug Control, and that this be done either by the Government Health Service or by the Internal Revenue Bureau for the benefit of officials and others in the several States.

Report of the Special Committee to Consider Economic Methods of Caring for Public Health.—Dr. E. PARK LEWIS of Buffalo submitted this report, in which it was

stated that it would be impossible for any committee to make judicious recommendations by which the obvious needs in this particular could be carried into effect without a much fuller knowledge of the exact conditions obtaining throughout the State than was now available. A knowledge of the number of hospitals and the degree of efficiency that they had attained and their approximation to a standardized ideal was of first importance, as it was to the staffs of existing hospitals that we should look for the establishment of diagnostic community clinics. The extent of preventable and of curable disease should be known and many other facts should be secured and correlated in order that proper deductions might be drawn before any plan could be proposed for the establishment of proper relation between the medical profession and the public. The more imperative needs were not for the very poor, and it is not desirable that efforts be made for increasing the number of charitable institutions, but a genuine need existed for the establishment of pay clinics in which group diagnoses could be secured at fees commensurate with the means of the patient and through which the physician in charge of any case would be enabled to secure correct treatment without danger of losing control of his patient. In order that the responsibility of the State toward its people in providing such facilities as will enable every practising physician to secure such necessary diagnostic aids as would enable him to give to his work its highest efficiency, it was recommended that a committee be appointed to prepare a suitable memorial to present to the next Legislature requesting the appointment of a committee by the Legislature empowered to investigate the needs outlined and to devise means through which they might be carried into effect.

Report of the Counsel.—Mr. JAMES TAYLOR LEWIS submitted a report showing that during the past year 27 cases had been disposed of, and juries had found verdicts against the defendants in two cases; one of the cases involved the claim of failure of diagnosis and improper treatment of fracture of the thigh, and the other the leaving of a broken needle in the abdominal wall of a patient after operation. A notice of appeal to the Appellate Division had been served in the former case, and a motion for a new trial had been made but not yet heard in the other. He had no doubt as to the successful final termination of both of these cases. There were 39 new actions brought during the year, being about the same as for the past four years. Of the number of cases tried in court during the last year, five had been those in which it was claimed some material had been left behind after an operation. This was a very much larger proportion of these cases than usually occurred. Attention was also called to the fact that this class of litigation was getting into the hands of a different class of lawyers. While formerly malpractice cases were confined in a considerable degree to lawyers of small practice and of not particularly high standing, this condition seemed to be changing. After citing the new cases for 1919, Mr. Lewis said that this year having completed twenty years of active service on behalf of physicians and surgeons of this State in the defense of malpractice cases it might not be out of place to furnish the members of the Society with some of the results accomplished during that time. The first case which he defended while he was attorney for the State and County Medical Associations was tried on Dec. 14 and 15, 1899. Since that time he had had come before him 811 malpractice cases, involving practically every known fracture of the human body, and the leaving behind of surgical instruments and varieties of dressings. During this time claims against defendants had aggregated upward of $12,000,000. There had been actually paid to plaintiffs less than $6,000. Finally, the year 1919 had been most satisfactory; the cases were growing slightly less in number, but more and more difficult to successfully defend, requiring of the Counsel continuing examination of the law, and the study of medicine, surgery, and anatomy especially.

Report of Committee on Medical Research.—Dr. FREDERIC E. SONDERN submitted this report which stated that during the current session of the Legislature up to the present, but one bill had been introduced which tended to restrict animal experimentation by excluding dogs for this purpose. This was Senator Boylan's measure entitled "An act to amend the penal law in relation to experiments on living dogs." A public hearing was held in Albany on March 10, at which this committee and the profession were ably represented. The bill was still in committee at this writing.

Report of Committee on Prize Essays.—Dr. EDWARD D. FISHER submitted this report in which he stated that the committee had received three essays, which was somewhat more encouraging than during previous years, though they were still disappointed that so few entered the competition. The money was, of course, not the real recompense, but the fact that the man winning the prize could pride himself on being a man of ability. There were two prizes, the Merritt H. Cash and the Lucien Howe. Two of the essays submitted were for the first prize and one for the second. The Merritt H. Cash prize was awarded to Dr. H. B. Sheffield of New York for his essay entitled "The Present Status of Poliomyelitis."

These reports were accepted and recommendations referred to the reference committees.

Report of Committee to Consider Method of Determining Partial Loss of Vision.—Dr. ARTHUR J. BEDELL of Albany submitted this report drawn up by a committee appointed to consider the question of partial loss of vision. It called attention to the urgent need of a uniform and authoritative method for determining loss of vision or partial loss of sight in workingmen. The report recommended a proper working basis for the computation of partial loss of sight three essentials: 1. Central visual acuity; (2) field vision; (3) stereoscopic vision.

Resolution Raises Dues.—Dr. WENDELL C. PHILLIPS introduced a resolution calling attention to the fact that the Society was facing a period when it might have extreme difficulty in meeting its bills, and particularly as they had adopted the recommendation to employ an executive secretary and providing for a special tax of one dollar per year per capita on the membership of the society. This resolution, he said, was presented because it would take two years before resolutions making a change in the constitution providing for an increase in dues would bring an increased amount of money into the treasury. This resolution was amended by a motion to make the special assessment $2 instead of $1. The amended resolution was adopted by the House.

Election of Officers.—*President*, Dr. J. Richard Kevin of Brooklyn; *First Vice-President*, Dr. W. Meddaugh Dunning, New York City; *Second Vice-President*, Dr. Wesley T. Mulligan, Rochester; *Third Vice-President*, Dr. W. H. Purdy, Westchester; *Secretary*, Dr. Edward Livingston Hunt, New York; *Assistant Secretary*, Dr. Charles Gordon Heyd; *Treasurer*, Dr. Harlow Brooks, New York; *Assistant Treasurer*, Dr. Seth M. Milliken, New York; *Chairman of Committee on Scientific Work*, Dr. Samuel Lloyd, New York; *Chairman of Committee on Public Health*, Dr. Joshua M. Van Cott, Brooklyn; *Chairman of Committee on Legislation*, Dr. James F. Rooney of Albany; *Chairman of Committee on Medical Economics*, Dr. Henry Lyle Winters, Cornwall; *Chairman of Committee on Medical Research*, Dr. Frederic M. Sondern, New York; *Delegates to the American Medical Association*, Dr. Eliot Harris, New York; Dr. Eden V. Delphey, New York; Dr. Arthur J. Bedell of Albany; Dr. Edward Livingston Hunt of New York; Dr. Dwight J. Murray of Syracuse; Dr. Richard J. Kevin, Brooklyn; Dr. Frederic M. Sondern, New York; Alternates, Dr. Frederic M. Sondern of New York, Dr. James Flemming of Brooklyn, Dr. George W. Kosmak, New York; Dr. Nathan B. Van Etten of New York; Dr. Nelson O. Brook, Dr. Albert T. Lytle of Buffalo.

Speaker and Vice-Speaker.—Resolutions providing for changes in the by-laws providing for the election and a speaker and vice-speaker were adopted by the House, following which Dr. E. Eliot Harris was elected speaker and Dr. Dwight H. Murray, vice-speaker.

Resolutions on Compulsory Health Insurance.—Resolutions were passed protesting against the insinuations contained in the report of the New York League of Women Voters which implied that their position with reference to compulsory health insurance was influenced at the instance of up-State or any other league of business men, and stating that their position was

uncompromisingly opposed to compulsory health insurance because it was destructive of the best interests of the medical profession and inimical to the public welfare. Resolutions were also adopted instructing the delegates to the American Medical Association to introduce resolutions opposing compulsory health insurance and to do all in their power to support such resolutions.

GENERAL MEETING.

Tuesday Evening, March 23.

THE PRESIDENT, DR. GRANT C. MADILL OF OGDENSBURG, IN THE CHAIR.

Address of Welcome by the Chairman of the Committee on Arrangements.—Dr. CHARLES H. PECK made a brief address of welcome in behalf of the medical profession of Greater New York and the official medical body of the County of New York, in which he said that they felt honored to have the annual meeting of the Medical Society of the State of New York in this city. Many things had happened since they met in New York in 1914. Many of the members of the society had had thrilling experiences in the great war and all who had gone had not returned. The influences of the war still continued to be a vital factor in our lives. He hoped the arrangements for the entertainment of the members and their guests would afford them profit mingled with pleasure. He trusted that they would find New York not a half bad place even if some of the amusements were missing that they had before the war.

President's Address.—Dr. GRANT C. MADILL delivered this address in which he said that as the echoes of war died away, new questions and complex problems arose, and although sixteen months had elapsed since firing had ceased, the world was still laboring to bring order out of social chaos. The problems to be solved involved social, industrial, economic, and governmental conditions. The causes of this social unrest had been studied from every angle without, as yet, definite results. During the period of the war man had reverted to primitive instincts and the individual willingly sacrificed wealth and life itself for the benefit of the herd—society. We were forced to realize that, with all the centuries of civilization, man still remained a biological element and regressed to the methods of the savage, when the welfare of the State demanded it. When the necessity for herding was ended the individual became conscious of self again, and soon began to drift to pre-war selfish initiative. We were now having class struggles with greater intensity than ever existed before the war. As the result of various efforts to bring about order and contentment from the maze of social unrest, we had leaders among the different groups, who hoped by revolutionary means, to bring about what should come by a process of evolution, which was the natural, conservative, and dependable means of biological progress. To those with an abnormal amount of sympathy and sentiment the law of struggle for existence and "survival of the fittest" appeared crude and barbarous. To the American-born there was, however, an added zest to life in the challenge expressed in struggle for existence and the Government stood as umpire in securing fair play, protecting the weak, and preventing infringement on the rights of others. They as physicians were concerned in the numerous social problems in which the State was interested, and in addition they had their own special problems, depending upon the close relation of medical advances with general industrial and social questions. They were passing through an era when many traditions, beliefs, and customs were being put in the scrap heap or the melting pot and the practice of medicine could not stand still. Dr. Madill then referred to the stand which the society had taken on Compulsory Health Insurance and urged that physicians should not become self-centered in their professional work and forget their duties as citizens. Though the House of Delegates had opposed Compulsory Health Insurance they had passed resolutions asking for an unbiased investigation to determine the amount and character of illness in its relation to the commonwealth, and urging that if additional legislation was to be enacted, it should provide for the development of existing agencies for preventive medicine. This meant that the Medical Society of the State of New York preferred the gradual evolution of state medicine to any form of health insurance. The progress of State and Federal medicine had been so gradual that the public and even physicians were scarcely aware of the vast amount of medical practice that was being done by physicians in this service. To realize this one need only recall the large number of institutions for the care of the insane and hospitals for the care of the tuberculous, and the many activities of the State Department of Health. The State was furnishing funds to carry on these numerous activities, and was showing deep interest in the health and welfare of its citizens. In addition to the State Board of Health there was the United States Public Health Service. For the performance of certain health functions there were other Federal departments. In the conduct of this work Congress had appropriated $8,338,470 for the fiscal year ending June 20, 1920, to the Public Health Service. Of this amount $3,000,000 was to be used for public health work. There was need, however, of greater coordination of Federal, State, and local health activities, and undoubtedly this would not result until there was one administrative head with a cabinet officer in charge of the Department of Health. That state medicine would eventually come, required no great imagination to predict. It would probably come gradually by a process of evolution, and could be developed in such a manner that the medical profession would not be deprived of its original prerogatives. It must be so adjusted that the spirit of individualism and initiative in medicine were not clouded. Remuneration for services must be on a scale sufficiently large to enable the physician to live well, educate his children, and enable him to retire at sixty-five to live on a pension. A fixed salary for a medical man would be a blessing, particularly to those practising medicine with a profound interest in the scientific aspect of medicine. The medical man was notoriously a poor business man and an annual budget would in many ways be a relief. The one great objection to any system of state medicine was the danger of the Department of Health becoming the victim of political patronage. After speaking of the need of more physicians in rural districts, Dr. Madill said it would be necessary for hospitals to expand in order to meet the demand for institutional care, and it might be that the State would be called upon to aid financially in enlarging hospitals already existing and in the construction of new buildings. When the survey of the State, to determine the amount of illness in its economical relation to the commonwealth, was completed, a basis would be established upon which an estimate of the cost to the State could be computed. The cost would undoubtedly be great, but the conservation of health and the prolongation of life was the most important function of the State, and the benefit economically considered amounted to millions. To successfully establish and put in action a system of State medicine would require deep study economically, sociologically, and from the point of view of the physician. Dr. Madill declared that to-day medicine was not attracting students in sufficient numbers to supply the demands of private practice, hospitals, State and national institutions, the army, navy, and public health service. It was his belief that the cost of obtaining a medical education, together with the comparatively small remuneration of the physician, was responsible for the small number of men entering the profession. The standard of medical education should not be lowered. Either the State or the universities must make provision for the education of students with a desire for and mental qualifications adapted to the study of scientific medicine. While he felt certain that income was by no means the determining factor which induced a young man to study medicine, it was essential that the reward be sufficient to maintain a dignified position in society. The practice of medicine in the future would undoubtedly be carried on by what was known as group clinics, either diagnostic alone, or diagnostic and remedial. Group practice would be of inestimable value to all classes, rich and poor, alike. This system was not an experiment as we had several conspicuous

examples of its success throughout the country. The State had already made a step toward this type of practice by employing specialists and diagnostic experts in contagious diseases, tuberculosis, muscle and joint deformities following infantile paralysis, and other special diseases. Undoubtedly as State medicine developed and health centers were established a staff of specialists would be employed to provide group study for those unable to afford the cost of examination by private groups.

Annual Oration.—Dr. JOHN H. FINLEY, LL.D., L.H. D., Commissioner of Education and President of the University of the State of New York, delivered this address. He said that if he had the part of determining what books of the Bible should be canonical, he would vote for Ecclesiasticus or the wisdom of the Son of Sirach. He would at least follow St. Augustine in making frequent use of it, and he would follow St. Jerome that it should be read for the instruction of the people, even if it was not followed in theological dogma. Not only in things spiritual were these writings remarkable, but they had some brief and sententious passages on disease. Nothing better had been written than this essay of the Son of Sirach which was written in Egypt 132 B. C. It was the sort of an essay that Abraham Jacobi or William Osler might have composed. Most of our modern writings were not apocryphal. It was only such men as these who compared with the early Greek and Hebrew writers who were able to write better than the men of to-day. He felt that he must also include Grover Cleveland, who addressed this Society in 1906 and closed his oration with the clause "for you have to do with the temples of the Holy Ghost." He said he could not forbear recalling these men who were great doctors, great philosophers, and noble friends. Dr. Jacobi had been called the great "friend of truth," and a "sad friend of truth." As he saw the box bearing the name of Dr. Jacobi being brought to New York he thought "We bring nothing into this world and it is certain we take nothing out of it," but how much Dr. Jacobi had left for all he brought so little into the world, and he had taken with him only his burial clothes and the covering the trees had provided. The great men of the world, the Newtons and Bacons, had been givers and not grabbers.

Dr. Finley quoted freely from the Scriptures and from an ancient oration, to show the esteem in which the physician had been held in ancient times, one quotation ending "All things are not provided for all men, neither do all souls need all things. In a multitude of 'eats' there shall be disease, and surfeiting shall go into colic, but he that taketh heed shall prolong his life." Dr. Finley declared that he was not so much interested in prolonging life as in making life full and happy. It was not too much to say that he that taketh heed should prolong his life. A most comprehensive program for the application of this advice was found in the conception of the law of the State of New York which looked to the formation of health habits for every child, not only in eating, but in drinking and caring for the body as the temple of the Holy Ghost. The law was construed as covering an individual health examination and personal health instruction concerning the important facts of hygiene and physical exercise as health habits. The exercise consisted in gymnastics, marching, and supervised play. This did not take the place of the work of the medical inspector or the school nurse. The State Department of Education cooperated with the State Department of Health in seeing that a child had frequent examinations and especially if he had serious organic weakness. There were outside of the City of New York 1,276,000 children, or 75.1 of all the children in the schools outside the city of New York who were examined, and 986,000 defects were found, of which 286,000 were repaired. That percentage was not as large as they wished. They were now working on a revision of the syllabus of State Health work by Dr. Biggs and members of this Society, the sole object of which was to transform health maxims and rules into health habits. This program Dr. Finley said he would not give in its entirety as it was in preparation only. (See report House of Delegates). was a lack of teachers to carry it out. A law without One great difficulty confronting them was that there teachers, physicians, and health inspectors was impotent. They did not expect to do as he had heard was done in one instance where a medical inspector examined 80 children in 60 minutes and used the same tongue depressor for all. Their need was for real health teachers who would work in cooperation with the Board of Education and the Health Department and this would give, not health insurance which they did not want, but health assurance which they wanted and which this Society could support.

Coming to another part of his quotation "Honor a physician according to thy need, for verily the Lord hath created him," Dr. Finley said "Honor the physician according to the State's need and according to the child's need in the State." He had always envied the physician who had the satisfaction of knowing that he had prolonged life, while those who worked with ideas never knew whether they had harmed or helped. He told the story of the doctor in the Bonnie Brier Bush by Ian MacLaren to illustrate the unselfishness of the true physician and expressed the opinion that the Medical Society of the State of New York would be doing a worthy deed if it could make physicians as unselfish as St. George or as Ian MacLaren's doctor. He quoted again from his ancient oration "Acquaint thyself of the physician before thou have have need of him," and recommended that advice. He felt that annual registration would do much to prevent impostures and to protect the people in the selection of a physician. The man who rebelled against it was not a true benefactor. Dr. Finley said he signed the licenses to permit physicians to practise in this State. It was a great and solemn responsibility as well as a high honor to open the door to all who entered, and when he bestowed a license on a young physician he prayed in the words of Grover Cleveland "tread lightly for you have to do with the temples of the Holy Ghost," and he administered in thought to all the ancient Hippocratic oath. This Dr. Finley quoted in closing.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held February 24, 1920.

DR. LILIAN K. P. FARRAR IN THE CHAIR.

Meningitis in an Infant Six Days Old.—Dr. ELISE L'ESPERANCE reported this case. She stated that labor was normal, the child apparently normal at birth. On the third day the child's temperature was 100.2° Fahr.; on the fourth day the temperature dropped to normal. On the fifth day the child had convulsions, and died on the sixth day. Autopsy showed a well-developed child. The caput was normal, fontanel slightly bulging. The meninges were covered with purulent, yellowish exudate, more marked along the sinus and dipping into the sulci. The rest of the autopsy was entirely negative, with the exception of a punctate hemorrhage in the lungs which were partly atelectatic. Examination of a smear of the exudate from the meninges showed the pneumococcus. No spinal fluid was withdrawn during life. This case was reported because few cases of meningitis in the new born had been reported. She felt that this was not because the condition was so rare, but because the diagnosis was not made, or they were taken for cases of meningeal hemorrhage. The case was also interesting from the standpoint of the method of infection. In many of the reported cases the infection was believed to have occurred through the navel, though some believed the infection gained entrance through the nose or mouth. The fact that many cases showed the colon bacillus made that seem quite possible. In this case the cord was absolutely normal. The child had had a slight nasal discharge, but nothing more than one frequently saw following delivery. She felt that in this case infection had occurred through the nose or mouth. In the reported cases the organisms most frequently found in their order of frequency were the colon bacillus, the streptococcus, pneumococcus, and the meningococcus.

Ectopic Pregnancy.—Dr. L'ESPERANCE reported this case from the obstetrical service of the Harlem Hospital. The patient gave a history of having been taken with cramp-like pains in the abdomen three days before admission to the hospital. These pains became

more severe, and were accompanied by a slight vaginal discharge. At the time of her admission to the hospital the diagnosis of ectopic pregnancy was made, and the patient ordered prepared for immediate operation. Before the preparation was complete she died. At autopsy the abdomen was found to be filled with blood-stained fluid, and a most perfect specimen of a ruptured ectopic gestation was found. This specimen was presented. The patient had menstruated last on December 14, 1919, which made the gestation one about two months' duration. There was an extreme decidual reaction in the uterus. This reaction occurred in many ectopic pregnancies, and in some instances a cast of the uterus had been discharged through the vagina. This decidual reaction was a pathognomonic sign of ectopic pregnancy.

Dr. BAILEY spoke of the first case in which the infant died of meningitis six days after birth. He said that likely Dr. L'Esperance did not recall that she had had a similar case at the Manhattan Maternity Hospital, in which there was a normal delivery in an induced labor in a woman with a contracted pelvis. The labor was induced with bags, and after the bags were removed the uterus contracted for a considerable period. At birth the baby was apparently normal. On the second day it had a temperature of from 101° to 103° Fahr., which rose to 105° on the morning of the fifth day, and the baby died. This baby, on the first day, had the typical meningitis cry. Whether the condition was the result of pressure in the contracted pelvis could not be determined. At autopsy an exudate was found over the parietal region. There was no fracture. Dr. Bailey said he had had recently another case with typical meningeal symptoms following a forceps delivery. Immediately after delivery there was marked swelling beneath the periosteum over the parietal bone and fracture. This baby also had a typical meningitis cry, and the lungs were atelectatic. On the fourth day the child showed marked retraction of the neck. Spinal puncture showed blood in the spinal canal. At autopsy there was no meningitis, but hemorrhage outside the meninges and rupture of the tentorium cerebelli.

Dr. S. W. BANDLER said the specimen was a beautiful one, and the decidual rection marked and exceedingly interesting. He asked with reference to the frequency of discharge of a decidual cast.

Dr. L'ESPERANCE replied that at Cornell they had had several instances in which the diagnosis had been made by the uterine casts being thrown off. She cited two instances in which decidual casts were thrown off in ectopic gestations of three months' duration.

Dr. BANDLER said this throwing off of a cast of the uterus was occasionally an important and interesting point in connection with the diagnosis of ectopic pregnancy, more particularly if it were found that these casts were thrown off more frequently than are thought. He thought one must feel that they were thrown off frequently and that the patient went on to recovery without our knowing positively that she had had an ectopic pregnancy. Many tubal pregnancies ended in a complete tubal abortion, in the early stages, and no further annoying symptoms developed.

Dr. FARRAR said that in going over the history of a large number of cases of ectopic gestation with another object in view she had been interested in observing how often the history showed that a body was thrown off from the uterus which the patient thought was due to a miscarriage, so that it became quite difficult to tell from the history whether a cast of the uterus had been thrown off or not. There were many cases in which the reports were made in the hospitals which showed that casts of the uterus had been thrown off, and in three or four instances there were complete sacs thrown off during the time the patient was in the hospital.

Dr. KOSMAK said it was rarely that we did not have irregular bleeding as evidence of this condition, yet in his experience it was very often absent, and the first evidence of an ectopic pregnancy was the rupture of the sac. They had had a case coming into the hospital within the last two weeks in which the only evidence of ectopic gestation was the symptoms of internal abdominal hemorrhage and a history of having skipped two or three periods, there being no evidence of uterine bleeding whatever. Inspection of the cervix showed nothing. This woman had had a tubal abortion with rupture of the artery running along the tube, and the fetus had escaped through the fimbriated end of the tube into the abdomen, as shown by the tear in the fimbriated end of the tube, together with the ruptured blood vessel. He had seen a number of these cases with no external hemorrhage, so he thought the symptoms of irregular bleeding should not be relied upon as an absolute factor in the diagnosis of these cases. In the case just referred to the uterus was very small and the woman had had no lochial discharge, so there was nothing in the way of a decidual reaction to manifest itself.

Dr. THOMPSON T. SWEENY said the question of a decidual reaction depended upon the time that had elapsed after the rupture of the fetal sac before the case was seen. He related a case in which there was a double pyosalpinx and also a tubal pregnancy in which a cast was thrown off. At operation a ruptured tube surrounded by hematoma were found. He thought the reason Dr. Kosmak did not see decidual casts was because he saw cases at the time of the initial hemorrhage and operated at once. He thought that if these cases were not operated on at once bleeding from the uterus would follow and one might see casts thrown off.

The Influence of the Male Parent on the Production of Human Twins.—CHARLES B. DAVENPORT, Ph.D., read this paper. (See page 509.)

Dr. CHARLES R. STOCKARD continued the discussion of the subject, illustrating his talk with lantern slides. He said they had long recognized that all qualities and conditions might be inherited, but they had not known so much about the two types of twins, and that double egg twins were about one-third as frequently inherited as single egg twins. He agreed entirely with what Dr. Davenport said with reference to the double chorion. There were also other cases, not so common, in which there were twins in separate embryos which were at first surrounded by separate sacs which later fused and the embryos might be either male or female. That happened in the South American armadillo that always had twins instead of quadruplets, but not always of the same sex. The problem of ovulation had been worked out by experiments with dogs, and it had been definitely shown that types of ovulation were inherited. In some instances several ova were found in one follicle, and when this was the case there were two or three times as many offspring as when there was only one ovum in a follicle. In some animals, like the guinea pig, ovulation occurred in both ovaries at once, and if one ovary was removed the other took up its functions and as many ova were produced as though both ovaries were functioning. There were never more corpora lutea than ova, and if there appeared to be more it was due to certain lethal factors that brought about the destruction of the ovum. Many ova were arrested in development on account of a disadvantageous position which they held. A whole embryo might be absorbed. If double ovulation was inherited that was a quality that could be transmitted by the male. Identical twins were produced when embryos were equal in size and normal in structure. As soon as there was a difference in size the smaller one would be deformed, and in such instances, the eye being the most sensitive structure, was the first to be affected. Dr. Stockard showed slides illustrating his experiments on fish whereby he had been able to produce double monsters. The factor which was responsible for this was the slowing of development in an early stage of embryonic growth. The degree of doubleness was determined by the angle the axis of the second embryo made with the first. Dr. Davenport had brought out that there might be inheritance through the father, and this slowing effect on the early development might also occur through the father. They found that when oxidation was low it had an effect on the spermatozoa which resulted in a slowing of the development of the fertilized ova. In man, because of his abnormal ways of living, this slowing effect was more likely to occur than in animals, so that one might get these defects through the male.

Dr. THOMPSON T. SWEENY said it was known that certain hybrids, such as mules, would not fecundate the mare. Just as the earless ram, they were sterile. Was this due to abnormal development of the testes or to lethal factors?

Dr. BANDLER asked if he understood correctly that all twins from one ovum were of the same sex.

Dr. DAVENPORT said yes they were.

Dr. BANDLER said that was his opinion, based on all records and reports, and on the basis of the chromosomes one saw double ectopics, and the double ectopics would show two eggs and two Graafian folicles. He believed that for every nidation that took place two or three ova died without becoming implanted. A woman might not be more than one or two days over a period, and the fertilized ovum might be in the uterus and menstrual stimulation might force it out. He believed that fecundation occurred thousands of times without nidation. In the treatment of sterilities it was well to have this in mind. One might feel certain that the spermatozoa met with the ova, but it was most important also to see that nidation took place. It was perfectly possible to have two ova fertilized, one of which would nest and the other not. Or one might remain two or three months and the other go on to term. He wondered whether this occurred as often as one might think. The earlier this occurred the less would be the evidence external to the membranes. The occasional passing, in the post-factum period, of a "bloody hard mass" after inspection immediately after the third stage had shown membranes and placenta to be intact, might be explained as above.

Dr. DAVENPORT said that in the case of the hybrid mule it was known that the spermatozoa did not develop properly. They had been trying until recently to make sure that the earless ram was sterile. They expected to kill the animal and make observations on the testes, but had not done it as yet. In regard to the failure of nidation, they did have the phenomena of the blighted fetus and instances in which the fetus developed for three or four months and then its growth was arrested, and he suspected that it happened oftener than we knew of.

An Analysis of One Hundred Cases of Placenta Praevia.—Dr. LANGROCK and Dr. GEORGE L. BRODHEAD presented this paper.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

BELLEVUE AND ALLIED HOSPITALS, CITY OF NEW YORK. SEVENTH ANNUAL REPORT FOR 1917. 98 pages.

THE MEDICAL CLINICS OF NORTH AMERICA, November, 1919, Mayo Clinic Number. 847 pages. Philadelphia and London: W. B. Saunders Company.

DIE MEHLFRUCHTEKUR BEI DIABETES MELLITUS. By Prof. Dr. W. FALTA. 388 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

THE AFTER-TREATMENT OF SURGICAL PATIENTS. By Dr. WILLARD BARTLETT. Vol. 1, 674 pages with 221 original illustrations; Vol. 2, 1,066 pages with 213 original illustrations. Published by C. V. Mosby Co., St. Louis, Mo.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. By Dr. W. A. N. DORLAND. 1,201 pages with illustrations. Published by W. B. Saunders Co., Philadelphia, Pa.

LA FATIGUE DE L'APPAREIL VISUEL CHEZ LES OUVRIERS MINEURS. By Dr. M. STASSEN. 233 pages. Published by H. Vaillant-Carmanne, St. Michel.

DIE GESCHLECHTSKÄLTE DER FRAU. By Dr. WILHELM STEKEL. 404 pages. Published by Urban & Schwarzenberg, Berlin, Germany.

THIRD ANNUAL REPORT OF THE STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS. 457 pages. Published by Wright & Potter Printing Co., Boston.

Therapeutic Hints.

Dried-Milk Feeding.—Vynne Borland, in discussing a scale for feeding infants on dried milk, holds that such a scale should fulfil the following conditions: (1) It must be practicable. (2) It must be easily understood by doctors, nurses, mothers, or any person having charge of the baby. (3) The calculated amount of feed must produce a satisfactory gain in weight per week. (4) The stools must remain normal. An investigation was carried out primarily on 69 babies of ages ranging from 3 weeks to 8½ months, and weights ranging from 6 lb. 7½ oz. to 21 lb. 1¾ oz. The smallest feed which produced a satisfactory gain, the baby otherwise being in good health, was chosen from the clinic cards and noted. In this way 188 feeds at various weights were obtained. These were arranged in successive increasing weights and an endeavor made to produce a simple formula that could be used for guidance. After trying several means of obtaining a suitable formula it was found that by adding the number 9 to the weight if below 7 lb. and the number 10 to the weight from 7 to 16 lb. inclusive, the required number of level teaspoonfuls of dried milk to be given in 24 hours was obtained. From 17 lb. upwards when the child is having four feeds in 24 hours the second figure of the number of pounds' weight is taken as one feed. For example, if the weight is 17 lb. then four feeds are given each containing seven level teaspoonfuls of dried milk. Attention is directed to the fact that all the various "full-cream dried milks" are reconstituted by a dilution of 1 in 8—*i.e.* one level teaspoonful to an ounce of water. The formula is thus stated:

Below 7 lb. add 9 to weight = up to 16 level teaspoons in 24 hours.
From 7 to 16 lb. add 10 to weight = 17 to 26 level teaspoons in 24 hours.
From 17 lb. upwards take second figure as one feed = 28 teaspoons upwards.

—*The Lancet.*

Internal Medication in Gonorrhea.—Arthur H. Crosbie of Boston, in a discussion of the treatment of gonorrhea in the male, says, with reference to internal medication, that after trying out many things he has come down to two simple old remedies.

He uses sandalwood oil capsules, three times a day after meals, and before meals a teaspoonful of a mixture of

℞ Tincture hyoscyamus..... ℥viss
Potassium citrate ..... ℥v
Water up to ..... ℥iv

The hyoscyamus, he says, is excellent to prevent chordee. If chordee is present he gives a fourth of a teaspoonful at bedtime. The potassium citrate helps to render the urine bland. He considers water under internal medication, because he feels that a large amount of water is more important than any other thing. Enough water should be taken so that the urine almost entirely loses its color. The patient should be instructed to drink at least a glass of water every hour during the day. This will render the urine bland and keep the discharge frequently washed out.—*Boston Medical and Surgical Journal.*

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Original Articles.

INFECTION OF INTESTINAL ORIGIN COMPLICATING PREGNANCY, LABOR, AND THE PUERPERAL STATE.*

BY EDWARD P. DAVIS, A.M., M.D., F.A.C.S.,

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PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE.

IN our efforts to promote the welfare of the patient through what is termed the hygiene of pregnancy, nothing is more important than the care given to the functions of the intestinal tract, and this is distinctly recognized as among the necessary elements in the management of successful pregnancy. While we are familiar with isolated conditions complicating parturition and having their origin in intestinal infection, we do not always group these together as one pathological entity. Possibly there may be something gained if we make a distinct group of these complications, contrasting them with puerperal septic infection of uterine origin and its manifold phenomena.

It is a matter of familiar knowledge that the intestine in the human being swarms with bacteria, notably the colon bacillus. The mechanical conditions prevailing in the abdomen as pregnancy advances are such that interference with the peristalsis of the bowel and the accumulation of fecal matter during pregnancy are inevitable. In addition to this, congestion of the abdominal viscera must be present to some degree during pregnancy in the majority of patients, and a combination of these two conditions furnishes a state of affairs exceedingly favorable for the development of infection of intestinal origin.

This may manifest itself most frequently in appendicitis, cholecystitis, infection of the pelvis of one or both kidneys, infection of the lymphatics of the intestine and peritoneum, or infection of the blood stream. With these we are more or less familiar and the first question which naturally presents itself is, what can be done during pregnancy to render such infection as infrequent as possible?

While some patients pass through pregnancy without the use of purgatives and laxatives this is not true of the majority. What is desired is to render the fecal mass in the bowels soft and unirritating and to promote peristalsis and to keep the bowel in a tonic condition. In the use of drugs care must be taken that the ganglia in the uterine muscle are not stimulated to contraction by drugs which stimulate peristalsis of the bowel, for excessive uterine peristalsis will cause abortion. That there is danger in the prolonged retention of hard feces in the intestine of the pregnant women was demonstrated to the writer when at autopsy upon a woman dying in labor hardened fecal masses were found in the intestine which were about to rupture the bowel. The mechanical action of the uterus in labor had pressed them against the wall of the intestine to the point of imminent rupture.

Recently, in abdominal surgery, there has arisen a decided opinion that active purgation just before abdominal operations is a mistake. It has been observed that, when fecal masses are softened and the bowel is aroused to active peristalsis, there is more disturbance immediately after operation, and that in the event of the necessity arising for operating upon the bowel itself the chances of infection are very much increased. At present we prefer to empty the patient's bowel thoroughly several days before operation. Or if this opportunity is lacking we content ourselves by cleansing the lower bowel by gentle irrigation and avoid the depressing and irritating effects of active purgation. That the use of irritant drugs may result fatally is a fact not unfamiliar to coroner's physicians and was strikingly illustrated in the experience of the writer when a young woman died shortly after labor from peritonitis. It was supposed that she had lost her life through puerperal septic infection, but at autopsy the pelvic organs were normal while the lymphatics of the intestines and peritoneum were in a state of acute engorgement and infection. This was found to be due to the presence of the colon bacillus, with others of less virulence, and when the history of the patient was obtained we learned that in the effort to destroy the life of the child and bring about a criminal premature labor the woman had taken large quantities of the most irritating purgatives.

The introduction of refined petroleum as a lubricant, the very common use of fruit and cereal foods during pregnancy all tend to relieve the patient of the danger of irritation of the bowel. What, however, is especially needed to promote intestinal peristalsis in pregnancy is exercise by walking. In modern life this is becoming more and more infrequent. The appliances which women wear upon their feet are designed to prevent walking, the common use of motor cars and in cities crowded streets render walking one of the most infrequent forms of exercise. Where this cannot be procured calisthenic exercises during pregnancy are of considerable value and should these be impossible massage by skilful hands may often be employed to great advantage. Exercise, cold bathing followed by gentle rubbing, the plentiful use of fruit, water,

*Read at the joint meeting of the New York and Philadelphia Obstetrical Societies, March 9, 1920.

and cereal foods, and regular and systematic attention to the matter will enable many patients to pass through pregnancy without the use of purgatives. If laxatives are necessary refined petroleum as a lubricant, with compound licorice powder, is often successful. In the presence of toxemia drugs which act vigorously upon the eliminative organs must be used, but without this indication purgation during pregnancy should be avoided.

Appendicitis is a matter of such common observation that I need not detain you to discuss it in this connection at any length. Its diagnosis in pregnancy is often interesting because the obstetrician must distinguish between appendicitis, tubal gestation on the right side, and threatened abortion of an intrauterine ovum. It is, I think, common experience that so soon as the diagnosis of infection of the appendix is made during pregnancy the appendix should be removed. In the experience of the writer abortion is rare and the earlier in pregnancy this is done the less difficult is the operation and the better is the chance for uncomplicated recovery. The median incision is preferable, for one can never be sure that the broad ligaments, tubes, or ovaries may not be to some extent involved in the infection. The leucocyte count is of considerable value in making the differential diagnosis.

In the presence of advanced pregnancy and appendical abscess, the uterus should first be emptied by section and closed, and then the abscess may be safely drained. In the puerperal period it is interesting to observe that appendicitis often develops from ten to fourteen days after childbirth. It must then be differentiated from puerperal septic infection with involvement of the right tube, and the fact that the patient may have a red, fluid, inodorous, lochial discharge may obscure the diagnosis. It must be remembered that infection of any sort complicating pregnancy or labor will produce a red, fluid, inodorous lochia if the infection be that of the blood stream. Those who have witnessed abortion or premature labor complicating influenza or pneumonia may have noticed this fact.

The differential diagnosis of colon bacillus infection complicating the puerperal state and attacking the appendix and intestinal lymphatics is made by first ruling out puerperal septic infection. The uterus will be found in a fair state of involution. There will be no mass or tumor in the pelvis, the patient will have made an apparent recovery from labor and will probably have been able to nurse her child. Lacerations in the generative tract will have healed and the general condition will be good. There will be, however, evidence of blood-stream infection, with rapidly increasing leucocytosis. Obscure tenderness will be elicited by deep pressure in the right lower abdomen.

The obscure and insidious nature of these cases may be illustrated by a multipara whose labor was induced for toxemia. Spontaneous labor was followed by a normal puerpal period, the patient nursing her child successfully. A week after returning to her home, high fever developed which fell on purgation. Obscure tenderness could be elicited on deep pressure in the right lower abdomen. There was a leucocytosis of 25,000. On section the appendix was seen to be gangrenous. The infection had extended to the right broad ligament and when grasped the Fallopian tube came away in the hand. With free drainage the patient recovered. Analysis of her history showed frequent attacks of indigestion with pain, extending over a number of years and requiring a carefully restricted diet and the use of drugs. Evidently a chronic catarrhal appendicitis had been present.

In a case operated upon a few days ago by the writer a young primipara had come to the 14th day of her puerperal period apparently well. Moderate fever and indefinite tenderness developed. On bimanual examination the pelvic organs were all normal. A thin, red, odorless lochial discharge appeared. The leucocytes at first were 8,000, but in 24 hours were 10,200. On section the abdomen contained reddish serum. The appendix was bright red and swollen and the peritoneum injected.

Obstetricians must go to the records of general surgery for their most valuable information concerning cholecystitis complicating pregnancy, parturition, and the puerperal state. There are abundant records of isolated cases in obstetric literature, but when the records of large surgical clinics tell us that in taking the histories of women operated upon for cholecystitis pregnancy is found to have been present in the greater number of these cases, usually in the first attack, we understand the position of the surgeon who recognizes pregnancy as a frequent cause or concomitant of cholecystitis. Strangely enough, many abdominal surgeons decline to drain the gall-bladder during pregnancy, cherishing the old belief that all operations are dangerous at this time. The writer is not prepared to say that all cases of cholecystitis of a mild grade complicating pregnancy should be subjected immediately to operation, but certainly this matter should receive careful attention at the hands of obstetricians.

That a condition of general toxemia in pregnancy may depend to a considerable extent upon a chronic infection of the gall-bladder was demonstrated to the writer in the case of a young primipara at term who was profoundly toxic. No adequate cause for her condition could be found by examining the urine. There was moderate leucocytosis, pain and tenderness could not be distinctly isolated in any one portion of the abdomen. Rest in bed, attention to diet and elimination did no good, and after observation for some time the conclusion was reached that several foci with abdominal infection must be present. Accordingly the patient was subjected to abdominal section. The uterus was first emptied and closed in the usual manner. The appendix was found in a state of chronic inflammation, partially filled with decomposed material and was removed. The gall-bladder was sutured to the abdominal wall and drained and a quantity of decomposed and offensive bile escaped. The patient made an uninterrupted recovery, her child surviving, and was discharged from the hospital in good condition. She had had little or no care during her pregnancy but the necessity for such extensive procedures must be rare in the majority of cases.

Colon bacillus infection of the pelvis of the kidney has been so thoroughly investigated by members of this Society that the subject is familiar.

The writer's experience may have differed somewhat from yours in that in a number of cases he has drained the pelvis of the right kidney through a lumbar incision after medicinal treatment had failed to improve the condition of the patient. The results have been gratifying in these cases and while it is seldom necessary to subject these patients to such an operation, we believe that there are cases where it is clearly indicated.

Infection of the lympathics of the intestine and peritoneum complicating the puerperal state has been described in the beginning of this paper as the result of irritating purgatives. It may also develop where no such distinct cause can be found. In the experience of the writer two cases stand out distinctly. One was a primipara who had suffered from chronic constipation during her adult life and who had passed through a spontaneous labor with very little laceration. The puerperal period was normal for ten days when moderate fever and indefinite abdominal tenderness developed. Purgation, ice bag, limited food did no good. Bimanual examination found no evidence of puerperal septic infection. Lacerations were healing kindly. On section the pelvic organs were normal, the appendix in chronic infection, and the lymphatics of the lower abdomen were reddened and engorged. There was beginning adhesion of intestinal coils and turbid serum in the abdominal cavity. The removal of the appendix, very thorough drainage, with Fowler's position and the Murphy drip proved successful. The second case was that of a Greek woman admitted to the hospital, in labor, who on the tenth day of the puerperal period showed more severe symptoms, of the same sort as those described in the former case. On section the condition was much more advanced, peritonitis had become established and the patient died. Autopsy failed to reveal evidence of puerperal septic infection.

Infection of the blood stream from various foci is much in evidence in the pathology of medicine in all its branches at the present time. If carried to excess the race bids fair to become toothless, tonsilless, minus the appendix, gall-bladder, diverticula, and whatever pernicious pockets may be discovered. There seems to be a sort of medical income tax developing, the purpose of which is to rob the owner of all foci and empty completely all pathological pockets. I am not aware that the obstetric pathology of the subject has been thoroughly worked out, but some clinical facts may be of interest. It is familiar experience in the management of the puerperal period that a free administration of salines with some patients is followed by a moderate fever. As a rule this subsides without injury. Is this fever caused by the absorption of dissolved fecal matter? Is it a nervous reflex through excessive peristalsis, or may there not be a mild infection which is overcome by the immunizing principles in the patient's blood? In non-puerperal cases the occurrence of peritonitis without injury or apparent contagion must be admitted. A young woman who was approaching a menstrual period and in whose case there could be no possibility of pregnancy, on an excessively hot summer's day took a cold tub bath. This was followed by the rapid development of peritonitis and death. At autopsy acute peritonitis was present and from the blood were isolated bacteria. In the absence of pregnancy, attempted abortion, vaginal manipulation, mechanical injury, irritant poison, to what source shall we ascribe the peritonitis? Was it caused by bacteria in the intestine which became greatly congested as the result of the cold bath; and did these bacteria enter the blood stream, or the lymphatics?

Obstetricians occasionally see cases of mammary abscess which develop in women who have never nursed a child and in whom there has been no manipulation of the breast and no wound or injury to the nipple. On examining a number of puerperal women before the child had nursed it was found that the fluid drawn from the breast by a sterile pump contained abundant bacteria. Did these bacteria gain access to the breast from the blood stream, or did they make their way from the skin along the lymphatics of the nipple? We cannot deny the possibility of infection of the blood stream through foci in the puerperal period. Cases of pyelitis are thus accounted for in some patients. In the observation of the writer a primipara after a normal labor under antiseptic precautions was taken with fever and rapid pulse from the eighth day of the puerperal period. As no cause could be found in the pelvis or abdomen, an examination of the patient was made, beginning with the skull. On coming to the mouth it was stated that a dentist had pronounced the patient in good condition just before labor. Permission was asked to palpate the teeth when at the root of one tooth tenderness was discovered. The patient then remembered that this was a tooth which had given trouble years before, but had become quiescent and was considered safe. The dentist was summoned in consultation and upon his incising the gum about a drachm of exceedingly fetid pus escaped and the disinfection of this focus caused the disappearance of the fever.

In presenting this subject before you no attempt has been made to give a lengthy review of the literature nor to advance theories. It is hoped that it may be useful to bring together this group of clinical phenomena and suggest a common cause for a number of conditions which cannot be rare among parturient women. It would be a great mistake to lessen in the eyes of the profession the importance of puerperal septic infection originating in the generative organs. But the differential diagnosis of complications affecting parturition must add to our knowledge and not detract from our accuracy or the interest of our study. May I urge again the importance of the hygiene of pregnancy and the care of the intestine and the avoidance of artificial methods so far as possible in maintaining the proper action of the bowels during pregnancy. Does it not seem rational to deal with infection of intestinal origin complicating parturition by surgical methods promptly and thoroughly so soon as the diagnosis can be established? While the experience of the writer has not been extensive, for these cases can not be exceedingly common, the results of surgical treatment have been in the main satisfactory.

The best part of a paper is usually the discussion which it brings forth. The Obstetrical Society of New York have entertained us to-day so liberally and given us so much of interest and value that this joint meeting will long be remembered as one of

our best, but you have created an insatiate appetite for more, and so it is to get the benefit of your knowledge and experience upon this subject that we contribute this paper.

250 South Twenty-first Street.

MENTAL DEFICIENCY AND CRIMINALITY.

By MAX G. SCHLAPP, M.D.,

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Four hundred years ago, no less a thoughtful and scholarly personage than Martin Luther recommended that a twelve-year-old child be drowned and asked that prayers be offered to cleanse its soul of a devil. Coming nearer to our own time, our Puritan ancestors burned scores of persons so unfortunate as to be believed possessed of devils.

We know now that the child who almost fell victim to Luther's ignorance, and many of the persons burned by our forefathers as witches were guilty of no worse offense than feeblemindedness. We look back with wonder on the ignorance of these times; but our own attitude as evidenced by our present unenlightened methods of dealing with mental defectives, particularly those whose defectiveness has taken a criminal trend, shows in us a pitifully slow evolution in ascertaining the causes of abnormality in human beings.

We still judge criminals and delinquents by their acts alone and to a large extent dispose of them legally on this basis. The general public, and even the courts, believes that a person of normal intellect can control his actions and, consequently, that the actions of any person of normal intellect are premeditated, or at least controlled completely by the intellectual mental make-up, and that therefore the person is responsible.

In the light of well established facts, known to psychiatrists for the last half century, this method of placing responsibility for criminal acts is basically erroneous and should be revised. We must learn to comprehend many abnormal classes hitherto unrecognized by society as subjects for study, control or aid.

There is no question of altruism involved; a proper understanding and attitude toward these people who have no innate power of adjustment to their environment will make every home and family more nearly safe, the state's taxes will be lessened and future generations will be infinitely better equipped for the struggle of life. Too much stress cannot be laid on the broad scope of influence which mental defectives exercise on everyday affairs and the consequent tremendous interest the problem should have for "the man on the street."

You are acquainted—perhaps too well—with the boy who, surrounded by an affectionate family in a home of ease, runs away repeatedly, undergoes unnecessary hardships and when brought back can never give any explanation for his acts except that he "just wanted to get away." You doubtless also have come into contact with those other well-known types of juvenile delinquency—children who lie and practise petty thievery from their earliest years, later forge checks and generally involve their families in serious situations, and in whose genealogical history there is no discernible trace of family propensity for similar actions. There is also the brilliant youth with every promise of success and an intellect capable of splendid achievement who never quite gets a grip on himself, who follows the line of least resistance, becomes a drifter and eventually is classed as a confirmed failure.

In another class are the thousand of tramps, possessing what is commonly termed an aversion to work, who form an almost alien strata of society, useless to themselves, and liable at any time to become a menace to the communities through which they pass.

Still another class which we have not understood is composed of those unfortunate persons who because of abnormal emotional trends or phobias are forced to commit acts over which they have no intellectual control—such persons as, entering a subway or crowded hall, are subject to seizure by an overwhelming sense of oppression and an irresistable desire to rush out into the open, which they frequently do.

Even without the direct proof now offered by medical science, it should be obvious to any thinking person that in all these cases there is something wrong in the delicate mental mechanism which controls the destinies of these people. And there is just as much evidence that these mental disturbances are directly traceable to a physical cause.

Our present methods of handling criminals, not to mention our attitude toward all the classes of abnormalities mentioned heretofore, show an absolute lack of recognition of any connections between their acts and their mental and physical deformities.

The first thing to be understood about these people is the fact that the pathological criminal or mental defective is unable to adjust himself normally to his environment for the very important reason that the motivating activities of his brain are seriously disturbed.

To understand such disturbances, it is first necessary to know that the motivating activities of the brain are regulated entirely by two antecedent processes—the intellectual and the emotional, or affective, activities. If these two processes are well balanced, the motivating center will be stimulated in such a way as to make the individual adjust himself normally to his environment. Should this balance between the intellectual and the emotional processes be seriously disturbed, however, then it will be impossible for the individual to adjust himself normally and he will perpetrate acts which often are illegal and always abnormal.

The mind is thus a duality, and not a unity, and it must be understood as such if we are to gain a knowledge of its contents which will lead to a correct diagnosis of the conditions responsible for the maladjustment of individuals to their surroundings.

The intellectual side of the mind is that through which we receive perceptions and form conceptions. (See illustration.) Our standards of judgment are born, and the actual processes of reasoning take place, in this department of the mind.

Perceptions are the elementary mental impressions received through what commonly are called the five senses. Conceptions are the pictures the mind registers and files away of the things perceived.

For instance, a child sees a radiator. That initial impression of color and shape is a percept, as is the

impression of the sound the radiator makes. One perception goes into the brain through the projection centers of the visual nerves, the other through the projection centers of the auditory nerves. Together, the two percepts rush to the association centers of the brain and a concept of the radiator is formed.

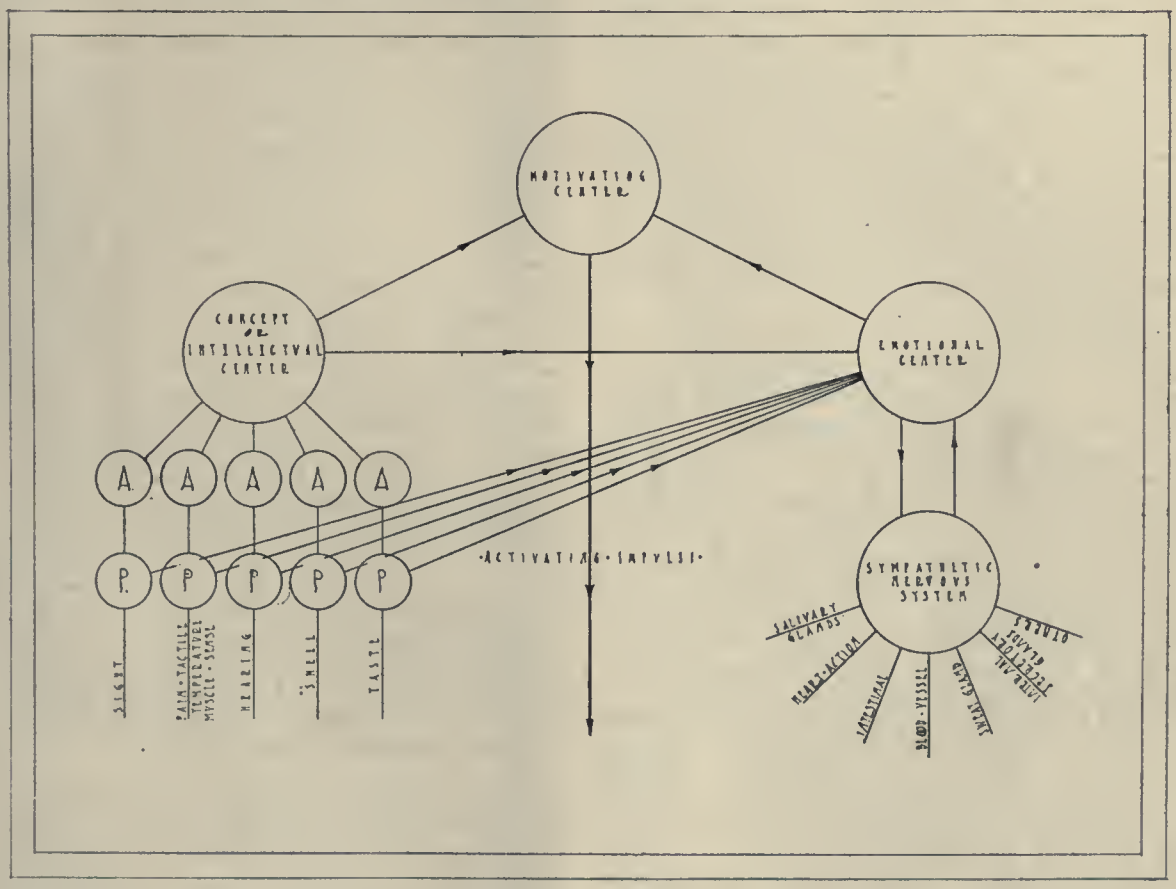
The child, still moved only by the intellect, is curious concerning the radiator—wants to know more about it. He reaches out and touches the hot metal. Another percept reaches his brain at once, the percept of pain, traveling to the pain centers. This percept goes also to the association centers and makes more complete the concept of the radiator. It is a thing which has a certain appearance, makes a certain sound and produces a certain variety of pain. The visual percept and the sound percept of the radiator may not have awakened any wave of feeling in the child's brain of which he was conscious, but when the percept of pain was added to the mental picture of the radiator, then, aside from the actual pain impression, a wave of feeling which was distinctly one of displeasure was awakened in the child's mental make-up.

From that time on, reception into the child's intellect of any of the three percepts will rebuild the completed concept, which will cause the emotional side of his mind to experience again the emotion of fear. The radiator may be silent, but the mere sight of it reawakens the concept and the child will not touch it.

Something else may make a similar sound. Until developed reasoning power teaches him better, the child associates the sound with the hot radiator and will not touch the object which produced the concept-forming noise. If he should run against something hot in the dark, the child will think of the radiator, provided he has not been burned by something else. In each case, the reawakened concept would arouse in the emotional centers of the child's mind the emotion of fear and that emotion would make him avoid the real or fancied danger.

Through this simple illustration, we see the relation between the two departments of the mind and the functional activities of each department.

A disturbance in brain activity seriously involving either the intellectual or the emotional centers, or both of them, results in what is known as mental defectiveness. To understand these disturbances, it is necessary to examine the life processes of the cells of which the brain, like the rest of the body, is composed.



We know that the life processes of the brain cells consist of three kinds of activity—the nutritive, the formative, and the functional. Through the nutritive processes, the cells take in substances from the surrounding medium and store them as potential energy. The formative activity is the process of cell-division, or physical growth. The functional activity is the process whereby a cell, responding to a stimulus from without, performs some act—the contraction of muscle cells, the secretion of gland cells, the reaction of nerve cells, and so forth.

The potential energy stored by the nutritive activity is drawn upon constantly by the formative and the functional activities, the two being rivals. Before birth, the cells of the body are chiefly engaged in formative activity, while from birth on the functional activity rapidly increases until it becomes the predominating process in adult life.

So, if the chemical substances necessary for certain cells are not supplied sufficiently before birth, or in early life, the growth of the organ those cells compose is affected. This results in physical defectiveness, or in mental defectiveness if the brain is involved. The same lack of nourishment in later life will affect the cells' functional activity, or their power to act.

A division of mental defectiveness into three groups provides the best working basis for grasping the intricacies of the particular branch in which we are interested.

In order immediately to dispose of it, the Traumatic Type should compose the first group. This includes all those cases in which the defectiveness is due to a definite physical injury to the brain before birth, at birth, or in early life.

Likewise, we should dispose of the Formative Type, or cases in which the brain in whole or in part has not developed because of improper cell growth.

The third, and to us the most important group because it is amenable to treatment, is the Functional Type. In cases of this type, the brain cells are not lacking in number, but there is a disturbance in the proportion of the different chemical factors in the surrounding medium from which the cells draw their necessary potential energy and activating substances, and therefore the cells do not react normally to stimulation.

The point at which an incoming impulse will explode the unstable protoplasm within the cell—thus turning the potential energy therein into kinetic energy—and release an outgoing impulse is called the threshold of functional activity. If there exists a normal chemical balance in the blood, and therefore in the cell, this threshold will be normal. If there exists a chemical unbalance or disturbance, then the threshold may be either raised or lowered.

Under conditions of chemical disturbance, this threshold may figuratively be compared to that of various grades of explosives. Gunpowder, for instance, is fairly stable, dynamite explodes more easily, and TNT has a still lower threshold.

It must be borne in mind that a normal threshold has a certain more or less constant level. If the threshold is raised above this level, the cell response is less active; indeed, the threshold may even be raised to the point where the cell will not respond at all to outside stimulation.

In a similar way, the lowering of the threshold below the normal level will bring about a condition in which the cell will respond to impulses that ordinarily would not cause a reaction.

One of the chief causes of a lowered threshold is a disturbance of the internal secretions. For example, a lowered threshold is found in persons in whom the thyroid substances of the body are increased. A marked instability of the cells is affected and explosive reactions will result from incoming impulses which in normal circumstances would hardly produce any reaction. Likewise, when the thyroid substance is deficient, a person will not respond normally and keenly to an incoming impulse which in normal circumstances would cause a response, because the threshold of functional activity has been raised.

What is true of the thyroid is also true of the suprarenal, pituitary, and other gland secretions, though their action has not yet been as fully determined as that of the thyroid.

Interference with the functional activity of the cells and emotional instability may also result from the introduction of foreign toxins into the system. These toxins may not only affect the threshold of functional activity but may also create a disturbance of the internal secretory glands.

Both toxins and the chemicals in the blood act selectively upon the various centers of the nervous system. Ether, for example, selectively involves the highest centers of cerebration, raising the threshold to such a point that incoming impulses cause no reaction, thus producing unconsciousness; but at the same time it does not equally affect the nerve cells of the respiratory and circulatory centers, thus permitting those centers to respond to incoming impulses and allowing the person to live.

So we see that a chemical disturbance in the blood may affect the functional activity of one or more centers of the brain, making them either more unstable, or stable. This brings us to consideration of the effect of such disturbances upon our actions.

Perceptions and conceptions, formed in the intellectual side of the brain, send impulses to the emotional side. If these impulses pass the threshold of functional activity in the emotional centers, a wave of feeling, or emotion, results. If, through a chemical disturbance of the blood, the threshold of functional activity of the cell groups of the emotional centers has been selectively lowered, the wave of feeling may be so strong as to wipe out entirely all restraining influences coming from the intellectual side of the brain, and make the emotional the motivating impulse in the person's mental make-up.

In persons of normal emotional make-up unreasonable reactions may be prevented through inhibitions coming from the intellectual side of the brain. In persons of unstable emotional make-up, intellectual inhibitions may be felt, but if the wave of feeling is strong enough the person may not even be conscious of the inhibition. The wave of feeling simply wipes out the mental attributes of judgment, of right, and of thought of consequences and precipitates the impulsively inspired action.

The person so unfortunate as to be unstable emotionally is not only exposed to these impulses, such as anger impulses, sex impulses, etc., and to the consequences arising from them, but any succession of exposures is likely to build up phobias and trends which may make him lose complete intellectual control of himself whenever the impulse comes to him.

These pathological waves of feeling, aroused by a percept or a concept, may be either negative or positive. A negative wave, which would be a displeasurable one, may create in the brain an unreasoning fear of some object or condition which will impel him against all his intellect to some unreasonable or perhaps ludicrous action, though one usually not of a criminal type. A positive, or pleasurable wave, on the other hand, may create in the brain a trend which will impel a man upon re-experiencing the concept to an action which is unreasonable and often criminal.

The boy in a comfortable home may be inflicted through unstable emotional make-up with a trend for running away and undergoing all sorts of unnecessary hardships; the boy who has all his desires

gratified may be inflicted with a trend to steal and eventually becomes a forger and thief; men of good training and intellect may come to commit heinous crimes; girls of good family and training may be led to the streets, and our reformatories, jails, and corrective institutions become constantly more crowded with persons who never should have been sent to them either in justice to themselves or to the rest of the community.

It should be emphasized that persons impelled by overpowering impulses that are not criminal have nothing to gain by their unusual actions; instead, they more often have much to lose by resulting ludicrous situations. Even those impelled to steal may in the next moment give away what they have taken. It is not as though they act for their personal benefit—they simply cannot help it.

Instances, no two alike, could be cited indefinitely, and the encouraging part of it is that most of these people can be relieved if not cured.

It is apparent that, if through tests we can find a chemical disturbance in the blood of persons of obvious unstable emotional make-up, we can lay hands on the seat of the disturbance in most cases and help them. In many of the cases examined at the Post-Graduate Hospital, chemical disturbance was found, and in more than half of these cases the cause was traced directly to certain of the internal secretory glands.

This has been accomplished through only a few blood tests which have been evolved. New tests are being worked on constantly, and the hope is to narrow the field until we can lay a finger on the seat of all emotional disturbances.

The large number of cases examined have given sufficient data to show a connection between emotional types and a disturbing of definite glands, and the attempt now is to establish a definite cause for each criminal type.

Necessarily the treatment varies in every case. It consists in most cases in raising the threshold of functional activity by chemical substances which prevent excessive stimulation of the internal secretory glands and by neutralizing the effects of certain excessive secretions by introducing counterbalancing substances.

The principles of the counterbalancing substances are found in animal glands, but these for the most part also remain to be determined with any degree of precision.

Where the disturbance is of thyroid origin, methods have been fairly well worked out, and there has been some success with suprarenal unbalances, but the pituitary and other glands have not yet revealed their secrets.

Based on the rapid strides made since this particular study was begun in 1912, there seems to be no limit to the possibilities which the research of the next few years may open. The key may safely be said to have been found and the lock turned; it remains to discover what lies beyond in definite methods of diagnosis and treatment.

Means for this research, so vital for the protection and welfare of every home, are not now at hand. Such institutions as we have were designed and established for the most part only for segregation or punishment. There is no provision for the necessary constant observation and treatment.

It is foolish to build institutions for detaining defectives for long periods as a punishment for a condition for which they are not responsible, and then discharge them without doing anything to remove the cause of their trouble. Every person handled in this manner is not only an expense to the State, but he is made a potential menace to the State. His emotional instability lays him wide open to all sorts of concepts and impulses from intellectual criminals.

The attitude of the public and of the State toward the social problem must be changed if conditions are to be improved. Hospitals must be substituted for prisons and treatment for punishment, so far as defectives are concerned.

Then there will be a real chance to combat the problem of crime. It will be possible to separate those who are not responsible for their misdeeds from those who are; and this latter class, who use a perfectly ordered mind to prey upon society, we shall come to incarcerate permanently, instead of inflicting upon them punishment which may not prevent a repetition of their criminal acts.

The first step in introducing this order should be the erection of a Detention Hospital where all persons suspected of defectiveness can be properly examined and their condition ascertained. There should be the closest of contact between this hospital and the courts and other public institutions.

The proper execution of tests requires periods of fasting, quiet, and observation, which cannot be observed unless the patient is detained.

For this reason, and because of the many other activities of the Post-Graduate Hospital, the work now being done there is greatly handicapped. This work is to be extended in the near future as part of the expansion program for which the Post-Graduate Medical School and Hospital is raising an additional $2,000,000 endowment, but even this will not be sufficient for exhaustive investigation.

Besides reception and consultation rooms, wards, recreation, and living quarters, such an institution as would meet the requirements must have laboratories fully equipped both for complete tests and research. Every provision should be made for prompt and thorough examination by a staff of specially trained observers and nurses and there should be either a sufficient endowment fund or an assured appropriation in order to prevent embarrassment in management, or limitation in the scope of work.

This may sound like a large order, but to every thinking person it must be evident that the solution of society's gravest problem, which is criminality, cannot be accomplished without the expenditure of much time, thought, and effort, and that these are made possible only with money. Such funds as would be required, on the other hand, would amount to the smallest fraction of the money now spent in the well-intended but misdirected efforts now made by society to cope with an ugly situation.

It may be that private philanthropy once more will blaze the trail of progress, but that time surely cannot be far off when the State will avail itself of the more humane and common-sense methods which science has to offer in the care of the helplessly unfortunate.

40 East Forty-first Street.

THE DUCTLESS GLANDS AND CONSTITUTIONAL DIAGNOSIS.

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It is the aim of this paper to call attention first to a number of physiological facts serving as a basis upon which the study of human constitutions is founded, and second, to enter a plea for the diagnosis of morbid phenomena from an endocrine standpoint as the only method by which the obscure paths of the unexplored symptomatic wilderness may be illumined.

In the interpretation of a case from the constitutional standpoint several fundamental facts concerning the functions of the ductless glands upon which the study of human constitutions is based must be borne in mind: (1) The effect of the inherited powers of the endocrines upon the development of the individual; (2) their control of all metabolic processes of fundamental importance; (3) their domination of all vital functions occurring during the three cycles of life; (4) their cooperative method of functioning and intimate relationship; and (5) the consequences resulting from a derangement of their functions or of glandular dyshormonism.

Inherited Endocrine Powers and Development.—As to the first, the influence which the inherited valencies of the endocrines exercise upon development is conclusively evident so that all may read who understand the sign manual. It begins with the very origin of life and terminates only at its end. From that moment when the spermatozoon penetrates the micropyle to fecundate the ovum, the fate of the future being is forever sealed and destined. Every particle of protoplasm, every granule of the impregnated ovum carries within it the essence of the parental ductless glands and with it all those elements which transmit to the offspring the racial, national, and atavistic characteristics of its progenitors. They endow the child with all the phenomena we commonly interpret as inherited. They determine those features which identify the offspring in later life as Caucasian or Mongolian, Scandinavian or Italian, Gentile or Jew. They serve as foundation stones upon which the future tendencies, mental expressions, and pathological affectations are built. They determine the unique facial features, the habits, character, traits, ambitions, talents, longevity, and idiosyncracies peculiar to families and individuals. This is due to the common orchestration of the ductless glands in all members of a family; their endocrines are of similar morphological structure, of like functional capacity; they exert their influences in all members of the family in parallel directions and proportions.

That the conformation of the individual and his organs is within the control of the endocrines has not only been conclusively proven by experimentation but repeatedly verified by clinical investigation. Fraenkel has enabled us to classify three main types of endocrine constitution which Kaplan calls tropisms: namely, the thyrotrope, adrenotrope, and pituitotrope. Individuals of the pure type are common, but more common are those of mixed type. In the pure types only one of the endocrines exercises a dominating influence in development. It requires no assistance from the others. It is the commander in chief of the forces engaged in building the individual. It is capable of meeting every emergency. It creates its own type of man with the functions, habits, and attributes peculiar to itself. A thyrotrope differs as much from an adrenotrope as does a greyhound from a bulldog. Both are animals, of the same genus but of different species, however. The greyhound is unique in size, character, form, and ambition and likewise the bulldog, but with qualifications quite different. Each is destined by nature for different careers. The same applies to human beings. The pure thyrotrope is easily distinguished from the pure adrenotrope, and the adrenotrope from the pituitotrope. Each is peculiar in build, height, skin, hair, mental capacity, character, ambition, and predisposition to certain diseases.

The mixed types are less clearly defined than the pure, and are more difficult to classify. The mixed trope is a hybrid in whom two or even three of the endocrines constantly strive for predominance with a resulting confusion in developmental characteristics and attributes, thus necessitating a hyphenated or mixed classification. One of the glands, the thyroid, for example, may show its inherent effects by the presence of many thyroidal markings originating at a very early date in development, while other features will disclose the influence at a later period of the pituitary or adrenals. This combination stamps the individual as a thyropituitotrope or thyroadrenotrope.

Substantial evidence that the endocrine glands are in full control of the external features of the human being is also supplied when the glands are pathologically affected. The morbid phenomena which we were taught to look upon as hereditary are such because they affect only individuals of similar glandular structure and function or tropism. The study of the relationship of the endocrines to pathological states by Leignel-Lavastine and others has proven quite conclusively that certain diseases affect only certain individuals of a certain definite constitution. It is a commonly known fact that apoplexy, diabetes, arteriosclerosis, and interstitial nephritis are met with almost exclusively in individuals of the so-called status apoplecticus and seldom occur in the thymicolymphatic. On the other hand, anemia, tuberculosis, hemophilia and lymphatic-gland diseases occur in the thymicolymphatic and not in the apoplectic. The two individuals are very dissimilar in their constitutional fabrics, being of different endocrine tropism. Two beings of the same genus *Homo*, but of different breeds, of unlike physical and mental capacity. This fact is of practical value in the diagnosis of pathological conditions because it shows the definite relationship of the constitution to its peculiar form of morbidity, whether functional or pathological, and suggests the possibility of an individualistic and accurately scientific therapy as an improvement upon and substitute for polypharmacy, empiricism, and therapeutic nihilism—conditions for which we are often condemned

by the intelligent layman and ridiculed by the unscrupulous healers of every variety, and which are a constant source of humiliation to every sensible and intelligent member of the profession.

Endocrine Control of Metabolism.—Another fact to bear in mind in constitutional analysis is the control of metabolism by the endocrine glands. Through such control the growth and form of each and every organ are regulated. By enhancing and retarding metabolic changes the nutrition of an organ is favored or restricted. This results in an increased or diminished growth of the particular organ. Whether an individual is to be tall or short, lean or corpulent, graceful or awkward is all dependent upon the peculiar reaction of the different glands individually and collectively; upon whether they work together harmoniously or discordantly; upon which does most work or which one relaxes in its functions.

The influences upon growth are exceptionally potent when for any reason a gland undergoes morphological changes with either a hypo or hyperplasia of certain of its elements. As a consequence marked changes occur in its functions producing phenomena illustrating in a striking manner the powerful effects of such alterations of function. Every one is more or less familiar with the remarkable changes in growth, mentality, and sexuality displayed in an individual affected by an overgrowth of the anterior pituitary and known as acromegalic. We see the marked differences in the metabolic rate, sugar tolerance, oxygen consumption, and urea excretion between an exophthalmic and a myxedematous individual. The striking abnormality of a eunuchoid or Froehlich type individual is so marked that it is apparent even to the layman. It is often astonishing to see the marked transformation which can occur in an individual as a result of perverted endocrine function. Normally, each endocrine is endowed with definite functions which in accordance with a prescribed rate of metabolic exchanges determine the physiological activity of the organism. Under abnormal conditions, the metabolic rate is altered, some functions are augmented and others decreased, and metabolic imbalance occurs.

To illustrate: the thyroid regulates the shape, form, and finish of the organ. The pituitary determines the period when certain developmental events are to occur: the time of teeth eruption, of puberty, of the menstrual cycle, of the onset of labor, etc. The gonads are empowered to distribute the secondary sexual characteristics, to determine masculinity and femininity, sexual maturity, and skeletal peculiarities. Abnormally, all the above mentioned functions of the several glands assume different aspects. An individual so affected apparently changes into a different subject. He changes in growth, the shape of his extremities, the size of the various acral parts, and character, habits, mental aptitude, disposition, etc. also become altered. These transformations may be slight or of marked degree, depending entirely upon the extent of the changes in the affected gland. They are always demonstrable by careful examination even when of slight degree.

The Domination of Vital Functions.—All vital functions instrumental in the maintenance of life are directly initiated by the endocrine glands. It has been shown that the adrenals have the closest anatomic and embryologic connection with the sympathetic system. Wherever ganglionic nerve cells and fibers are present, chromaffine cells analogous to those in the adrenals are also to be found. Embryologically, these two tissues are the descendants of the same mother cells and wander from their seat of origin into distant regions, side by side, and closely associated anatomically and functionally. The hormones of the endocrines are in constant touch with the whole vegetative system, those of the adrenals influencing the sympathetic while those of the pituitary seem to activate the parasympathetic. The adrenal hormones activate the nerve cells in which the energy is stored in a static form. Such activation converts the static forces into a kinetic expression which results in a discharge of energy through organs controlled by the cells activated.

All impulses are derived from the external world through distant and chemical contact, ceptor stimuli, as Crile calls them. Such stimuli call for immediate response on the part of the adrenals which instantaneously mobilize their hormones to such parts of the organism as are called upon for activity in response to the original impulse. Perhaps an illustration may help to explain the mechanism more clearly. A cat unexpectedly sees a dog. The sight of the enemy brings to the cat's consciousness a vivid picture of danger. Through eons of ages the cat and dog families were enemies, and the mechanism of offense and defense were always brought into play when chance brought them together. The visual mental picture reflected upon the cat's brain impresses the necessity for either defense or flight. For either of these force is necessary. Static force is stored up in the muscle and nerve cell. The biologic mechanism whereby consciousness dictates an order requiring execution is directed to the adrenals where the activating hormones which convert the static into kinetic energy are stored in sufficient quantities to meet all emergencies and activities in the life of the animal. Vasomotor energy is also known to be concentrated to a greater extent in the adrenals than elsewhere. By various efferent paths orders are issued to check immediately all immaterial activities in organs not called for in the defense or flight of the animal. Thus, gastric digestion, intestinal absorption, sexual activity, and similar functions are stopped while all material such as glycogen, oxygen, etc., necessary for the most strenuous functions of the defensive organs, is mobilized through the agency of the vascular and nervous systems to the organs concerned in the defense. A full current of adrenal secretion, nutritious materials, glycogen, oxygen, etc., is thus encountered in the blood stream flowing to the defensive organs of the animal. Thus, the cat's brain is forced into full action, the mind is cleared from all immaterial thoughts, the sight is sharpened, the hearing made most acute, the cardiorespiratory apparatus prepared for forceful action, the muscular apparatus loaded with kinetic force, and prepared to spend it all in the struggle for life. All this is accomplished primarily, through the medium of the vegetative, nervous system.

All systems of the organism are directly controlled by the vegetative nerves and indirectly governed by the forces higher up, the endocrines. Thus the cardiovascular, gastrointestinal, vasomotor, respiratory, sexual, and other systems are fully subservient to the glandular hormones. Every phase of life, every material function, every physiological act occurring within the sphere of these systems is regulated and controlled, induced or checked, by the hormones of some one endocrine; every functional expression is not an accident but a corollary of endocrine expression. Bradycardia or tachycardia vascular hyper or hypotension, hypertonus or atonicity, constipation or diarrhea, gastric hyperacidity or achylia are not mere coincidences but consequences of endocrine management through the vegetative nervous system.

Endocrine Cooperation.—Another principle to remember is the interrelationship of the endocrine glands and the cooperative system of their functioning. Although certain definite glands assume at certain periods of life a leading rôle in the development and physiological interpretations of the organism, all others, however, are at all times cooperating harmoniously with the leader. Such united action is necessary to keep the individual in perfect balance and to serve his economy best. The leading gland determines the architecture and creates an individual of its own type. The others assist in this work. Harmony prevails at all times under normal conditions. If, however, one of the glands, because of special stress becomes exhausted and unable further to respond to its task, the others hasten to its rescue and assume its responsibilities. They call for a hyper or hypofunction of the organs under their own control to make up for the deficiencies of the organs controlled by the exhausted gland. Such cooperation, if perfect, preserves a normal balance.

Standards of good health differ, no standard may be proclaimed normal, to the exclusion of all others. What is normal for one individual need not be for another, for it is his habitus and subjective state which determine what is normal or abnormal for him. Hypertension, high acidity, or marked trichosis may be the nearest possible approach to normal in one case and yet decidedly abnormal in another of different tropism. It is essential for good health that there should exist perfect cooperation of the various endocrines and any interference or disharmony in the cooperation, whether through exhaustion, disease, or ablation, is certain to be followed by serious consequences.

Dyshormonism.—Another fact to be borne in mind is the change produced in an organism whose ductless glands functionate deficiently. Individuals born with defective glands show most decided morphologic and physiologic distortions. In those, on the other hand, in whom the glands become affected later in life, the symptoms depend entirely upon the degree of glandular involvement. If the damage to an endocrine is not of an irreparable nature, the others may for a certain time compensate for the deficiency and overcome the difficulty with but few signs of disturbance. If, on the other hand, the damage to the gland is extensive, the resulting deformities may be extremely marked and severe. However, glands need not be incapacitated in all of their multiple functions. They may fail only in some of their valencies and remain competent in others. Failure of a gland may occur at any period of the three great cycles of life. All events from childhood to senility call for special efforts by at least one of the endocrines. The demands may overstimulate or exhaust a gland depending upon the amount of stimulus and the glandular capability; hence, some of the glands may withstand the strain of life and functionate during the entire life of the individual, but a gland of inferior quality may fail completely with the resulting symptoms of dyshormonism. School life, infectious diseases, puberty, courtship, marriage, childbirth, dissipation, accidents, privation, financial reverses, mental strain, etc., may be the rock upon which the constitution of an individual with deficient endocrines will founder. Milder efforts may cause only temporary exhaustion from which the gland may recover, but if the strain is carried to extremes, a permanent exhaustion will occur from which the gland may never recover. This results in a perverted metabolism with characteristic subjective and objective syndrones now recognized as a state of dyshormonism.

Constitutional Diagnosis.—Since the endocrines exercise this profound influence, it is essential in the constitutional analysis of a case to bear in mind all past events and their effects upon the individual. The events of infancy, adolescence and maturity, the sexual life, nutrition, vocation, etc., always disclose points of scientific interest and facts of etiological importance. In addition, we must bear in mind the inherited tendencies, for these also make an indelible imprint upon the constitution and help to bring about the conditions for which the patient comes to us.

A case may be studied from a number of viewpoints. The pathological, at present the predominating method is interesting, useful, and practical, but it is never fully illuminating. It fails to throw light upon many functional disturbances met with in the study of the patient and does not satisfy the physician who seeks for a complete understanding of the case. A pathological diagnosis can be obtained only after a rigid clinical examination, various laboratory analyses, the *x*-ray, etc. After having conducted the patient through all these and having obtained important and necessary information, are we then really in possession of all facts relating to the case? Are we prepared to answer all questions which the inquisitive mind might ask? Have we found an explanation for all functional disturbances? Have we disclosed the primary fundamental cause of the pathological process? Have we discovered the reason why the individual symptoms of one differs so decidedly from the complex of another with the same pathological diagnosis? We have not! True, after an exhaustive examination we are privileged to label the patients with the name of some disease but should we, as scientific, conscientious physicians, be contented with this? No, we should demand an explanation for all and everything we perceive. We want to know why individuals affected with similar pathological derangements present dissimilar symptoms. We want to know why some of our pneumonia cases run a very severe and fatal course while others a

mild and favorable course and why certain typhoid patients suffer grave abdominal complications while others show marked cephalic manifestations. What determines the variety of influenza in an individual? Why do certain people suffer from asthma, diabetes, hay fever, nephritis, etc., and not others? What predisposes some of our children to numerous infectious diseases while others living under the same environments are free from any? Why is immunity so benevolent to some individuals and not others? Similar innumerable questions crowd the mind of the doctor who studies his case in a critical manner. Can he find an answer to all this from a pathological analysis? Certainly not! We seek for an explanation in the literature and text books but in vain. Our text books in describing the numerous pathological affections usually excuse our ignorance of the many problems in medicine by the adaptation of the word "unknown" and admit that the symptomatology of the same disease may differ decidedly in different individuals but offer no explanation for the discrepancy.

The pathologic, anatomic, chemic, and all the older methods of diagnosis supply very valuable data which permit the elucidation of many features of a case but only of those which are of a static character. These represent finalities. They do not tell us of the various steps and changes which the organ had suffered before its conversion from the normal to the pathological. In other words, all dynamic events which have occurred during that period of transformation from normal to abnormal are not elucidated by a pathological study. Formerly, when a patient applied to his physician complaining of symptoms for which even after careful search, no pathologic basis could be disclosed, the doctor was apt to consider the patient either as a neurasthenic or as hysterical and eventually as more or less of a nuisance. We were unable to identify such complaints with disturbed physiological function of certain important organs before their conversion into distinct anatomically recognized pathological states. We were unable to perceive the close connection between subjective symptoms and pathological physiology. Now, since the endocrines have received close study and since constitutional diagnosis has taken a place in the foreground, the physician begins to see light and to perceive a basis even for the multitude of symptoms which the so-called neurasthenic displays. It is quite a revelation to discover how valuable, how interesting, and how illuminating constitutional diagnosis on an endocrine basis is, especially so since it forms a basis for the more rational study of therapeutics.

Since endocrinology has received the attention of scientists, another milestone has been added in the progress of diagnosis and therapeutics. It has placed the practice of medicine nearer to the exactness and explicitness of a science. It has furnished the means of understanding many of the functional phenomena hitherto not understood. It has created a new physiology and has displaced pathological diagnosis as the primary and most important factor of the proper understanding of disease. Even now, in the early stages of the science, endocrinology answers most of the questions which have been just propounded.

Endocrinologic diagnosis is not a simple procedure, but it helps, one to decipher the whys and wherefores of life and offers a precise and more satisfactory explanation of conditions not otherwise satisfactorily explainable. It renders possible individualization in diagnosis and therapy, whereas in pathological diagnosis alone, individualization is impossible. This accounts for the fact that therapy based solely upon pathological findings is seldom productive of any very definite or lasting curative results. For these reasons and from the standpoint of the sick individual, correct endocrinological diagnosis must be the chief aim of the medical diagnostician of the future.

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MENTAL HYGIENE DURING CHILDHOOD.*

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THE popularity and the extent in development of various mental cults offer a challenge to the medical profession. Laying aside any spiritual significance which they may claim, one is obliged to believe that they supply to their devotees an element that increases their happiness and fortifies their resistance against morbific factors threatening their peace of mind. In a sense their existence is the result of the neglect of medicine to recognize human unity and the reciprocal relations of physical and mental functions. Waving metaphysical conceptions, man is more than a mere system of anatomical parts. The single transition from life to death indicates an alteration of existent characters far beyond present laboratory demonstration. The physical body apparently remains, but at the moment of exitus, some vital force has ceased to exist. Similarly, one notes what is termed "physical perfection," in the presence of psychic disabilities, varying from hyperirritability to insanity. The entire field of the psychoneuroses reveals a little understood relationship between the physical manifestations of mental disorder, and the peculiar psychic distortions acting as an electric spark, short-circuiting comfort and efficiency.

Pediatrics, as a branch of medical science, has concerned itself principally with the body, as differentiated from the mind. There has been a certain degree of recognition of the fact that bodily states affect the mind and partially determine personality and character. The numerous functional disorders of childhood attest the marked influences of environmental experience upon bodily function and demonstrate the necessity for increased attention to a study of childhood in all its phases. How infrequently is attention focused on the normal instincts of childhood as a means of interpreting variations in conduct that are deemed pathological and that have their origin attributed to single physical defects, such as hypertrophied tonsils, or phimosis! Without marshalling statistics it is undeniable that a large percentage of the mental disorders recurring during adolescence and maturity have their roots in the variable soil of childhood. Much of the communal cost of insanity, crime, vocational failures, dependency, and suicide could be

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avoided through a larger degree of heed to the hygiene of childhood.

It cannot be overemphasized that emotions and ideas are as profoundly effective of physical changes as many of the drugs now employed for therapeutic purposes. The effect of emotions upon the visceral, motor, and nervous systems is only partially appreciated. The part that ideas play in motivating and energizing life is scarcely comprehended, though their importance is intensified by virtue of their recurrence and possible permanency. The profound effects of emotions and ideas combined are readily realized with the acceptance of the pleasure and pain principle so long regarded as the mainspring of human conduct.

The prevalence of insanity, hysteria, the psychoneuroses, and, indeed, delinquency and maladjustments during maturity may be attributed in part to our failure to grasp the importance of attacking their origins during childhood. Altogether, inadequate thought has been devoted to the beginnings of mental disorders. Stress has been placed upon alcoholism, suicide, vicious inheritances, and syphilis without a deeper investigation into the various causes underlying them.

The elements entering into hygiene during childhood comprise the many factors influencing child welfare. These include heredity and the essential phases of the environment that are involved in the family, companionship, school influences, recreational opportunities, and the complete special environment surrounding the individual child. There is a particular need of considering all these in connection with the development of healthy childhood, because of the peculiarly altered ratios of childbearing. To-day, the highest birth rate is found among racial elements that have contributed the least toward racial betterment. Furthermore, social agencies and the humanization of health administration have caused a high degree of reversal of the old theoretical law of the survival of the fittest. Modern methods have acepted offspring and have promoted their survival regardless of their potentials. As a result, not merely are an increasing number of the unfit demanding prolonged nurture, protection, and healthful development, but the community finds itself charged with an increased responsibility for its own protection. It is necessary, therefore, for society to differentiate particular elements of its population in order that the essential types of hygienic, educational, social, and administrative agencies may be applied in the interest of communal betterment and protection.

To term traits "hereditary" is simple, but unsatisfactory if it involves a sense of finality. Patently, the child receives no benefit from the diagnosis of an inherited defect. The solution of such a problem is forced back to the treatment of our present problems concerning marriage. If one believes that children inherit tendencies toward specific defects, then it is essential for the salvation of the child that its developmental training and environment be such as to preclude the full evolution of the suspected handicap or peculiarity. It is for this reason that the mental hygiene of childhood embraces all phases of the relations of childhood reacting to its environment. It is well understood that the fundamental factors of mind training and conduct are perceived and absorbed through environmental contacts whether of a personal or a communal nature.

The interest of the child is not always the interest of society. Conduct is action directed toward the realization of desires born of self-interest. It is apparent that the social problem is to make self-interest include social interest. In a sense not strictly Freudian, conduct arises from the expression of the self-preservative, or ego instinct, and the race preservative, or sex instinct. The more nearly these two approach harmony the higher is the ideal and the more social is the character of conduct. It is evident that in securing the fusion of these two instincts, rational and character-building contacts must be derived from the manifold elements of the environment.

The child forms only one part of the problem of childhood. Just as infant mortality has been reduced through the correction of social defects and delinquencies, so mental morbidity and mortality may be reduced by directing attention in a constructive manner to the environmental components moulding the minds of children. The tendency to place all the blame upon the child has been due to our failure to understand the importance of causal factors originating outside of the child's mind, involving undesirable reactions. The frequency with which children are called lazy, foolish, vicious, and "no good" is indicative of the measure of placing full responsibility for conduct and character upon children, regardless of the fact that they may be suffering from an iniquitous parenthood or an uncharitably repressive environment.

Mental hygiene, therefore, may be regarded as involving physical, psychological, educational, and social factors. One recognizes immediately the difference in hygiene that is to be found in superior and in inferior homes. One grasps the possibility of the mental conflicts that may arise under a system of rigid discipline that attempts to force adult standards upon youthful minds incapable of appreciating or accepting them. One can see the possibility of repression from physical causes, such as insufficient oxidation, impairment of sight and hearing, or physical deformity. No imagination is required to visualize the psychological influences of praise or blame, nor is there difficulty in recognizing the harmful results of educational maladjustments, whether they are due to inherent mental defects or to the faulty gradation in school of the child with superior mental ability. It thus becomes evident that the supplying of information relative to the necessary mental hygiene during childhood requires the study and investigation of the physical, psychological, educational, and social factors. It is not possible to diagnose the causes of irritability, emotionalism, obsessions, prejudices, and fears in terms of physical defects alone, nor is it sufficient to attribute them to functional disorders, the anatomic causes of which are undefined. These symptoms, however, are highly suggestive of mental disorders, which either may crystallize into powerful impulses leading to inefficiency, suicide, or crime, or may continue to exist in the form of hysteria or neuroses causative of vocational ineptitude predisposing to dependency.

At the present time one-third to one-half of

school children fail to move through schools at the expected rate of progress. Ten to 15 per cent. of the children are two years or more retarded, and 5 to 8 per cent. are retarded at least three years. What is the reason for this educational failure? The explanation is not to be secured through physical examination, despite the fact that numerous defects are discoverable. A psychological examination aids in determining the level of intelligence and permits the school adjustment of children in greater conformity with their educability. Mass education slowly is giving way to special types of classes more adequately attuned to the mental vibrations of children, differing widely in their educational possibilities. School failure has not been due so much to the mental weaknesses of children as to the rigidity of school systems aiming to impress a single mould upon minds varying in plasticity. The individualization of educational opportunities, direction, and methods is an ideal difficult to achieve, but is, nevertheless, of practical importance in determining the hygiene of mental development. Mental weakness in some particular way merits careful study. Why is one child an adept in spelling and a failure in arithmetic? Why is another gifted in the art of acquiring languages and completely at a loss in manual work? Why does a third child learn more easily through visual methods and still another through aural measures? These problems exist, and in individual children some solution is required. The large number of school failures who have achieved success in the world points out the necessity for scrutinizing the educational problems presented by children with a view to securing a more rational adaptation of mental ability, general and special, to educational facilities.

It is equally valuable from the standpoint of the school system to differentiate physical defectives from mental defectives, and to appreciate the causes underlying backwardness, truancy, and incorrigibility. The gain to the family is similarly important, while it is assuredly a benefit to children to be understood, whether the cause of their educational failure be diagnosed as imbecility or resentment at pedagogical injustice.

The child with superior intelligence and a high intelligence quotient is entitled to have its mind supplied with adequate exercise just as much as is the child of inferior mental power to be granted a modification of the curriculum, according to its needs. The time marking system for the bright is mentally harmful, and, racially considered, is more so than is the alleged forcing of children with inferior intellects. Nature in her wisdom has afforded the average child an ample variety of mechanisms enabling it to escape overwork.

Without enumerating all the sins of omission and commission in our educational system, it is sufficient to insist that physicians should be aware of the significance of the physical, psychological, educational, and social factors with a view to studying them and applying their knowledge to the preservation of child mentality, and the elimination of such symptoms as tend to mental deterioration and social impoverishment. The school system deserves no greater criticism than the medical profession, which has failed to offer its advice or insist upon a more elastic scheme of mind training.

A consideration of mental hygiene during childhood involves the recognition of the numerous problems bound up in present-day discussions of defectives, delinquents, and dependents. The recognition of mental dullness and feeblemindedness and its distribution among idiots, imbeciles, and morons is of primary importance. Childhood must be understood in order to be adequately supervised or directed. Educational possibilities are not determinable without an insight into latent mental power. The part that mental defectiveness plays in delinquency and dependency is of too great importance to warrant its neglect. The share that delinquency claims in the development of dependency is also of considerable interest. I purposely omit the statistical phases of my argument because the facts are patent, and reliable figures are available to all desirous of obtaining them. It is, however, of the utmost significance that the modern management of juvenile problems is based upon the study of the mind, with a view to interpreting conduct in terms of intelligence and motivation. Dependency, similarly, is being restudied with relation to the mental characteristics of specific members of the household. Vocational adjustment is undergoing numerous alterations through the interposition of psychological methods in vocational guidance and labor management. The school systems are being altered to meet the needs of childhood as revealed through the study of mental makeup.

It is evident that the fundamentals of mind training must include an increasing attention to mental adjustment to the realities of life, and this requires the institution of a wider measure of mental hygiene. It is insufficient to use the word nervousness as a satisfactory explanation of children's conduct, nor is it scientific to be satisfied with an explanation to parents that a defect is trivial, and that the child will outgrow it, usually it may be remarked, within the mystic number of seven years. Many of the conditions regarded as nervousness find their origin in physical, emotional, or volitional disturbances. Let us, for example, bear in mind such conditions as stuttering, tics, restlessness, easy fatiguability, peevishness, bashfulness, fears, night terrors, sexual perversions, suggestibility, vacillation, hysterical laughter, chronic headaches, irregular attacks of indigestion, lack of self-control, sulkiness, moroseness, so-called laziness, stubbornness, and stupidity. These are all conditions which are far from uncommon and present difficulties which are not surmounted by fixing upon nervousness as a cause. Why do children present these symptoms; how may they be corrected, and, what is of greater value, how may they be prevented? These represent some of the questions for which mental hygiene seeks to offer a partial solution. Investigation of children possessing such defects and handicaps reveals the necessity of studying the physical, psychological, educational, and social factors entering into the reactions of childhood.

Mental hygiene is not concerned with the study of memory or perception or reasoning and judgment, as such, in terms of clinical psychology, but is seeking to understand the whole child, as a hu-

man being that forms part of organic society. It recognizes the instincts, volitions, and emotions and all other bases of character as plastic material varying in potential development, whose mature form will bear the imprint of the countless moulds into which it is cast.

Mental hygiene should begin theoretically with selective matings, but at this time progress in this direction is limited to the prenuptial guarantees, the segregation of the feebleminded, and some abortive efforts at sterilization of epileptics, criminals, and the insane. In a sense the efforts at prenatal care, improved maternity facilities, the emphasis upon a decrease of the unnecessary use of forceps, and the extension of infant welfare work are to be regarded as phases of work in mental hygiene. It is true that the efforts toward the child are largely by indirection, the stress being placed upon the care and education of the mother, in the interest of the welfare of the child. During infancy, for example, efforts are made to attack many undesirable infantile habits, including thumb-sucking, masturbation, and the like, though the burden of effort rests upon the parent.

Infancy, in a nonlegal sense, gives way to childhood at about the age of two years, and the paucity of agencies dealing with the preschool age has left this period of life somewhat barren of study as to the necessary provisions for systematic hygienic care, particularly in the mental field. Only the occasional problem arising during these years receives the necessary and merited study at the hands of the regular medical attendants. Carelessness, indifference, and ignorance have been responsible for failure to give sufficient thought and study to mental development, character, and conduct before the school age is reached. Under these circumstances the majority of children enter school handicapped physically or mentally, or with both defects working to interfere with school progress and the development of those attributes deemed essential for units that are to participate in citizenship and government. A large measure of the school failures, destroying self-confidence and instilling a sense of inferiority, might have been obviated had thought been given earlier to the welfare of the children. I shall not dwell upon the numerous types of efforts that are undertaken during the school age, though I wish to emphasize the tremendous wastage of time, effort, and money which results from the failure to attack the problems of childhood previous to entrance into school.

In order to institute mental hygiene in a practicay way, it is essential that physicians enter into the spirit of this new movement to promote mental health. It is obvious that a complete physical examination should be made and, as early as may be possible, all correctible defects and handicaps should receive the necessary attention. In this connection particular stress is to be placed upon nutrition, vision, hearing, tonsils, adenoids, and teeth, though, of course, there must be no overlooking of disturbances of the circulatory, respiratory, excretory, or nervous systems.

The removal of physical defects is essential not merely because of the physical benefits that result but also as a means of supplying the sound body, which partially conditions the sound mind. Its value is emphasized in connection with so-called borderline cases which test the skill of the psychiatrist and require careful and prolonged study in order to determine whether the preponderant influence lies in the physical or mental sphere.

The tendency to make rapid diagnosis is unfortunate and fails to take into consideration the baneful effects upon mentality of deficient oxidation or malnutrition. The difficulties of mental diagnosis during childhood, particularly in the line of determining psychopathic children, demand the scrupulous care of the body as an adjunct to the investigation of mental development.

The second step to be taken involves the mental examination. For this purpose I employ the Stanford revision of the Binet-Simon tests, which suffice to give an idea of the general level of intelligence. It is insufficient, however, to rest content with the determination of the intelligence quotient, because this is little more than cataloguing mental levels. It fails to take into consideration various mental complexes which determine the form and development of character and conduct within the demonstrated sphere of intellectual capacity. The necessity of examinations beyond the determination of intelligence levels is emphasized in the psychiatric problems of the juvenile courts, and particularly in such studies of the mental mechanism of criminals, particularly recidivists, as have been portrayed by Dr. Glueck.

There are varieties of mental powers which demand specific study in order to determine the directions therapeutic measures must pursue, and the especial channels along which a modified system of hygiene must flow. The psychological studies must determine constructive ability and learning ability, imaginativeness, the type of memory, the power of concentration, motor coordination, and association, as well as the ability to follow directions and the degree of moral comprehension.

Educational investigation resolves itself into pedagogical tests in various branches studied in public schools, the careful analysis of the various elements entering into study, including the character of work performed with reference to the gradation at school, the necessity for private instruction, and the direction of education into fields untried but promising greater advantages to the mind. It is needless to say that the attitude of the child toward the school and the teacher frequently is of greater effect than a myopia or a chronic otitis that interferes with the channels of perception through which mental training is acquired.

It hardly appears necessary to stress the tremendous wastage of brain power from lack of its development. The accomplishments of a Laura Bridgeman, or a Helen Kellar, the reeducation of the crippled and handicapped, the renewed power that is developed following diseases of various types, indicate the tremendous gains that are possible through prolonged rational study and persistent and well directed efforts toward building up a body or mind that has suffered some unfortunate limitation. Such experiences as those with the deaf, the blind, the crippled, and the neurotic, indicate the benefits that might ensue were similar pains taken in the promotion of the health and welfare of the growing generation.

I have found the necessity for a careful social study of each particular child. By this I do not mean merely knowledge as to whether it comes from a home of wealth or of poverty, nor do I mean alone the degree of mentality of the parents. I refer particularly to the social relationships existing within the home, and those radiating into or out of the home. It is more helpful to know whether a child hates its father and why, than to know that it comes from a home of luxury and attends a high class private school. It is more advantageous to find the beginnings of habits of delinquency through social analysis than to accept the comment of the confessedly kind hearted parent who states that the child takes after a deceased uncle.

In short, to determine the character of mental hygiene to be instituted in any specific instance it is essential that the child and its various spheres of influence, whether centripetal or centrifugal, be explored. All the data thus acquired must be carefully weighed as evidence, balanced, and analyzed as a preliminary to determining upon a course of action. The need lies not in diagnosis, though it is essential for prognosis. The character of the prognosis, however, must depend upon knowledge of the possibilities of therapeusis, or prophylaxis. This is incontrovertibly true in the realm of physical and mental diseases, with all due regard for the necessary reservations due to human fallibility in judgment.

The study of pathology has given rise to most of the benefits that the world enjoys from hygiene. A knowledge of etiology must precede specific hygienic methods. There are, however, general principles of hygiene which are applicable to many diseases whose real cause has thus far failed of demonstration. This is equally true in the realm of mental hygiene, as it is in physical hygiene. What has been learned from the treatment of mental defectives, the handling of psychoneurotics and psychopaths, affords much of value for introduction into the lives of all children. Early attention to the slightest evidence of conditions common to mental disorders will accomplish far more than the application of indicated remedies after the disease has become acute. The purpose of the movement for the introduction of psychiatric clinics or the establishment of psychoeducational clinics, or the growth of ungraded classes throughout the country, is to discover mental disabilities to prevent further mental deterioration, and, constructively, to build up mental power to the maximum extent.

Mass study of this character presents numerous difficulties which hamper and delay or interfere with smooth progress. Individualization in treatment is obviously required. For this reason numerous group benefits will accrue from the more thorough study of individual children. Permit me to repeat: for the purpose of furthering mental hygiene, it is imperative that we give more attention to the psychological, educational, and social elements entering into child life, than has been our custom in the past. This does not mean any decrease in activities along the physical lines. In truth, more rather than less stress must be placed upon physical examinations, particularly of the nervous system, and the vast hazy territory of endocrinology. Not merely must defects and handicaps be noted and remedied, but tendencies toward physical disabilities should be sought and corrected.

The horizon of medicine has broadened. Just as the field of social service has extended so that social investigation is now an essential part of the highest form of medical practice, so the field of psychology and education are calling for a greater interest on the part of physicians. Character, conduct, and educability belong within the category of states claiming medical thought. What is required is a new point of view regarding human beings. We must think in terms of health and hygiene; but the application of these terms must embrace the physical, mental, and moral development of human beings who are entitled by virtue of their birth to the amplest opportunity for the highest development. In the beginning this work should be coincident with life and receive its greatest impetus during childhood. Mental hygiene during this wonderful era of childhood promises new rewards and benefits for the race. The beginnings, however, must be found in the study of individual children along all the lines suggested: the physical, psychological, educational, and social phases of child life.

264 West Seventy-third Street.

ELECTRONIC REACTIONS OF ABRAMS.

OVERT PHENOMENA.

By ALBERT ABRAMS, A.M., M.D., LL.D.,

San Francisco, Cal.

Elsewhere[1] reference has been made to these reactions in detail. In our repeated references to the latter we have commented on the sensitivity of the human reflexes for demonstrating infinitesimal radioactivity, which is an inherent property of all matter. It is difficult to conceive of any mechanism* which is responsive to ethereal vibrations at a rate of 500 million million a second. Thus it is that the physicist recognizes only a limited number of bodies possessed of radioactivity, although he concedes that all elements are radioactive.

Recent reports from the Department of Agriculture show that old maxims bearing on farm practice are more reliable than deductions recruited from scientific data. These traditional maxims are based on the behavior of plants and animals which are more sensitive and consequently more responsive to external conditions than any instrument yet devised by man. In despair and in accordance with the foregoing a science of phenomena, "Phenology," is proposed. The physiological responses to infinitestimal atomic energy have merely escaped observation, thus making knowledge defective not so much for want of knowing as for want of looking. There is never a sensation from within which does not find its expression from without.

The writer has shown elsewhere[2] how the heart

*The writer has constructed an apparatus known as the Electroradiometer, which is essentially an electric balanced electroscope enabling him to differentiate radiant energy. Although practical, it does not attain the sensitivity of the human reflexes. It was the electroradiometer which enabled him to devise his oscilloclast, an apparatus by which major operations may be executed by aid of a definite vibratory rate secured from an electric circuit and from which absolutely no sensation is felt by the patient.

may be utilized for demonstrating and differentiating various forms of energy. Brief reference at this time will be made to new vasomotorial and muscular phenomena. Practically all diseases yield a definite physiological topography as shown in

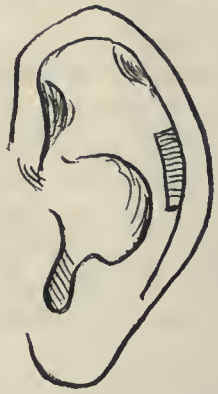

Fig. 1.—Area of localized hyperemia when tuberculous energy is conveyed to the navel. A more intense hyperemia is noted when the energy is applied to the *center of the forehead.* The area of hyperemia is supplanted by *pallor* when the end of the culture tube is applied at a point about 3 in. to the left of the navel.

"Iconography of the Electronic Reactions of Abrams," but at this time reference will be made only to tuberculosis. For the rationale of the phenomena, the reader is referred elsewhere.[1]

To objectify the following overt physiological reactions, the initial exaction is a modicum of patience.

General Exactions.—Practically any nontuberculous person of either sex (subject) may be used for the physiological reactions. The subject must be seated facing the geographical *West* in proximity to a window with the feet on a metal plate grounded by means of a wire to a faucet or radiator. This grounding may be effected without a plate by fastening a wire to the subject's leg and the other end to a faucet or radiator.* Preliminary investigations may be made with a culture tube of tubercle bacilli. The latter must be so grasped that the finger tips of the experimenter must not be pointed in the direction of the culture tube (to avoid the radioactive polarity issuing from the fingers). When the phenomenon is evident to the experimenter, he may conduct the energy through a conducting cord (preferably with aluminum electrodes, not in excess of 1 in. in diameter) from a suspected tuberculous lesion to the receptive area of the subject. Better results are achieved if the patient as well as the subject is grounded. Later, by employing a special ohmmeter, he may differentiate the energy thus

*Later investigations show better results when the reagent (subject) is insulated and not grounded. To

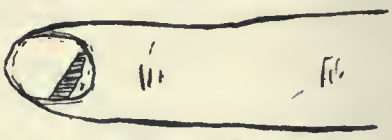

Fig. 2.—Area of pallor in the fingernail (preferably ring finger) in tuberculosis.

achieve the former, reagent stands on a rubber mat; if seated, feet on a rubber mat and chair on same or other insulating substance. Arms must be away from body and feet separated to prevent short-circuiting; a subject to be discussed in a future number of this Journal.

conveyed through the latter by noting that the physiological response is only at either 15 or 57 of the scale. Furthermore, he may be able by aid of the ohmmeter to measure the potentiality of the energy and thus note the progression or retrogression of

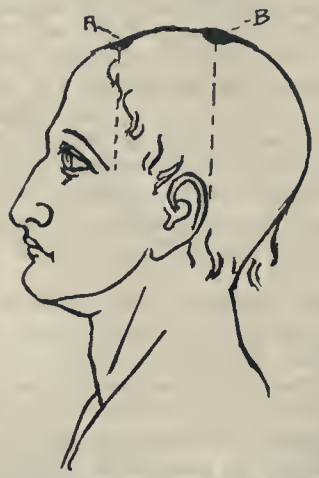

Fig. 3.—A—Receptive area to elicit the myoscopic reactions (center for muscular tonus); B, hypothetical centrum for atonicity.

the disease. The physiological reactions in question furnish the earliest evidence of tuberculosis and far exceed in value the conventional methods employed in diagnosis. With a pointed aluminum electrode the area of the lesion may be defined. Thus, when the electrode attains one side of the area, there is a response and so with other sides of the area which may be marked with a pencil. The reactions may be noted in artificial light which must be at some distance from the subject.

The writer has shown[2] how the patient may be utilized (without a subject) for diagnosis by aid of the electronic reactions and, in the same work, how the ear of a white rabbit may be employed for a like purpose.

Otoangioscopy.—Select a subject with a moderately red ear (a congested ear is of no value). Note that when the end of the culture tube is applied in

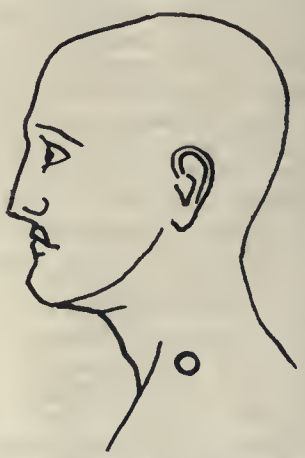

Fig. 4.—Circumscribed retraction of the skin from tuberculous energy conveyed to the area shown in Fig. 3A.

the region of the navel, there is an immediate response in the area shown in Fig. 1. The physiological response is an area of circumscribed hyperemia, and if any veins are present their engorgement is apparent. Most subjects can localize the

area by the burning sensation which persists for a variable period after the removal of the tube. The experiment with the same subject can be repeated only a few times owing to the persistence of the hyperemia.

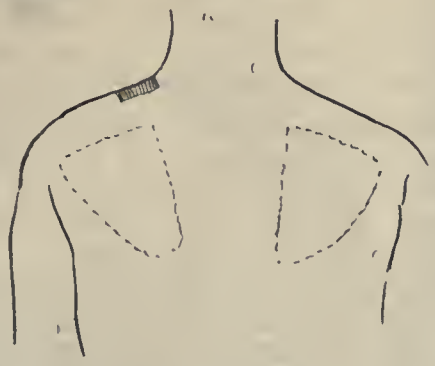

Fig. 5.—Suprascapular myoscopic reactions.

A better hyperemic response is achieved when the tube is placed in the *center of the forehead.*

Onychoscopy.—It is difficult to observe circumscribed areas of hyperemia in the nails so that observation must be limited to areas of pallor. If the end of the tube is applied to the subject at a point on a line with the navel and about 3 in. to the left of the latter, pallor will be noted at the area shown in Fig. 1. In the application of the energy to the receptive abdominal areas, it is unnecessary to remove the clothing, although better results are achieved when the tube approximates the skin.

Myoscopy. — Exactions (position, grounding, light, etc.) like the elicitation of the foregoing reactions. Thin individuals are alone adapted for the myoscopic reactions. The receptive zone* for the tuberculous energy in these reactions is the area A shown in Fig. 3, viz., at a point corresponding to the median line of the vertex, on a line drawn from the outer borders of the orbitæ.

Reaction of the Platysma Myoides.—When the end of the culture tube is placed at A, Fig. 3, a

*Abrams' heart and lung reflexes are universally recognized by stimulation of definite spinous processes as shown in "Spondylotherapy" and elsewhere. Stimulation of the area (Fig. 3A) will elicit these reflexes of greater amplitude and duration. If this area is struck with a plexor by aid of a pleximeter and the small veins of the hand or arm are noted, the veins in

Fig. 6.—Brachial myoscopic reactions.

question will be seen to contract. The writer assumes that this area (Fig. 3A) is the center for muscular tonicity. If an area corresponding to the center of the vertex (B, Fig. 3) is stimulated by concussion or sinusoidalization the veins become engorged. These centers may be utilized in treatment (cephalotherapy).

retraction of the skin ensues which is invariably in the same area (Fig. 4). This area may be identified after several observations.

The myoscopic like the vasomotorial reactions are easily exhausted. Pulsations and movements due to respiratory excursions are easily excluded.

Suprascapular and Brachial Reactions (Figs. 5 and 6).—The energy is conveyed to the same area (A, Fig. 3) for all myoscopic reactions. Note, however, that in these reactions there is no retraction of the skin, but a muscular wave (not unlike the fibrillation observed in muscular atrophy) pursuing the direction as shown in Figs. 5 and 6.

Addendum. — Various unsatisfactory theories have been suggested to explain the supposed miraculous power of dowsers: (1) That they guess at the position of what they are about to discover; (2) that a knowledge on the part of diviners of the locality and of its geology are sufficient; (3) that the power is an involuntary action resulting from a fixed idea.

Every man is an ideo-motor being and his idea is expressed in some kind of external motion. It is impossible to entertain an idea without participation of the whole body in harmony with it.

The dowser's method to find water is to grasp the limb of a twig (divining rod) firmly in each hand.

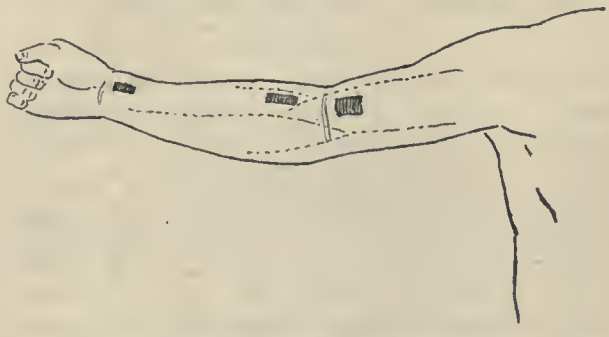

Fig. 7.—Areas of muscular reactions when the energy from water is conveyed to A, Fig. 3.

He holds the rod in front of him and proceeds slowly. When he arrives at running water, the twig jerks up and down, and not infrequently it twists around in the dowser's hand. Anyone can demonstrate by the following myoscopic reactions that the correct explanation of the dowser's method is involuntary muscular action independent of a preconceived idea. It must be recalled that there are reflexophilic individuals with exaggerated reflexes. With the latter the myoscopic reactions are accentuated.

The grounded subject faces the west with bare arms held in a semi-flexed position. Use a cord with electrodes. One electrode is fixed at A (Fig. 3), whereas the other electrode is brought into proximity with a large quantity of water in a bathtub. Note that the moment the electrode is over the water (knowledge of the subject to be excluded), a slight twitching is observed in the areas shown in Fig. 7. Note that when the water is agitated there is a decided muscular twitching, notably at the lower portion of the biceps.

The electric sensations of dowsers are muscular contractions and the latter are in direct proportion to the quantity of water and its depth. The dowser's reactions are evident only over running water.

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2135 SACRAMENTO STREET.

PSYCHOANALYSIS OF THE HEART.

BY AURELIUS R. DE JANIS, M.D.,

BOSTON, MASS.

"IT is often a mistake on the part of the physician to inform his patient of the presence of organic disease of the heart. Such an announcement will only tend to militate against the best chosen remedies by depressing the patient's spirits, and thus lowering the vital energies. It is better to encourage; and allude to the heart only in an indirect manner."

The heart is one of the so-called involuntary muscles, and an organ supposed to be beyond the influence of the will, if not of the mental sphere. This view is not entirely correct, for we know that the action of the heart is often disturbed by merely centering upon its consciousness, and without any emotion or anxiety. For example, the physician can often induce palpitation and irregular pulsation by merely feeling the pulse. Such action is apparently brought on by the effort of attention even though there is no evidence of undue emotion.

The heart is an organ which is highly susceptible of emotional excitement and neither volition nor the coolest temperament will give immunity from this susceptibility. It has long been noticed that long-continued anxiety will lead to a feeble and slow action of the heart and at the same time render the organ irritable and liable to become excited under the slightest access of emotional feeling.

A sudden and painful mental shock has also been known to arrest the action of the heart, or to excite it to such a degree as even to injure its valves or their cordæ tendineæ. Furthermore, we often hear the phrase "died of a broken heart," and this is not purely figurative, because sudden death may undoubtedly be sometimes due to a ruptured heart caused by violent emotions. Terror or joy, when it suddenly seizes a person already overpowered by despair, may paralyze the heart. History tells us that the Roman matrons, after the battle of Cannæ, on seeing their sons, whom they supposed to have been killed, dropped dead on the spot.

Fear, which is the chronic form of fright, occasions a tremulous palpitation; rage also may produce precordial oppression, and is known even to have brought on an attack of angina pectoris. Excessive grief will cause functional disorder with deranged action of the valves, the patient becoming pale and anemic. It is a general rule that hope will excite and sustain the organ; despair and anxiety will depress it; and contentment and peace of mind will give it healthy action.

I am convinced that but few physicians realize the great importance of the relations of the brain with the heart; or even appreciate the connection between the soul and that center of physical life. We might even assert that as there is a corporeal heart (the life-giving center of the body) so there must be a spiritual heart, (the center of soul-life), Else, why is the word "heart" continually applied to the feelings, the impulses, and emotions?

It is further said, a man "has a heart" or "no heart," that such an emotion "comes from the heart or the head," thereby indicating that a one kind of feeling may come from the soul, and another from a more "calculating" center. And all the grand, noble, and loving impulses of our nature are said to come from the "heart," while the cold, unemotional, and "practical" acts are said to emanate from the brain.

It is a well-known fact to anatomists that animals possess the power to move and govern certain muscular organs and muscles, while man possessing the same muscular structures has no apparent influence on them. Our attention may well be attracted as to how far this influence extends to the heart; however, this is a problem, and this sympathy between the mind and the heart should not be overlooked, for a full appreciation of it may lead us in certain cases to form more correct diagnosis than could otherwise be made.

A physician may be treating the heart with medicines, when his efforts should be directed to a "diseased mind." It cannot be too strongly insisted upon that we should never lose sight of the psychological relations of the heart as well as its anatomical, physiological, and pathological history.

74 WESTLAND AVENUE.

Medicolegal Notes.

License to Practise—Neuropathy.—The Pennsylvania Superior Court holds that a person who is a graduate of the American College of Neuropathy and who describes himself as a doctor, may be convicted of practising medicine and surgery without a license, where he practises a system which is described as "A science of the healing art by which all diseased conditions of the body are restored to health by regulating the blood supply to the involved areas through the nerve mechanism, but exclusively by the physical manipulation around and above the affected parts of the human body." The court said that in order to practise medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it, he may still be held to be practising medicine. There has been great specialization in the profession, and the purpose of the statutes seems to be to permit the practice of special methods of treatment including everything that strictly belongs to each, provided such practitioners have the required general knowledge of medicine: Commonwealth v. Jewelle, 199 Mass. 559; Commonwealth v. Zimmerman, 221 Mass. 184. "To rule out of the profession great physicians whose work is confined to consultation, the diagnosticians, who leave to others the details of the practice, and the administration of drugs, or the use of surgical instruments, would be to eliminate a very important branch of medical and surgical practice": People v. Allcutt, 189 N. Y. 517. The law is not concerned with the question whether Chiropractic or Neuropathy is as good or better than other systems of treatment, but it is concerned with the grave question that before any one shall undertake, no matter by what system, to diagnose, treat, operate upon, to prescribe or administer remedies or treatment for any physical or mental ailment or condition of another, for a fee or other consideration, he shall possess the learning and skill required by the statutes, produce a degree or diploma from a college meeting the requirements enumerated in the statute, and pass an examination before the State Board showing his competency.—Commonwealth v. Seibert, 69 Pa. Superior Court 271.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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SPINOVENTRICULAR LAVAGE IN THE TREATMENT OF MENINGITIS.

WITH the exception of tuberculous meningitis, it would seem that spinoventricular lavage is indicated in many types of meningitis which clinically and bacteriologically are regarded as fatal, such as suppurating traumatic meningitis when surgical intemperance has failed; suppurative meningitis from middle-ear processes in which the mastoid operation and spinal injections of the colloidal metals or of antistreptococcic serum are often without avail; cerebrospinal meningitis which does not respond to serotherapy; and lastly, the purulent meningitides, due to the streptococcus, pneumococcus, or Eberth's bacillus, which arise as complications of general or local injections.

The technique of the lavage consists of two steps: ventricular puncture and lumbar puncture. In infants ventricular puncture is relatively easy; the needle is inserted at the external angle of the anterior fontanel in order to avoid the sinus which is median, and is then pushed in from above downward and from without inward. In adults puncture is to be preceded by trepanation. The opening in the skull and ventricular puncture can be made at either of two different points. Sicard, Roger, and Dambrin advise opening the cranium at about three centimeters above the middle of a line drawn from the inion to the base of the mastoid apophysis in order to reach the occipital horn of the ventricle; Bellin, Alvin, and Vernet select a point three centimeters above the external auditory canal, pushing the needle in a direction perpendicular to the surface of the side of the brain operated on because the temporal horn is only three centimeters below and easily reached by the needle. Lumbar puncture is done according to the usual technique and should be made first, thus avoiding sudden hernia of the brain, after which puncture of the ventricle is done through the opening in the skull. The needle used should be about fifteen centimeters long, and is pushed directly in to the extent of four centimeters.

The lavage is then begun, using a syringe having a capacity of 20 c.c. through either the needle in the ventricle or that in the spinal canal. A physiological salt solution or specific serum is used, the quantity varying according to circumstances from 100 to 400 c.c., and the lavage may be repeated if necessary. In meningitis with predominating cerebral symptoms, ascending lavage should be done in order to avoid diffusion of the bacteria, and inversely. One of the principal points of the technique is to inject the fluid slowly.

The results obtained so far have been rather encouraging when the types of meningitis requiring this treatment are taken into consideration, as they are always the most severe, and when we consider also the possible improvement in the technique yet to come. One serious objection to this therapeutic measure is that it would be ineffective when the case offered a walled-off collection resulting from fibrinopurulent adhesions occluding Magendie's and Luschha's trunks, resulting in a pyocephalus which cannot be reached by the solution; but some recent observers maintain that the occlusion may not be absolute and that a sufficiently thin fluid may get through. In such cases they advise an essay with ascending lavage administered with all due precaution.

THE GREATER DELICACY OF MALE INFANTS.

IT is a well established fact, but one which is perhaps not generally appreciated, that many more thousands of boy than girl babies die, although in most years a few thousand more boys than girls are born. The consequence is that in all countries, with the possible exception of lands to which immigration is large, the preponderance of the female sex is considerable and ever increasing. In Europe, on account of emigration and recently because of the war, the undue disproportion of the sexes constitutes a grave problem. A well known English physician, Dr. R. Murray Leslie, a few weeks ago made this disproportion in Great Britain the text for a homily on the dangers to which the large preponderance of women was subjecting the population, and he dwelt especially on this law, that while more boys are born than girls, a considerably larger number of boys die than of girls. According to the views of some authorities, the main reason is that male infants are more complex animals than female infants, and that man is of another type than woman. Woman's function physiologically is to be conservative, to maintain the race-type. Man's function is to vary that type in accordance with the varying environment of the race. He is therefore more directly in touch with environment and he tends to exaggerate all the influences, whether good or bad, that play upon him. It is obvious that in the earliest stages of infancy environment is all-important. If there is any factor in this environment that is inimical to life the boy baby responds to it more energetically than the girl baby; that is, he is more delicate. It therefore follows that any measures taken to save infants of

both sexes will save more boys than girls and so the solution of the problem is to bring baby culture up to the highest point of efficiency, and nature will adjust the balance of the sexes.

The steps to be taken to secure this result would seem to be that, first, the medical profession should be more concerned as to the best means of rearing infants, and especially of guarding them during the earliest days of life. Another thing greatly needed is that the education of midwives and nurses should be improved; and lastly, parents should be instructed, mothers in particular, in the scientific aspects of parenthood.

Educational work of this description in the poor localities of the big cities of Europe has thoroughly demonstrated its worth. In Paris, in Brussels, in Ghent, the "Gouttes de Lait" not only have been the means of saving a very large number of infant lives, but have overcome to a considerable extent the drawbacks of unsuitable environment, and children reared on these lines have grown into healthy men and women. In London and other British cities the outcome of similar measures has been equally satisfactory. If it is true that boy infants are more difficult to rear successfully than girl infants, it is evident that the solution of the difficulty lies in efficient baby culture and child welfare work. The assertion which has been made that the boy baby is more susceptible to his environment because he is a finer and more delicate type will not be accepted by everyone. The male type and female type differ in certain respects, but it is a difference rather than a definite superiority of one over the other type. Each type possesses its characteristics of superiority. With regard to the powers of vital resistance inherent in either sex, it is probably a misnomer to term the female the weaker sex. The female has quite as much, if not more tenacity of life, than the male. But, however this may be, it is certain that there never has been a time when the need for the conservation of child life and the rearing of a healthy, vigorous race has been so clearly apparent as it is at the present time, and any measures calculated to insure this result will be welcomed and adopted throughout the civilized world.

FATAL MOUSE TYPHUS IN A HUMAN SUBJECT.

THE Loeffler mouse-typhus bacillus is morphologically, culturally, and biologically akin to the paratyphus B from which it differs chiefly in its pathogenicity toward the mouse. Experiments many years ago appeared to show that mankind is immune to this organism. Later, however, it was realized that it could attack men, and mass infections have resulted from the consumption of contaminated flour, the flesh of sick horses, etc., the symptoms being those of gastroenteritis. At least seven fatalities have been recorded.

Staub, an assistant at the clinic of Professor Stahelin at Basle has reported a case in the *Schweizerische medizinische Wochenschrift* for February 5, 1920, i, 6. The patient, a man of 62, ate some potato which was covered with mouse poison in the shape of cultures of mouse-typhus bacillus intended to destroy these animals. He later complained of vertigo and prostration and vomited repeatedly. The physician found him asleep and when roused with difficulty he staggered, behaving exactly as if drunk. The pupils were extremely narrow. He was given coffee. Next day the pulse, previously good, became rapid and weak and digitalis was ordered. Constipation had set in from the first and castor oil was followed by persistent diarrhea. There was no fever. The patient arrived at the hospital on the third day of the disease and was somnolent, highly emaciated, prostrated, and cyanotic, the blood pressure being 90. The emaciation, cyanosis, thirst, rice-water discharges, and other symptoms were decidedly choleriform. The highest temperature was 37.3° C. (99.1° F.) in the axilla. There was no response to treatment and the fatal exit took place on the fourth day after swallowing the poison. Section showed marked congestion of the gastroenteric tract. Pure cultures from the blood would ordinarily have passed for the paratyphus B, but when tested on mice along with the culture used on the potato proved to be the *Bacillus typhi murium* of Loeffler.

Characteristic of the disease is the extremely brief incubation period of about ten hours, the severe watery diarrhea setting in on the third day, and the acute dehydration and absence of fever. In other words it mimics closely the choleriform type of paratyphus B infection, otherwise the form of cholera morbus due to that germ, the autopsy finds also agreeing with that affection. Commercial mouse poison should therefore be placed officially among substances dangerous to man.

THE CANCER PROBLEM.

THE *Journal de médecine et de chirurgie pratiques* for February 10, xci, 3, is devoted to papers on cancer and of this number one by Plicque is general in scope. The author gives incidentally a digest of two papers by Hartmann and Lumière on four leading factors in the cancer problem of which the first deals with chronic irritations. Thirty-four distinct types of chronic irritation have been isolated, most of them being familiar to the student of can- of these sources of irritation, as paraffin and especially the betel nut or rather the lime used to facilitate its mastication. The skin is interested in many of these sources of irritation as paraffin and especially soot and *x*-ray burns. Gallstones are the irritant in cancer of the gallbladder and ducts, subpreputial infection in cancer of the penis. In cancer of the breast the friction of the upper border of the corset is accused. The change of chronic ulcers of various kinds into malignancy is well enough known, this being ranked as the second of the casual factors. The third in order is the region of least resistance and here is placed scar cancer.

The fourth known or supposed causal factor is parasitism which naturally can cooperate with the preceding, although parasitism is more readily brought into connection with sarcoma than with carcinoma, and sarcomatous tissue suggests a reaction toward some form of parasite in that it resembles in many ways the tissue of tuberculous and syphilitic gummata. Epithelial tissue is much less prone to proliferate under the stimulus of infection although this does occur now and then. The author also discusses implantation and grafts in connection with the parasitic theory. The parasitic theory, he thinks, is the only one which holds out any hope of cure of cancer, hence it stimulates research, in the direction both of an antiparasitic treatment and of modifying the soil by mineralization and demineralization, for if the dietetic theory of cancer is sound it must rest on the possibility that certain substances in excess, like protein, act as favorable culture media while defect or excess of certain mineral matter tends to render the medium unfavorable. The benefit from irradiation also suggests the destruction or inhibition of growth of microorganisms.

This is an approach to the more rational constitutional theory which is, however, by no means dependent upon a belief in parasitism for its acceptance.

Is Essential Epilepsy Hereditary?

Hartenberg answered this question in the negative at a recent session of the Société de Médecine de Paris (*Le Presse Médicale*, xxviii, 6) In 80 cases investigated from this viewpoint, only three showed epilepsy in the ascendants. Since the disease is thus no source of reproach to the family, it need not be concealed. It is somehow acquired and is casual or accidental, and should not be regarded as incurable. In the discussion that followed Tellemer conceded the rarity of epilepsy in the patient's ascendants, but has found that if epileptics marry, their children seem tainted in some way. Laignel-Lavastine cited in addition to himself Pierre Marie, Babinski, and Comby, none of whom believed in the heredity of idiopathic epilepsy. This means that epilepsy is no autonomous disease but a syndrome. In some cases the accidental cause is apparent, as an infection is early childhood which sensibilizes the brain. Blind agreed with the other speakers, and he believes the Scandinavian laws forbidding the marriage of epileptics to be unjust. In closing Hartenberg agreed that epilepsy is a syndrome and that the term idiopathic epilepsy means nothing, although it is very handy to indicate the affection in an otherwise normal subject. It does not differ essentially from socalled symptomatic epilepsy in which some alleged cause is apparent. Cranial wounds and other individual factors can cause essential epilepsy as well as atypical forms by sensibilizing the brain.

Acetonuria of Fatigue.

The various familiar conditions under which acetonuria develops may be amplified by fatigue, according to Azzo Azzi in *La Riforma Medica* for November 8, 1919, xxxv, 45. The acetone bodies occur in normal urine in a concentration which amounts to 0.0136 gm. in 24 hours. In fatigue as studied in troops during a war footing this amount may increase to the figure of 2.5 gm. in 24 hours. The essential requirement to get such figures is unremitting activity without the least repose. When at last the subject favors himself and rests, the amount diminishes at the rate which would be anticipated. Forced marches supply the conditions which are calculated to produce acetonuria in excess. Of collateral phenomena observed the ammonia excretion was very irregular and the same was true of total acidity, but the excretion of ureic N in the most notable cases of forced march was notably diminished. The increase in the acetone bodies stands in relation to the sense of fatigue. How explain the increase in acetone bodies in fatigue? Is it a mere index of increased combustion? This cannot be answered offhand, but it is quite possible that these substances constitute in part the poison of fatigue and are neurotropic, causing the sensation of weariness —in other words, from this viewpoint the autointoxication of exhaustion is expressed by acetonuria. The author does not mention the fact that the sense of fatigue occurs without acetonuria, and that the latter does not develop in fatigue from brief intensive muscular activity. Most of our knowledge of experimental fatigue concerns the shorter, intensive efforts.

News of the Week.

Insane Asylum Under Investigation.—The New York State Hospital Commission, at its recent quarterly meeting held in New York City, instituted an investigation concerning the detention of the aged Brush sisters for ten years in the State Hospital for the Insane at Kings Park, L. I.

Milk Commission Advocated. — The passage of the milk commission bill, with power to regulate the price to the producer, distributer and consumer, is strongly advocated by Governor Alfred E. Smith of New York as necessary to protect the women and children of the State.

Legal Control of Glandular Products Urged.— At a session of the Section of Medicine of the New York State Medical Society, during the recent meeting held in New York City, Dr. S. W. Bandler suggested the wisdom of legal control of the sale of glandular products for life extension or other purposes. He urged the appointment of a committee of fourteen physicians to take the initiative in the matter of the prevention, by legislation, of the sale of such products by druggists without a physician's prescription.

Medical College Alumni Association Organized. —Five hundred physicians, alumni of the New York University and Bellevue Hospital Medical College, met in that institution March 24 and organized an alumni association. A motion to create a legislative committee was finally adopted, after considerable discussion and opposition. Dr. Robert J. Carlyle was elected President, Dr. Robert J. Wilson, Vice-President; Dr. C. J. Lyson, Secretary, and Dr. Godfrey Fisk, Treasurer.

Smallpox in Jersey.—Nineteen cases of smallpox have been reported in Belleville, N. J. All public

school pupils are being vaccinated, and churches, "movie" houses, and all public halls have been ordered closed.

Soldiers' and Sailors' Home Investigated.—Charges of cruelty to inmates called forth an investigation of the Soldiers' and Sailors' Home at Bath, N. Y. Dr. Robert P. Bush, President of the Board of Trustees of the institution, made a general denial of the charges of mismanagement and cruelty to the inmates. Dr. Raymond Hills, house physician, also denied charges of mismanagement. Lieut. Governor Walker, who conducted the investigation, announced that a decision wuold be made two weeks later, if no further direct evidence of import developed.

Fifty Thousand to Post-Graduate.—Announcement has been made by the New York Post-Graduate Medical School and Hospital endowment fund committee of the receipt of fifty thousand dollars from James C. Brady. This is an encouraging start for the two-million-dollar drive launched by the committee on March 30.

Doctors Advocate Universal Military Training.—Thirty prominent physicians have sent a letter to the members of Congress urging the adoption of universal military training. It is contended that "universal training would be of inestimable value as a means of determining the proportion of young men physically fit or unfit and the underlying causes contributing to both conditions, aside from its many other desirable features."

Scarlet Fever at Brown University.—In consequence of a sudden outbreak of scarlet fever at Brown University, Providence, R. I., it was decided to close the university at once. This was done March 25, after a conference by President Faunce with the Commarian Club and Dr. Charles V. Chapin, Superintendent of Health of Providence. Warnings were sent to health authorities of towns and cities to which the students might go to be on the watch in the homes of the students for signs of scarlet fever.

Healthiest Town in the Country.—According to report Wassaic,' Dutchess County, N. Y., holds the banner for health. Although the township is nearly two hundred years old it has never supported a cemetery within its bounds and has no resident physician. It is not stated that there is any cause-and-effect relationship here, nor is the inference necessarily to be drawn that the inhabitants of nearly two hundred years ago are still alive.

Funds Needed for Orthopedic Hospital.—An appeal has been made by Robert S. Brewster, President of the New York Orthopedic Dispensary and Hospital, 420 East Fifty-Ninth Street, for funds with which to continue the work of the institution. The expenditures this year will amount to $220,000, an increase of $37,000.

Sugar Shortage and Drug Addiction.—Dr. S. Dana Hubbard, Director of the Bureau of Public Health Education of the Health Department, New York City, is credited with the theory that there may be a relationship between sugar shortage and increase in drug addiction. In 1919, he pointed out, the consumption of sugar in the United States was 5,200,000 tons, an increase of about 1,000,000 tons over 1918, and a per capita approaching 100 pounds. Should this not continue, and should the public be deprived of chocolates, soft drinks, and other sweets, drug addiction will follow the deprivation, according to Dr. Hubbard, who therefore urges the conservation of sugar.

Proposed Medical Center for Southwest.—The Board of Directors of the Baptist Memorial Sanatorium, Dallas, Texas, is working out plans, according to M. H. Wolfe, Finance Chairman, to make Dallas the medical center of the Southwest by the building and equipment of a hospital and medical college equal to any of the larger institutions of the country. Funds are being raised for this purpose. The Baptist Memorial Sanatorium, Baylor College of Medicine, Baylor College of Dentistry, Baylor College of Pharmacy, and the Baptist Training School for Nurses are considered as an adequate basis upon which to elaborate such a medical center.

Fifty Per Cent. Raise in Fees in Chicago.—At a recent meeting of the council of the Chicago Medical Society a new scale of fees was adopted, some of which are as follows: House visits, former maximum 5, now $15; night visits, formerly $3 to $10, now $10 to $50; operations involving fractured ribs, formerly $25 to $50, now $50 to $500; toe amputations, formerly $15 to $50, now $50 to $200; major operations will range from $200 to $10,000. The scale will be flexible, it is held, always governed by the patient's ability to pay.

Compulsory Filing of Birth Returns.—Senator George T. Gorton of Pawtucket, R. I., recently introduced an amendment to the present Rhode Island law, which, if passed, will require physicians of the State to file birth returns with city and town clerks within four days, and which will require the clerks to make monthly instead of annual returns to the State Board of Health of their birth and death registrations. The proposed amendment is designed to assist the State Board of Health in obtaining prompt birth returns from physicians. The penalty for violation of the proposed amended law is a fine not exceeding fifty dollars, nor less than ten dollars. The penalty under the present law is a fine of not less than two nor more than ten dollars.

American Urological Association Meets.—The American Urological Association held its seventeenth annual meeting at the Hotel Commodore, New York City, March 23, 24 and 25, under the presidency of Dr. Arthur L. Chute of Boston. The following officers were elected for the ensuing year: *President*, Dr. W. F. Braasch of Rochester, Minn.; *Vice-President*, Dr. H. G. Bugbee of New York City; *Secretary*, Dr. Henry L. Sanford of Cleveland, Ohio (re-elected); *Treasurer*, Dr. James A. Gardner of Buffalo (re-elected). Montreal, Canada, was selected as the place of meeting for the next session.

New York Association for Medical Education.—The annual meeting of the corporate members of the New York Association for Medical Education was held at the New York Academy of Medicine March 12, under the presidency of Dr. Wendell C. Phillips. In his formal address Dr. Phillips emphasized certain features of the work of the organization. The committee, among other things, has undertaken to establish standards to be recommended as guides in the preparation of graduate courses in the various specialties, and, further, to induce some of our institutions to offer such courses of instruction to eligible medical students. It is

intended to issue a series of bulletins announcing to the profession these opportunities and facilities for graduate study. The first bulletin will probably deal with Ophthalmology and Oto-Laryngology, since plans are most nearly perfected in those subjects, but other bulletins will follow as rapidly as the material can be brought into shape.

Medical Missionaries Needed. — The Interchurch World Movement is making a plea for 655 medical missionaries for work in 1920, and for 1,831 during the five year period of the Interchurch Movement. The sick, blind and defective, it is held, hamper progress in non-Christian countries. In Africa and the East, there is a vast army of defectives—most of them needlessly so, it is believed—in China there are a million blind and at least 400,000 deaf; in India there are half a million blind, and in Cairo five per cent. of the population is said to be physically defective, usually blind or half blind. Even the natives of the African jungle are for the most part poorly nourished and physically below par.

Junior Red Cross Aids Children in War Stricken Countries. — School children in this country, through the Junior Red Cross, are feeding more than 3,000 Belgian school children at the school canteens established by the Red Cross. Thirty-two of these canteens are being operated. A free school is conducted at Roulers where 200 destitute children are being educated and cared for. Winter colonies have been established in Brittany and the south of France for children of the devastated regions. In Italy 500 children are being cared for and schools have been established in the Balkan countries. These and many other activities in aid of the children made destitute by war are being carried on by the Junior Red Cross.

Activities of War Relief Organizations.—During the past week the various agencies engaged in war relief acknowledged receipt of donations amounting to $73,810. The Fatherless Children of France, Inc., 11 West Forty-sixth Street, received $26,578 and reports the total fund at $1,147,864. The Central Committee for the Relief of Jews Suffering Through the War, 51 Chambers Street, reports $42,156. The American Jugo-Slav Relief, 511 Fifth Avenue, received $5,076, making its total $358,369.

Relief for Serbian Children.—The Serbian Child Welfare Association of America, 19 West Forty-fourth Street, announces the shipment to Serbia for destitute children of $10,000 worth of clothing and food supplies, contributed by the Foreign Mission Board of the Methodist Episcopal Church, through Bishop William Burt of Buffalo.

High Cost of Living Penetrates Wilds of Massachusetts.—A physician of the Bay State makes the following frank statement to his clientèle: "Owing to the extreme high cost of drugs and medicine I will hereafter be obliged to make a charge for all medicines furnished by myself and also all unsettled accounts over three months will bear interest at the rate of 6 per cent."

American Proctologic Society Meeting. — The twenty-first annual meeting of the American Proctologic Society will be held at Memphis, Tenn., April 22 and 23, under the presidency of Dr. Collier F. Martin of Philadelphia. Dr. Ralph W. Jackson of Fall River, Mass., is Secretary. The scientific sessions will be held at the Hotel Gayoso, and clinics will be held at the Memphis General Hospital, the Baptist Memorial Hospital and the University of Tennessee.

Military Surgeons to Meet.—The twenty-eighth annual meeting of The Association of Military Surgeons of the United States will be held at New Orleans, April 22 to 24 inclusive, with headquarters at the Hotel Grunewald. The sessions are open to the medical profession at large. Colonel James Robb Church, Army Medical Museum, Washington, D. C., is Secretary of the Association.

United States Civil Service Examinations.—Open competitive examinations are announced by the Civil Service Commission for Bacteriologist and Junior Bacteriologist, and for Inspector, Antinarcotic Act. Application blanks (Form 1312) and information regarding time and place may be obtained from the Civil Service Commission, Washington, D. C., or from the Secretary of one's local Civil Service Board.

Foot Clinics.—During the past year 11,000 persons were treated at Foot Clinics, New York City, an organization which gives free foot treatment to the poor. A bazaar was recently held to raise funds for carrying on the work.

Vaccination Fee Increase.—The Town Council of East Providence (R. I.) recently received a request through the health officer, for an increase in the amount paid for vaccinations. The price is fixed by ordinance. The Council took the matter under advisement.

Anesthesia Research Society.—The annual convention of this society will be held at Pittsburgh the week of October 4, this meeting to be in conjunction with that of the Interstate Anesthetists' Association and the Pennsylvania Medical Society. It is possible that the Western Pennsylvania Dental Association also will join in the meeting. The Governors have voted $200 to be apportioned in prizes for the best papers on research in anesthesia, such papers to be read at the national meeting. This offer is open to all students, surgical, medical, and dental practitioners in the United States. A committee of three has been appointed to prepare forms for a uniform anesthesia chart. The committee consists of Dr. A. F. Erdman of Brooklyn, Dr. A. H. Miller of Providence, and Dr. E. I. McKesson of Toledo. The society will also prepare and publish at the earliest moment possible a monograph on the best practices in anesthesia in obstetrics.

Lack of Window Glass Spreads Epidemics.—According to Lieutenant James H. Becker, Relief Administrator of the American Joint Distribution Committee for Jewish War Relief, the lack of window glass is responsible for the spread of typhus fever, tuberculosis, and other contagious diseases in Central Europe. The windows are closed with mud, shutting out light and fresh air in the effort to exclude the cold. Shortage of buildings causes overcrowding in these poorly ventilated quarters.

Lake Keuka Medical and Surgical Association to Meet.—The twenty-first annual meeting of the Lake Keuka Medical and Surgical Association will be held at Keuka College, Keuka Park, N. Y., July

29 and 30. This association, which comprises twenty-one counties of western New York, is peculiar in that it has no membership in the sense that most organizations have, but the meeting is open to all licensed practitioners of medicine. The controlling body consists of an executive committee appointed at the time of each annual meeting from among those in attendance from the various counties. There are no dues except a small fee for incidental expenses, which is paid by those who attend. Dr. E. Carlton Foster of Penn Yan, N. Y., is the Secretary.

Jubilee Dinner for Fifty-Year Practitioners.—A dinner was recently given in Kansas City in honor of the following physicians who have passed the half-century mark in the practice of medicine: Dr. John S. Mott, Dr. Jefferson Davis Griffith, Dr. J. C. Rogers, and Dr. John Wilson. Dr. John F. Binnie was toastmaster.

Community Nurses in Illinois.—At a recent conference between Dr. C. St. Clair Drake, State Director of Public Health for Illinois, and Miss Helen Fox of Washington, Superintendent of the Public Health Nursing Service of the Red Cross, it was decided that every community in Illinois having a population of more than 5000 will have a community nurse.

Dr. Max Mailhouse, for twenty years clinical professor of neurology in the Yale Medical School, has resigned, and his resignation has been accepted by the Yale Corporation, with an expression of appreciation of his long service.

Dr. Joseph M. Merchant, the oldest living graduate of Bowdoin College, Me., observed his eighty-sixth birthday at his home in Warren, R. I., March 15. He was graduated from Bowdoin in 1858.

Harrower Prize.—Cash prizes amounting to $500 are offered to members of the medical profession (and to medical students) by Dr. Henry R. Harrower of The Harrower Laboratory, Glendale, Cal., for a series of essays on the internal secretions. There will be five cash prizes: First, $250; second, $100; third, $75; fourth, $50, and fifth, $25. Any subject directly pertaining to the practical and clinical aspects of the internal secretions may be selected. It is suggested that the essays be directed at one special phase of the subject and not generalized too much. It is especially desired to direct attention and emphasis to three important points bearing on the character of the prize essays: (a) The importance of the endocrine glands in *every-day medicine.* (b) The closeness of their physiological and clinical relations. (c) The advances of organotherapy in general practice. Applications must be received before July 1, 1920, and the contest will close August 15, 1920. It is hoped that the awards may be completed and the prizes distributed in October, 1920.

Charitable Bequests.—Appraisal of the estate of the late James A. Scrymser of New York City recently filed shows that the residuary estate of $2,423,784, which was bequeathed for life to his wife, Mrs. Mary A. Scrymser, upon her death will be divided equally between St. Luke's Hospital and the American Red Cross.

Obituary Notes.—Dr. Edwin B. Reed of Asbury Park, N. J., died of cardiac disease February 2. He was graduated from Jefferson Medical College, Philadelphia, in 1884.

Dr. Julius Goldsmith of New York City, died March 10. He was graduated from the Eclectic Medical College of the City of New York in 1905.

Dr. Justin A. Walling of Milbridge, Me., died March 2, at the age of sixty-two. He was graduated from the Medical School of Maine in 1882.

Dr. Lucy L. Wendover of Springfield, Mass., died March 4. She was graduated from the Medical Department of the University of Michigan, and had practised in Springfield for twenty-six years.

Dr. Frank Fletcher Carr of Holden, Mass., died suddenly from cardiac disease March 7. He was graduated from the Medical School of Harvard University in 1893.

Dr. Joseph A. Gendron of Ware, Mass., died March 7 at the age of fifty-nine. He was graduated from Victoria University Medical Department, Toronto, Canada, in 1888. For a number of years Dr. Gendron was chairman of the Ware Board of Health.

Dr. Kenneth A. J. Mackenzie, dean of the Medical Department of the University of Oregon, died at his home in Portland, March 15, at the age of sixty. He was graduated from McGill University in 1881, and had practiced in Portland since 1882. Dr. Mackenzie was Professor of the Theory and Practice of Medicine at the University of Oregon from 1887 to 1907, and latterly Professor of Clinical and Operative Surgery. He was a fellow of the American Medical Association, the American Surgical Association, and the American College of Surgeons.

Dr. H. Murray Loewenthal of Brooklyn, N. Y., died March 13, at the age of forty-seven. He was graduated from the College of Physicians and Surgeons, Baltimore, Md., in 1892.

Dr. Ellen B. Ferguson, for many years a practising physician in Salt Lake City, Utah, died at Whitestone, L. I., March 15. In 1896 Dr. Ferguson was one of Utah's delegates to the Democratic National Convention.

Dr. Frederick J. Leviseur of New York City died March 19, at the age of sixty. He was graduated from the University of Göttingen, Germany, in 1884, specializing in dermatology. He was chief clinician in dermatology at Mt. Sinai Hospital and consulting physician in dermatology to the Montefiore Home and Hebrew Orphan Asylum.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, March 19, 1920.

Insurance Act Changed. — The main object of the Insurance Bill or partial revision of that bill introduced by Dr. Addison, the Minister of Health, into the House of Commons on March 11, last, was to provide for an increase in the rates of benefits under the present acts, in view of the fall in the value of money. The normal rate of sickness benefit is increased from 10/ to 15/ a week in the case of men, and from 7/6 to 12/ a week in the case of women, for the full period of twenty-six weeks; the rate of disablement benefit from 5/ to 7/6 a week for both men and women, and the amount of maternity benefit from 30/ to

40/. The bill does not interfere in any way with the fundamental principles of the National Insurance Act of 1911, which are that the cost of the benefits should be met out of compulsory weekly contributions by workers and their employers, together with a grant from the Exchequer. In order to provide for the increased benefits the joint weekly contribution is to be raised from seven pence to ten pence in the case of men, and from six pence to nine pence in the case of women, and in each case two pence of the increase is to be borne by the employer and one penny by the worker. The proportion of the cost of benefits to be contributed by the State is to be two-ninths in the case of the men as at present, and two-ninths, instead of the present fourth, in the case of women, with an additional Exchequer contribution toward the cost of women's benefits in the form of an increase in the existing Women's Equalization Fund.

An important proposal of the Government is that, except in the case of Ireland, sanatorium benefit shall be discontinued. The bill empowers the Minister of Health to make regulations providing for the disposal of any surplus standing to the credit of the sanatorium benefit fund of an insurance committee, after discharging all liabilities or for meeting any deficit in the fund. Regulations are also to be made to govern the disposal by insurance committee of registers, records or other documents relating to the administration of sanatorium benefit or to persons who have been in receipt of it. The expression "medical treatment and attendance" is to be held to include treatment and attendance in respect of tuberculosis. It is understood to be the intention of the Ministry of Health to deal with the question of tuberculosis treatment as a whole, and to this may be attributed the proposal to remove sanatorium benefit from the Act. Various amendments of the financial provisions of the Act of 1911 are proposed. For example, the sum to be retained by the Minister of Health out of each weekly contribution is increased in the case of men to two pence and one-third of a penny, and in the case of women to one penny and eleven-twelfths of a penny. In consequence of the present general increase in the cost of medical service, the bill provides for an increased contribution from insurance funds toward the cost of medical benefit, and fixes the total charge upon those funds at 9/6 per insured person per annum for medical benefit, including drugs as well as attendance, and a further sum for this purpose will be provided in the shape of a special grant out of public funds. As mentioned in a previous letter dealing with the Insurance Act, arbitration was decided upon to arrange the rate of capitation fee which should be paid to medical men working under the Act. The arbitrators, issued on Friday, March 5, the following award: That having heard and considered the statements of facts and arguments submitted to them, do hereby award, determine and advise that the capitation fee per insured person per annum should be eleven shillings. Although a considerable number of the medical men involved protested that eleven shillings was insufficient, and while there will be some disappointment, it is probable that the result of the arbitration will be accepted without bickering. It must be taken into account that the settlement is only temporary. In order to press their claims with greater force it is essential that the medical profession should not only show a united front but should possess a satisfactory defence fund.

The Nation's Health.—Supporting a supplementary vote in respect of the Ministry of Health in the House of Commons recently, Dr. Addison defended expenditure which had been incurred for precautions at the ports against the introduction of disease, and said that the screen which had been kept round Great Britain had been well justified. Expenditure on child welfare was very proper. This year 400 additional child welfare centers had been opened and we hope to open a great many more next year. They had extended midwifery service for a population of 200,000, and fifty maternity homes had been established. Infant mortality was considerably the lowest on record. It was now eighty-nine, which was eight points lower than in the two previous years, but it ought to be fifty. With regard to national insurance, the standard that ought to be maintained was to get for the insured person as good treatment as a medical man gave to his ordinary private patients. The new medical benefit regulations aimed at improved conditions. As a part of the scheme they were appointing a number of referees and consultants to whom cases might be sent when further advice was desirable.

Women Surgeons.—Yet another new departure has been made. Women physicians have been in existence for a considerable time, and some of the British medical degrees and qualifications are open to them. But a woman surgeon is a rara avis indeed, and the College of Surgeons has been closed tight against the entrance of females. However, the old order of things is passing away not gradually but with celerity, and one by one the forts of masculine privilege are being stormed by women and captured. The Royal College of Surgeons of Edinburgh has resolved to admit women to the Fellowship of the College on the same conditions as men. There seems no particular reason why, if we have women doctors, we should not have women surgeons. It would be no innovation either, as there are said to be many records of women practising as surgeons in medieval times.

Indian Medical Research.—The Secretary of State for India has succeeded in borrowing Dr. E. H. Starling, Jodrell Professor of Physiology at University College, London, whose services are needed to draw up a report before the hot weather sets in on the possible creation of an All-India Institute for Medical Research. Professor Starling will sail at once and will be absent from England for about three months.

Memorial to the Late Sir William Osler in Oxford.—The Vice-Chancellor of Oxford University presided at a public meeting held on March 6, to promote a memorial to the late Sir William Osler. The Vice-Chancellor said that they had met to show the respect and affection that was felt for their late Regius Professor, not only by the University of Oxford, but by the London, and

other universities and other continents. His name would always be associated not merely with the history of the chair he occupied, but with its actual existence by reason of the generous benefaction, of which he thought he was the first to hear from Sir William Osler himself. Whether it would be associated by name with the future history of the School of Medicine in Oxford would depend largely on the result of that meeting. Sir Clifford Allbutt proposed a resolution to the effect that the distinguished services of Sir William Osler were deserving of a permanent memorial in Oxford. Sir William Church proposed "that in view of the intimate association of Sir William Osler's life work with the study of the origin and prevention of disease, the most appropriate form of memorial would be an Osler Institute of General Pathology and Preventive Medicine." Professor Thomson, who seconded, said a memorial of the kind suggested typified the career of the man. Sir William began life by studying the causes of disease, and ended his life as the ardent advocate of the means for preventing disease. The one depended on the other, and in this proposed institution they would typify that intimate and close association. The Home Secretary, Professor Gunn, intimated that he had already entered into communication with friends of the late Professor Osler in America, and a provisional committee had been formed consisting of Professor Welch, John Hopkins University, Baltimore; Harvey Cushing, Harvard University, Billings, Chicago, Dr. Butler, President of Columbia University, and Dr. Walter James, New York, to cooperate with the committee, and it was hoped a similar arrangement would be made in Canada.

Plague on a Japanese Liner.—The Ministry of Health has announced recently that the case of plague occurring on the S. S. *Alpo Maru* in the port of London, announced on Feb. 19, was followed by a further fatal case among the crew while the vessel was in port. The ship was disinfected as far as practicable and left the port of London on March 6.

Obituary.—Dr. Samuel West died in London, on March 2, at the age of 72. He was educated at Oxford University and St. Bartholomew's Hospital, London, taking the degree of medicine of Oxford and the F. R. C. P., London. Dr. West became assistant physician to St. Bartholomew's Hospital in 1887, and full physician seventeen years later, and at the same time was physician to the Royal Free Hospital and to the Victoria Park Chest Hospital. Dr. West was examiner at the Universities of Oxford, Cambridge, London and Birmingham, and at the Conjoint Board. He will be perhaps best remembered for his labors to assist the dependents of impecunious members of the profession by means of the Royal Medical Benevolent Fund. During the war Dr. West initiated the Special War Emergency Fund, and became chairman of the executive committee of the Professional Classes War Relief Council. He was not a voluminous writer but all he wrote was well worth reading, because of its exact knowledge. His "Diseases of the Organs of Respiration" went through several editions, as also his practical guide, "How to Examine the Chest."

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 18, 1920, clxxxii, 12.

1. Ether Day Address: Traditions, Standards, and Prospects of the Massachusetts General Hospital. Richard C. Cabot.
2. The Specific Treatment of Hay Fever. Francis M. Rackemann.
3. A Case of Tumor of the Sacrum. Joel E. Goldthwait.

2. The Specific Treatment of Hay Fever.—Francis M. Rackemann presents a study of ninety-one cases of hay fever treated by means of repeated injections of the specific pollen which caused the disease. This method is now a well established therapeutic procedure, yielding results which are on the whole very satisfactory. These results, however, are often irregular and by no means perfect. The purpose of the writer is not only to detail the results in his own cases, but by studying the irregularity in the results to try to throw light on the mechanism of the disease. The results of treating the ninety-one cases of fall (ragweed) hay fever are as follows: Nearly 9 per cent. of patients are entirely freed of their symptoms; another 62 per cent. are considerably relieved. Of the remaining 28 per cent., about one-third showed no relief at all. These results were determined by a personal communication to each patient four to six weeks after the ragweed season. Because this final report was not obtained, nineteen other cases are not included. The best results are apparently obtained with a moderate amount of specific treatment since in these cases even after considerable preparation the tolerance for ragweed pollen extract still remains at a very low level. Systemic reactions occur after two per cent. of individual injections and are not always due to an overdose. In view of the fact that so few of the postulates of experimental anaphylaxis hold good for hay fever, it is probable that hay fever depends upon a mechanism which is not "anaphylactic" but which is perhaps closely associated with that of drug idiosyncrasies.

New York Medical Journal.

March 13, 1920, cxl, 11.

1. Practical Application of Methods of Standardization of the Hospital. George Gray Ward.
2. Acute Abdominal Conditions. John B. Deaver.
3. Killian Operation on Frontal Sinus and Ethmoids. Lewis A. Coffin.
4. The Scope of Selfreparative Measures. J. Madison Taylor.
5. The Reconstruction of the Workman After Injury. Preston Le Breton.
6. Treatment of Influenza. Jacob Munter Lobsenz.
7. Results of Operation In Pelvic Disease. G. Paul Laroque.
8. A New Method for Blood Transfusion. George I. Miller.
9. The Problems of Eugenics in Connection with the Manic Depressive Temperament. B. Onuf.

1. Practical Application of Methods of Standardization of the Hospital.—George Gray Ward reviews briefly some of the afforts made along the line of the standardization of hospitals, giving the requirements of the minimum standard as laid down by the American College of Surgeons, and discusses the provision of the Board of Governors of the Woman's Hospital, New York, for a reorganization of the service in line with this movement. He emphasizes the point that as soon as the trustees of hospitals and the public at large appreciate that at present they have no accurate knowledge of the character of the work being done, and that they cannot have such knowledge unless a systematic study of end results is carried out on the lines followed in large industrial plants where the production sheet shows facts, not suppositions, they will demand such a public accounting, and if it falls short of what they have a right to expect of the hospital and its staff, they will insist upon the necessary reorganization to make that institution efficient.

5. The Reconstruction of Workmen After Injury.—Prescott Le Breton holds that three things are needed in the city to provide for the large class of workmen rendered defective through injury, and these should be under the supervision of the city and under the department of public welfare. He states these requirements as: 1. An employment bureau for the partially disabled, where such men can apply and leave their names,

and where employers can find men as they need them. 2. A Zander treatment room in connection with some large hospital or dispensary, where the work for the man can be directed by surgeons. In this room, which should be in charge of a Swedish masseur, there should be a sufficient number of simple exercising machines, such as were used during the war. By means of massage, and voluntary motions, many cases can be materially improved. This end treatment is so often neglected in practice, but is effective in many cases in relieving poor circulation, strengthening muscles, loosening stiff joints, and overcoming pain and soreness. 3. The most important item is the opportunity of learning some simple trade whereby in a few months such men can earn enough to support their families. The most practical place for this is in one of the technical schools where industrial trades are taught.

New York Medical Journal.

March 20, 1920, cxl, 12.

1. The Treatment of Flail and Stiff Joints. Sir Robert Jones.
2. Appendicitis in the Argonne. Ellsworth Eliot, Jr.
3. Gonorrheal Infection in Childhood. P. Brooke Bland.
4. Blood Transfusion in Modern Therapeutics. George I. Miller.
5. Influenza Pneumonia. Joseph Harkavy and John Hunter Selby.
6. Goitre. J. Christopher O'Day.
7. Etiology, Treatment and Results of Cholesteatoma. J. Morrissett Smith.
8. Electrotherapeutics and the Medical Profession. Henry Finkelpearl.

3. Gonorrheal Infection in Childhood.—P. Brooke Bland considers gonorrhea one of the most troublesome and serious infections in infancy and childhood. This malady is much more frequent in the female than in the male, but fortunately widespread infection in little girls is far less common than in women who have entered the active menstrual life or those in early adolescence. Deep pelvic involvement in children, therefore, is not the rule, although destructive peritonitis before the advent of menstruation does sometimes occur. This favorable tendency of the disease to localization is overbalanced by its vicious determination to persist and to develop into a family or institutional contamination, as seen in a general infection of a family group, in girls' orphanages, or in the pediatric wards of hospitals. In the great majority of cases of vulvovaginitis—as gonorrheal infection in female children has come to be called—the infection is indirect and the organisms are conveyed to the children through ignorance and carelessness. Direct infection by coitus with the infected male adult is comparatively rare, as likewise is parturient infection. The majority of cases occur between the second and tenth years. The constitutional reaction to the disease is not commonly observed by the physician and the general systemic symptoms, as a rule, have disappeared when the patient is presented for treatment. The first complaint is of itching, which is quite constant day and night, and may be so pronounced as to interfere with the child's rest. This itching, and the rubbing incident thereto, may be the first signs to arouse the parents' suspicion of trouble. The child also complains of a burning or stinging sensation which is decidedly aggravated during urination, causing the child to refrain from emptying the bladder as long as possible. If marked urethral involvement complicates the trouble, the dysuria becomes more marked. Shortly after the onset of the disease the discharge appears, at first thin and ichorous, later assuming the typical thick yellow or yellowish-green profuse gonorrheal type, in the still later stages becoming mucoid, creamy or watery. The duration of vulvovaginitis is as varied as its course. Many cases respond fairly promptly to treatment and tend to a favorable result; in others, despite every measure, the trouble persists and recurs. Prognosis should always be guarded. Under the head of treatment the writer emphasizes the importance of preventive measures, especially in institutions for girls, babies' hospitals and pediatric wards of general hospitals. The active treatment should begin with the use of simple non-irritating solutions and applications, care being taken to cause as little fright and pain as possible for the first few treatments. Bland advocates copious cleansing of the vulva and vagina for two or three days with simple warm water. This is accomplished through a number fourteen soft rubber catheter. After gaining the confidence of the child, Lugol's solution of iodine in warm water is employed; beginning with a very weak solution, usually one quarter of a teaspoonful to two quarts of warm water, or approximately one quarter of one per cent. This is gradually increased to one per cent. The vulva is first thoroughly cleansed with this preparation, after which the catheter is introduced into the vagina and this canal is thoroughly flushed. The irrigation is carried out morning and evening and continued for at least three or four weeks. In addition, once daily a twenty-five per cent. solution of argyrol is instilled into the vaginal canal. At the same time the vulva is painted with this material and a cotton pad moistened with twenty-five per cent. argyrol is placed in contact with the labia and vestibule. After a month or six weeks the irrigation is used once daily, but the application is carried out daily. This treatment is continued until four successive negative smears are returned and also until the complement fixation test is negative.

4. Blood Transfusion in Modern Therapeutics.—George I. Miller holds that the transfusion of blood in some cases is as absolute a specific as is quinine, digitalis or salvarsan. Performed in a proper case and at the proper time, transfusion is an immediate life-saving therapeutic remedy, unequaled by any drug, including the specific remedies. A patient who is unconscious from gas poisoning, or from acute loss of blood from any cause, can often be saved by the prompt transfusion of blood, and not always by saline or drugs. The writer cites several cases with different pathological lesions in which transfusion was done. In hemorrhagic diseases of the newborn he found that transfusion checked the bleeding and restored the blood which had been lost. Anemia resulting from profuse and prolonged menstruation in virgins may be remedied by transfusion when the usual remedies have failed to check the bleeding. In patients who suffer from blood dyscrasia, as in hemophilia, transfusion of whole blood renders the coagulation time approximately normal and checks the bleeding. In purpura hemorrhagica transfusion is an exceedingly valuable remedy. The writer feels certain that in pernicious anemia life can be prolonged by transfusion, but a complete recovery cannot be promised. The successful use of transfusion in these and other affections leads Bland to believe that it is a therapeutic remedy of the greatest value when employed in the early stages of the various conditions.

Journal of the American Medical Association.

March 20, 1920, lxxiv, 12.

1. General Prognosis of Syphilis in the Light of Recent Progress. Sigmund Pollitzer.
2. The Rôle of Carbohydrates in the Treatment of Toxemias of Early Pregnancy. Paul Titus, George L. Hoffman, and M. H. Givens.
3. The Therapeutic Use of Carbon Dioxid After Anesthesia and Operation. Yandell Henderson, Howard W. Haggard, and Raymond C. Coburn.
4. Tetany in a Case of Sprue. A. L. Barach and H. A. Murray.
5. Agreement in Results of the Wassermann Reaction: A Study of Tests Performed by Two Laboratories in Three Thousand Successive Hospital Admissions. Harry C. Solomon.
6. Duodenal Perforation (Fistula) Treated by Duodenal (Jejunal) Alimentation: Another Case. Max Einhorn.
7. Gumma of the Breast: Report of a Probable Case. Loyd Thompson.
8. Laryngeal Crisis with an Unusual Complication: Report of Case. Lewis T. Gregory.
9. A Method of Treatment for Neurosyphilis. John A. Kolmer.
10. An Analysis of Fifty-six Cases of Breech Presentation: Description of a Method of Delivery in Which Manual Extraction of Extended Arms Is Rarely Necessary. Harbeck Halsted.
11. Digestibility of Steam-Cooked Soy Beans and Peanuts. Arthur D. Holmes.

2. The Rôle of Carbohydrates in the Treatment of Toxemias of Early Pregnancy.—Titus, Hoffman and Givens discuss theories regarding the etiology of toxemia of early pregnancy, the development of treatment from a dietetic standpoint, giving in tabular form a general outline for diet high in carbohydrates, and the application of the carbohydrate deficiency theory; review their cases under three groups, and give a pre-

liminary report of chemical and experimental investigations. Their views are set forth in the following conclusions: 1. The problematic relationship between mild and profound toxemias of pregnancy warrants a study of the former in order to gain information regarding the latter. 2. The development of a course of treatment, the success of which seemed to depend on the use of carbohydrates in large amounts, led to the assumption that a deficiency in carbohydrates has an important bearing on the origin of toxemia of pregnancy. 3. Carbohydrate deficiency during pregnancy is of twofold origin: (1) a relative deficiency due to an unexpected demand for glycogen on the part of the fetus and the uterus, and (2) an actual deficiency, augmented in the presence of nausea and vomiting, from lessened carbohydrate intake. 4. Carbohydrate deficiency in the maternal organism causes a glycogen depletion of the liver, because this is the organ in which carbohydrates are stored for use as needed. 5. There is experimental evidence to show that liver function is impaired and the body flooded with toxins after carbohydrate starvation. 6. Pathologic changes in the liver lobules which are similar to those of fatal toxemias of pregnancy can be produced experimentally by the use of certain chemical poisons. These changes can be made to disappear rapidly by the ingestion of carbohydrates. 7. Mild cases of nausea and vomiting may be controlled by so regulating the diet that there is a preponderance of carbohydrates, and an avoidance of more than short intervals of fasting by the taking of food more frequently than under ordinary circumstances. This increased carbohydrate intake should be augmented by giving the patient from 8 to 16 ounces of 10 per cent. glucose and 2 per cent. sodium bicarbonate solution daily by mouth. This may be given in 1 or 2 ounce doses. More severe cases require more rigid attention. After an initial period of rest, gastric lavage and the introduction of saline cathartics through the stomach tube, small amounts of liquid food are allowed alternately with from 1 to 2 ounces of the glucose and soda solution, every two hours. By mouth or by bowel it should be possible to give the patient 1 quart of this solution daily. In the seriously toxic patients the treatment is pushed even more vigorously with the addition of intravenous injection of from 15 to 25 gm. of glucose in from 250 to 300 c.c. of water. This is given from one to three or more times daily, according to the needs and response of the patient. 8. Not only is intravenous injection of glucose solution a valuable therapeutic measure, but the rate of its absorption and storage by the liver is an index of liver efficiency which is of prognostic value. More rapid storage than normal is favorable because it indicates that the liver, depleted as it has been of glycogen, is nevertheless still able to restore itself. Storage which is slower than normal offers an unfavorable prognosis, since this is evidence that liver efficiency is impaired.

6. Duodenal Perforation (Fistula) Treated by Duodenal (Jejunal) Alimentation.—Max Einhorn reports another case of duodenal perforation successfully treated by jejunal alimentation, report of the first cases having appeared in the MEDICAL RECORD for November 30, 1918. In the present case the diagnosis of a duodenal fistula situated between the pylorus and the papilla of Vater was established by the character of material oozing from the fistula. It was of alkaline reaction and contained food particles and usually no bile. As the patient had enough acid in his stomach the fistula must have come from the duodenum. The frequent absence of bile in it demonstrated that the opening must be situated above the papilla of Vater. This conclusion appears to find corroboration in the roentgen-ray examination and also in the clinical syndrome. The treatment consisted of atropine in conjunction with the jejunal alimentation. The patient first lost considerable weight (20 pounds). After three weeks of jejunal alimentation, the tube was pulled up to some extent so that the capsule end was now situated in the duodenum proper, thus giving real duodenal alimentation, which agreed with the patient much better, as he lost no more in weight, subsequently regaining the initial loss. The healing of the fistula by duodenal alimentation in the case described and in the one previously reported shows that in the duodenal tube and the method of feeding through it one has an important aid in overcoming this very tedious and what was formerly thought to be an almost intractable condition.

British Medical Journal.

February 28, 1920, i, 3087.

1. A Lecture on the Diagnosis of Glaucoma. Lieut-Colonel R. H. Elliot.
2. Neurological Jottings. James Taylor.
3. Intravenous Protein Therapy. A. E. Gow.
4. The Poison of the Spiny Dog-fish. A Case of Acute Oedema the Result of a Prick by a Dog-fish, and a Preliminary Note on the Poison Gland of the Spiny Dog-fish. H. Muir Evans.
5. Metastatic Staphylococcal Infection of the Kidney. H. R. Souper.
6. Volvulus of the Caecum: Double Obstruction. R. Eccles Smith.
7. The Use of Immunized Blood Donors in the Treatment of Pyogenic Infections by Whole Blood Transfusion. J. B. Fry.
8. The Functional Connection between the Reproductive Organs and Other Glands of Internal Secretion. Evelyn E. Hewer.

1. The Diagnosis of Glaucoma.—Lieut.-Col. R. H. Elliot considers that one of the tragedies of ophthalmic practice lies in the frequency with which one meets men and women blinded by glaucoma, simply owing to the failure of the medical men in charge to make an early diagnosis of the condition and to take unflinching action thereon. It is not that there is any real difficulty in recognizing what is wrong, but rather that the possibility of the existence of the disease is too often forgotten, with the result that the symptoms are ascribed to some more commonly met with condition. The writer approaches the subject from this angle, discussing the outstanding signs of glaucoma which first impress themselves on the attention of the patient and of his doctor, and showing the steps which the practitioner can and should take in order either to make a firm diagnosis of glaucoma or to exclude the presence of that disease. The first symptom discussed is headache, which may be a passing morning headache, headache after near work, severe headache often attended by vomiting. Loss of sight, like the headaches, may vary greatly in different patients. The typical varieties are gradual loss of sight without any apparent cause; gradual loss of sight with intermittent headaches; marked losses of sight, clearly following severe attacks of headache. With regard to the loss of vision the writer warns that when a patient thinks his sight is failing it is unwise to dismiss him as a *malade imaginaire*. It should be remembered that simple glaucoma may be far advanced, with nothing to indicate its presence but what he had ventured to call "the triad of glaucoma signs"—(a) contraction of the visual field; (b) cupping of the disc, and (c) failure of central visual acuity. Even the last named defect may be but poorly marked. Assuming the actual existence of a gradual loss of sight, the differential diagnosis must be made between chronic glaucoma and (1) cataract, (2) refraction errors, (3) brain trouble, and (4) optic atrophy. When there is gradual loss of sight with intermittent headaches one should be on the lookout for glaucoma as a possible causative factor. One should not, then, be content to treat one's patient for biliousness or for nervous breakdown until glaucoma and cerebral tumor have been considered. One should make a point of seeing the patient in an attack and then look for the dilated pupil, the rise in tension, the shallow chamber, and the evidences of ocular congestion that attend rises in intraocular pressure. In the intervals one should examine the discs and visual fields. If still in doubt, expert opinion should be sought. In cases of marked loss of sight, clearly following severe attacks of headache, the eye condition may be altogether missed unless the surgeon bears its possibility in mind.

Possible Contagion of Cancer.—Mauclaire relates the case of a man with cancer of the penis whose wife was suffering from cancer of the vagina. The former antedated the latter clinically, which fact makes the identity of the transmitter doubtful. The observation was defective, there having been no histological examination. If there was transmission there was doubt as to whether contagion or mere implantation was involved, for the two processes differ widely.—*Gazette des Hôpitaux.*

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting Held in New York City, March 23-25, 1920.

SECTION ON SURGERY.

First Day, Tuesday, March 23, 1920.

DR. CLAUDE C. LYTLE OF GENEVA IN THE CHAIR.

Remarks on the Diagnosis of Right Iliac Fossa Pains and the End Results in 200 Operations for Chronic Appendicitis.—Dr. CLARENCE A. MCWILLIAMS of New York read this paper, in which he said that their attention had been drawn to this subject because there were many individuals who continued to complain of right-sided pain after the appendix had been removed in the hope of relieving their symptoms. At the Presbyterian Hospital, during the years 1916 and 1917, 200 operations for chronic appendicitis had been performed on ward patients, who were kept under observation by a very strict follow-up system. Of these cases 145, or 73 per cent., were females and 27 per cent. were males. Cures were effected in 151, or 75 per cent.; 22, or 11 per cent., were improved, and in 13 per cent. there was a failure to cure. In this series of cases there was no instance of subsequent hernia in the scar of inguinal hernia. In a series of 58 cases in private practice, not operated on by any one man, the results were by no means as satisfactory. This indicated that hospital cases were more carefully worked up than private cases and that there should be a more careful study of private patients before operation for the purpose of detecting associated or concomitant conditions that might be causing the symptoms. It was advisable to abandon the old gridiron incision for an ample right rectus incision or a transverse incision which would allow of thorough exploration of the upper abdomen and pelvis. Dr. Charles L. Gibson had recently reported their results at the New York Hospital where during the past two years they had reduced their bad results from 30 to 11 per cent. This Dr. Gibson attributed to more thorough diagnosis, a wider incision, and the use of 5 per cent. picric acid instead of iodine which was very irritating. Many patients were operated on for appendicitis when the symptoms were caused by other conditions. Cases of splanchnoptosis were often operated on for appendicitis. Of 120 cases of nonoperated ptoses, 87 complained of right-sided pain. Hence in these cases a degree of conservatism should be exercised, unless there was a history of previous acute attacks of appendicitis. Cases of this class were as a rule greatly benefited by abdominal support. Neither Lane's kink nor Jackson's membrane were in themselves of great significance. Many of the symptoms supposed to be due to these conditions were the result of faulty posture and incorrect methods of breathing. Many adhesions in the upper abdomen and in the intestines were due to faulty posture and lack of physical development. Setting up exercises would do more for women than any other one thing. A dilated, prolapsed cecum should be plicated at the time the appendix was removed. They had had a number of cases in which this was done with benefit. The kidney and ureter might be the cause of symptoms simulating those of appendicitis. In some cases it was almost impossible to differentiate duodenal ulcer from chronic appendicitis. Chronic jejunal obstruction due to adhesions or by overlying mesenteric vessels, as well as duodenal obstruction, might also simulate chronic appendicitis. Duodenal obstruction bid fair to be discussed far more in the future than it had been in the past. It was easy of demonstration after a bismuth meal. At the time of operation for chronic appendicitis a careful exploration of the abdomen and pelvis should be made.

Dr. HAROLD BARCLAY said that undoubtedly there were too many operations for chronic appendicitis where the appendix was not at fault. Their records included some 1500 operated cases and among these there were some 100 futile appendectomies. This emphasized the importance of working up these cases more carefully before operation and of using more conservatism. As to the differential diagnosis between appendicitis and duodenal ulcer, where the *x*-ray was not available a gastric analysis was of value. Most cases of chronic appendicitis showed slight hyperacidity but by no means as much as was found in duodenal ulcer. Where a patient had all the hunger symptoms and had acidity only slightly increased chronic appendicitis or gallbladder irritation was probably present; if hyperacidity was considerably increased, duodenal ulcer might be suspected. This was so constantly true that he had come to put considerable faith in it as a differential diagnostic point. As to the cases of enteroptoses he had formerly been inclined to put them to bed and give them a so-called fattening cure, but in the last year he had to a great extent given that up; he had obtained a man who was a gymnastic instructor and had given these patients a thorough course in gymnastics, which had developed their muscles, and had them taught to breathe properly.

Dr. PARKER SYMS of New York said he thought Dr. McWilliams had expressed what was accepted as the opinion of modern surgeons on this subject, namely, that they would have to become more careful in the selection of cases for appendectomy. In a large number of enteroptotic individuals the appendix had been removed, and in many of these it was found to be abnormal, but in this class of patients the removal of the appendix would not relieve symptoms other than those due to the appendix itself. Operations for conditions supposed to be due to Jackson's membrane were usually harmful rather than beneficial. Jackson's membrane should be operated on only when there was a definite lesion as a constricting band that gave rise to symptoms. He never stripped the bowel if there were fan-shaped adhesions but divided the adhesions at the flank. The question as to the relation of iodine to adhesions should be worked out. Where iodine had been used in the abdomen for the purpose of producing adhesions in cases of tuberculous peritonitis it was found that adhesions could not be produced in this way; it might be different under other conditions. It seemed to him that adhesions were due to a certain degree of infection.

Dr. LEROY BROUN of New York said that their experience at the Woman's Hospital was quite similar to that at the Presbyterian Hospital. He thought that in operating for chronic appendicitis they should only operate on those cases giving a history of acute attacks of appendicitis. Dr. McWilliams was correct in saying that they did not study their cases carefully enough to eliminate the possibility of error. One of the best means we had of differentiating these conditions was oxygen distension of the peritoneal cavity associated with the bismuth meal and roentgenologic study. In that way adhesions could be beautifully and distinctly demonstrated if present. Dr. McWilliams was also correct in saying that many cases of ptosis were submitted to futile operations for chronic appendicitis. At the Woman's Hospital they had a severe follow-up system. A monthly report was made by the surgeon upon his cases after they had been carefully followed up and only those cases satisfactory or partially satisfactory were discussed. If a patient returned after appendectomy with a right-sided pain, that operation was put down as a failure. Such a method was an incentive to a more thorough study of the cases before operation. Frequently private patients failed to avail themselves of the methods of diagnosis that the hospitals gave to the ward patients.

Dr. JACOB KAUFMANN said the internist saw quite a number of these failures following operations for chronic appendicitis. On this question he had arrived at a number of conclusions, one of the most important of which was that it was a mistake to make anatomical findings a basis for diagnosis and to forget to study function; it was the pathological physiology that counted rather than the pathological anatomy. It had been correctly pointed out that the majority of the chronic appendicitis cases had enteroptosis, and enteroptosis was not a disease in itself but a part of a general condition which produced all sorts of abdominal disturbances. These patients were often asthenics, and were suffering from mental and emotional overtaxation which interfered with the proper function of the gastrointestinal tract, and one must take all the factors into

consideration if he expected to get satisfactory results. Removal of the appendix did not always remove the pain in the right iliac fossa because this pain originated in the nerve plexuses surrounding the arteries and often pressure on the left iliac fossa would be found to be as painful as on the right side. It was correct to remove adhesions when they produced mechanical disturbances, but one must take into consideration the make-up of the patient. He fully agreed that in the cases of ptosis it was better to give proper exercises and treatment directed to the improvement of the general tonicity.

Dr. JOHN F. CONNORS called attention to the fact that they had been taught that pain in the right iliac fossa meant appendicitis and the same thing was being taught to-day. It was true that the private patient often did not get the same careful study that was given to the ward patient. Frequently when the surgeon was consulted the family physician had already made the diagnosis and the surgeon accepted it. A great many men did the operation through the McBurney incision, and that was a small incision; that was one reason there were so many failures. The incision must be large enough to permit of a thorough exploration of the abdomen. It was important that medical students should be taught that other conditions besides appendicitis caused pain in the right iliac fossa, and they should be taught not to perform the operation through the small intramuscular incision with one finger in the abdomen.

Dr. CHARLES L. SKINNER of Port Jervis called attention to the fact that in appendicitis there was an asphyxiation of the red blood cells by the toxins from the appendix and as a result there was universally a darkening of the veins in the right iliac region as compared with those in the left iliac fossa and upper abdomen. Pain itself was of very little value from the diagnostic standpoint. One very important symptom was neuritis of the lower intercostal nerves. The finding of pain at the points where the main branches and posterior roots of these nerves were given off and pain at the terminal points of these nerves should help in differentiating intercostal neuralgia from appendicitis.

Dr. MCWILLIAMS said he did not think their results in the hospital cases were as bad as one might be led to think from the discussion. They had had practically 73 per cent. cures and 13 per cent. failures. The main point was the need of more acuteness in diagnosis. He had never been able to detect the darker color of the veins in the right iliac fossa as compared with those in the left iliac region.

Dr. PARKER SYMS asked Dr. Skinner how he thought the darker color of the veins was produced.

Dr. SKINNER replied that he could not tell exactly, though he had observed it since 1891 and had taught other surgeons to recognize it. The darker color of the veins was particularly noticeable above Poupart's ligament and in those veins that converged towards the upper part of Poupart's ligament. There was a connection between superficial epigastric veins and those of the cecum that might lead to pressure on the portal system that caused a backflow.

Surgical Physiology and Pathology of the Colon from the X-Ray Standpoint.—Dr. JAMES T. CASE of Battle Creek, Mich., gave this demonstration by invitation. He said that the slides he had to show would serve as a discussion on Dr. McWilliams paper. He first showed slides of the normal colon and described it, and then discussed the question of position versus function. The normal colon had a wide range of motion, particularly the transverse portion. Lane's kink, hepatic-colonic and other varieties of adhesions might be the cause of stasis that would eventually produce appendicitis. A cecal stasis might often be due to obstruction in the distal colon rather than to a Lane's kink or a Jackson's membrane. The colon had three types of movements: (1) The right one-half showed antiperistaltic movements; (2) the left one-half had segmental and gross movements; (3) there were propulsive movements which directed the contents from the right towards the left. The normal transverse colon assumed various positions at different times, being sometimes high and sometimes low in the abdomen. Many slides were shown demonstrating the existence of an antiperistaltic wave. Cases showing this condition were frequently cases of colitis having no surgical lesion. Antiperistaltic movements were frequently responsible for stasis in the cecum. Respiration played a great part in the physiology of the contents of the colon, and undoubtedly helped in moving them forward. Propulsive movements occurred twice as rapidly as antiperistaltic movements. A failure to understand the mechanism of antiperistaltic action might lead one to interpret an *x*-ray plate showing this action as indicating the presence of ulcer or some form of gross pathology. It was important to differentiate between a true Jackson's membrane and a loose membrane that originated from the upper surface of the liver and gallbladder which did not cause colonic stasis. It was meddlesome surgery to interfere with such a loose membrane. Adhesions of the pelvic colon were quite common after salpingectomy; these in a number of cases he had been able to relieve with very satisfactory results. Adhesions of the pelvic loop were often the cause of ileocecal pain and afforded one explanation of why appendectomy sometimes failed to relieve right-sided pain. All cases of supposed chronic appendicitis needed careful study and one should particularly study the distal colon.

Dr. L. P. VAN WINKLE of Brooklyn, speaking from the viewpoint of the roentgenologist, said that Dr. Case had certainly shown them some wonderful pathology. One of the most important things from this standpoint was a careful and painstaking examination. One could not make the diagnosis from one X-ray plate or one examination, but from many plates and many examinations, supplemented by the fluoroscope, and with the patient in various positions. He asked Dr. Case if he had been able to standardize the amount of fluid injected into the colon and whether he thought it could be standardized, since the amount of fluid injected might be an important factor in relation to the amount of distension of the colon. He also asked Dr. Case whether he resorted to the stereopticon and whether he thought it was necessar to employ pneumoperitoneum. He had not tried it. A careful examination of the right kidney and ureter was also an important point that should not be forgotten in cases of right-sided pain.

Dr. CASE, in closing, emphasized the point that the *x*-ray was not the only method of studying these cases and that in none of these cases should one depend upon the *x*-ray alone. They should be studied from the standpoint of internal medicine. As to a number of *x*-ray plates, if he were making the examination, he would not feel it necessary to make *x*-ray plates at all in some cases, because he could make the diagnosis by means of the fluoroscope, and indeed one might be widely misled by the *x*-ray unless it was checked up by the fluoroscopic examination. The stereopticon was very helpful. It was their custom to make a stereopticon examination as that showed the relation of the colon to the other parts. The amount of the enema was quite constant, being about three pints. It was allowed to flow into the colon by gravity from an elevation of about two feet. Pneumoperitoneum he considered one of the greatest advances of roentgenology to-day. It was useful in supplementing fluid in ascites; it showed retroperitoneal tumors and pancreatic cysts: it was useful in differentiating the relation of the diaphragm to the liver, kidneys and spleen, but he would hesitate to use it until he had exhausted other methods of diagnosis, though if carefully conducted it was apparently without serious danger to the patient.

Technique of Anorectal Operations Under Local Anesthesia and Rectal Instrumentation.—Dr. SAMUEL GANT gave this motion picture demonstration. He said that it was possible under local anesthesia to perform an appendectomy, a colostomy, or to do work on the sigmoid, but he did not employ local anesthesia for operations of that kind unless a patient could not take a general anesthetic. He regularly did all his rectal work under local anesthesia, using one-eighth of one per cent. eucaine. The eucaine kept indefinitely and was effective. The injections should be given intradermally. Eucaine was preferable to quinine and urea which sometimes caused sloughing an induration. In removing thrombotic hemorrhoids he simply turned out the clot and did not put in sutures. If sutures were used a drain should be employed. After removing thrombotic hemorrhoids it was a mistake to tell the patient that he would have

no further trouble. Local anesthesia was not desirable in operating on deep fistulas, or in any operation in which the surgeon did not know the extent of the operation before he started to operate. In operating for anal polyps, fissures, ulcers, or external or internal hemorrhoids, he never used any thing but local anesthesia. It was an advantage to have a large needle and a copious syringe. There was very little hemorrhage in operations performed under eucaine anesthesia. Cocaine should never be used and adrenalin was not to be recommended because it first contracted the blood vessels, and they later relaxed and secondary hemorrhage might follow. One reel showed the removal of an enormous adenoma with the patient under local anesthesia; this had necessitated keeping the patient in the hospital only over one night. He never divulsed the sphincter in cases of ulcer or fissure. Under local anesthesia a hemorrhoid operation could be performed in five minutes and a fissure operation in two minutes. In employing the clamp and cautery method in operating on hemorrhoids one was likely to have a stricture if too much skin was removed. He had seen five hundred strictures following the Whitehead operation. Dr. Gant also demonstrated his method of operating for the relief of pruritus ani under local anesthesia. He made four button-hole incisions and by scissors dissection under the skin cut off the nerves around the itching area. Hemorrhage never occurred when this form of local anesthesia was properly employed. He believed that 95 per cent. of hemorrhages following operation were due to the ether, which caused vomiting and straining. In operating for pruritus ani he gave morphine about a half hour before the operation and again about fifteen minutes after. A motion picture illustrating of his method of introducing the proctoscope and of Gant's valvotomy clamp closed the demonstration.

Dr. PARKER SYMS of New York expressed himself as averse to making injections in the neighborhood of the anus, for the reason that he objected to a stab wound in a region that could not be surgically sterilized. All one needed to do was to touch the hemorrhoids with carbolic acid and then with alcohol and then they could be opened without the slightest pain. He preferred the clamp and cautery method because he thought it was safest and most painless and gave the most comfortable convalescence. He fully agreed to the importance of avoiding a general anesthetic if possible. One could use a method of anesthesia that was not new but had been put on a scientific basis by Dr. Thompson of Nashville, that was sacral anesthesia. He had been using sacral anesthesia in all his perineal prostatectomies, and had found it universally successful. There was no danger of infection and it produced a real anesthesia.

Dr. GANT, in closing, said the results of this operation for pruritus ani were not always permanent, unless the original cause was removed. He did not get infection with eucaine anesthesia and he did not use elaborate precautions for sterilization. It took about five minutes to make the necessary preparations. He thought the secret of his success was a large operation and free drainage. Ten times he had had hemorrhages in doing the clamp and cautery operation and did not do it any longer. The application of carbolic acid and iodine had no effect on the subcutaneous tissues. As for sacral anesthesia, it took longer and one had to be very careful to insert the needle just at the right point.

Second Day—Wednesday, March 24, 1920.

DR. CLAUDE C. LYTLE OF GENEVA IN THE CHAIR.

Abdominal Incisions.—Dr. CHARLES W. HENNINGTON of Rochester presented this paper. He stated that there was still a great difference of opinion in reference to abdominal incisions. The final decision as to which was best would be decided by a further study of the normal healing of tissues. In general the location and direction of the incision ought to be determined by its effect on the muscles and innervation. The approach to this question depended upon anatomical and embryological considerations. He felt that many of the objections recently raised to the McBurney incision would vanish if attention were paid to the complete and orderly separation of the layers. Whether the high or low McBurney incision was to be employed must be determined by examination and final palpation when the patient was under the anesthetic. The low McBurney, to his mind, was preferable as it gave better access for exploring the abdomen. The occurrence of hernia after the McBurney incision was due to needless destruction of the innervation. The other lateral incision was that through Petit's triangle, with a similar spreading of the muscles. This afforded a good approach to the retroperitoneal appendix and to the kidneys and ureter. This incision also had the advantage that it admitted of excellent closure and disturbance of the innervation could be avoided with moderate care. The transverse incision had been slow in gaining favor and justly so, in his opinion. Although the transverse incision permitted of a wider exposure, the muscle fibers of the rectus muscle were longitudinal, and furthermore the transverse incision did not readily lend itself to enlargement or alteration, and the difficulties of closure outweighed those that were encountered when the muscle was divided longitudinally. The best way of closing the transverse incision was by the "cross-buck" mattress suture. The best approach to the lower abdomen was by the classical longitudinal mid-line incision. There was, of course, greater danger to the innervation from a long than from a short incision. The toxicity absorbed might be just as great from a short incision as from a long one. A wound with bruised edges, even if short, might give a greater degree of toxicity than a long one with clean unbruised edges. In closing any incision emphasis was to be laid on the exact approximation of similar structures. The explanation of painful scars was dependent upon two factors, the inclusion of nerves in the scar and traction produced by tension on the scar. He had had a special opportunity of observing scars in France, since where he was located they had a considerable number of soldiers sent back from base hospitals because of painful abdominal scars, and these men proved a serious problem. It was a question whether they could be sent back as Class A men. Many hernia operations had been done in camps in the United States, and it would be interesting to know the exact percentage of these men who were really fitted for Class A military service. He was confident that a large number of these repairs had failed to make Class A men, and he thought they should be placed in Class B limited service. The fact that many of these men who had had operations for hernia, as well as those having undergone other abdominal operations, complained of painful scars gave weight to the idea that excessive scar formation was to be avoided. In closing an abdominal wound the aim should be not merely the avoidance of hernia but actual normal anatomical and physiological restitution of the abdominal covering.

Dr. EDWARD WALLACE LEE of New York asked for an expression of opinion as to whether there was such a thing as a constitutional tendency to scar formation. He asked this because they saw a great many cases that had been cared for by the most delicate and scientific technique and yet a hard unyielding scar would form. On the other hand, there were cases receiving no attention whatever in which primary union without scar formation took place; this sometimes occurred even when there was laceration with a great deal of contusion. There was a theory that where there was keloid formation or a tendency to keloid formation there was a strain of colored blood in the veins no matter how white the person might seem to be.

Dr. C. G. GOULD of New York said he had endeavored to popularize the transverse incision in the lower part of the abdomen, but not in the upper part as he was concerned chiefly with gynecological operations. The transverse incision was being used a great deal in the Mayo Clinic. Dr. Stimson was the first man in New York to use it, but it did not become popular until Pfannenstiel developed it. It had the advantage of avoiding post-operative hernia which occurred so frequently after the median line incision. Dr. Child took issue with what had been said regarding the McBurney incision. He believed the McBurney incision was out of date. Dr. Hennington said the low McBurney incision was preferable to the high McBurney. Why not use a type of Eliot-Davis incision which fulfilled all the requirements that Dr. Hennington had laid down.

It gave a better exposure than the low McBurney incision. He was surprised that this incision had not been used to a greater extent in New York. He took for granted that non-absorbable sutures were used in closing the incision though the reader of the paper had said nothing about suture materials. As to keloids he had observed that 90 per cent. of these occurred after median line incisions. He did not think the question of race entered into the question because he had seen the same individual operated on at one time by a longitudinal incision and at another time by a transverse incision and a keloid had occurred in the longitudinal scar and not in the transverse. He did not operate on males but in females the transverse incision was the ideal one. It was in the direct line of all the tissues that they were working with and with a minimum incision a maximum amount of exposure was effected with the least amount of trauma.

Dr. E. MacD. Stanton of Schenectady said he had always felt that the question as to which was the best type of incision could only be solved by definite statistical data, by keeping clear records of early and late results for a period of one or two years following operation. He had several years ago reported five or six hundred cases before this section, and he believed the really important factor was not the question of whether a little keloid formed but whether there was really firm union. The highest percentage of hernias occurred not at three or four months but a year or so after operation, and the type of incision that caused the most trouble was the McBurney. The important point in determining firm and early union was the careful suture of the fascial layers; if this was done no matter whether there was drainage or not they would have primary healing, firm union, and no hernia. He thought it was better to drain through a point in the course of the incision rather than by a lateral stab wound. After Dr. Moschcowitz published his paper on the transverse incision in the upper abdomen in 13 cases; hernia occurred in 11 of these and he was no longer using that incision.

Dr. J. Tinkler of Buffalo said he had yet to see a hernia follow a real muscle split incision. The low transverse incision should be the incision of choice as it gave the best exposure. A real muscle split incision contracted so as to close practically without sutures. Non-absorbable material should be used to insure that the tissues were held in place until healed and one did not get firm healing in five days or a week.

Dr. Hennington said he thought the answer to this question would come through the embryologist who would make a complete study of the structure of the abdominal wall.

The Symptomatology of Perforated Duodenal Ulcer.—Dr. Robert S. Macdonald of Plattsburg presented this paper, in which he said that of all the acute abdominal catastrophies perforated duodenal ulcer was the most painful. In sub-acute and chronic perforations there was a gradual increase in the symptoms, but in acute perforation the onset was absolutely sudden. In non-perforating duodenal ulcer the symptom complex was so complete that, as Dr. Deaver said, the diagnosis could be made over the telephone. The typical duodenal case gave a history of gastric disturbance extending over a series of years. There was often a history of a feeling of fulness in the chest and eructation of gas corrected to a certain extent by alkalies. In the point of time it was important to remember that the distress occurred several hours after meals and was worse at night; food seemed to relieve the distress. There was a typical loss of weight, mostly in the spring and fall. Vomiting and hematemesis, or blood in the stools, occurred in 80 per cent. of the cases. There was gastric hyperacidity and hyperperistalsis, and often there was atoo rapid expulsion of the barium if there was no obstruction present. In many cases the time when perforation would occur could be predicted with considerable accuracy. The anatomical location of the perforation was very uncertain. At the time of perforation it was frequently impossible to tell whether it was in the stomach or duodenum. Often the right side was affected more than the left and this might lead to a mistaken diagnosis of appendicitis, gallstones, or renal colic. The site of the ulcer seemed to make no difference as to the likelihood of perforation. C. H. Mayo reported 2,113 cases of all types; in 84.9 per cent. of the perforations were duodenal and in 15.1 gastric. The statistics of the Massachusetts General Hospital showed that 69 per cent. of the perforations were duodenal, while Dr. Charles L. Gibson reported that in his cases the majority of perforations were gastric. Dr. Stanton reported 70 per cent. gastric perforations. Of his own ten cases, three were gastric, five duodenal and two were in the pyloric area. There was an interval between the early crisis and the later rigidity when it might be possible to get some idea as to the location of the perforation. He felt convinced that 70 per cent. of perforations would be found to occur in the duodenum. The greatest aid in diagnosis was afforded by a well recorded history and a series of *x*-ray findings.

Dr. Charles W. Hennington called attention to the value of methylene blue in indicating the exact location of the performation and in showing multiple perforations if such were present.

Dr. Theodore Dunham of New York called attention to early intense rigidity as a diagnostic sign in these cases. He thought if one appreciated the cause of this early rigidity he would be more apt to remember it. Perforation of the stomach or duodenum caused at first a chemical peritonitis due to chemical activity of the fluid escaping from the stomach or duodenum. The ratio of intensity of this chemical activity decreased as it went further down in the intestinal tract and the chemical gave place to a bacterial peritonitis. On the contrary, a peritonitis primary in the lower intestinal tract was bacterial. If one took an emulsion of ascitic fluid and colon bacilli and injected it, there would be no response until bacterial activity had been established, and that would be hours after the injection. In acute pancreatitis one did not get the late bacterial peritonitis because the patient did not live long enough. The position of the patien and the fixed rigidity was striking in these cases. Where perforation was present the patient wanted to keep everything away from him while in distension of a hollow viscus the patient wanted the viscus supported. One could not always differentiate this type of cases, but this condition, as well as any of those for which it might be mistaken, was such that the aseptic scalpel was indicated as the instrument of diagnosis.

Dr. John F. Connors recalled a series of 50 cases which he had reported some years ago, in 48 of which the symptoms were such that it was impossible to say whether the perforation was gastric or duodenal.

The Diagnosis of Cholecystitis and Indications for Cholecystectomy.—Dr. Alexander E. Garrow of Quebec, Canada, made this presentation. He said that a patient might give a history of cholecystitis and yet the gallbladder show little evidence of pathology either to the eye or on palpation. Often such gallbladders when opened might show a typical strawberry mucous membrane. Frequently the peritoneum in the region of the colon might show hyperemia, and there might be enlargement in one of the lymph glands in the neighborhood of the gallbladder when the gallbladder itself showed nothing definitely pathological. In fact, it might be stated that contiguous pathology offered a better criterion for the removal of the gallbladder than the appearance of the organ itself. The evidence went to show that inflammations of the gallbladder were infective in origin. They had been taught that infection was most likely to occur through the bile or from the duodenum through the common duct, but in his opinion these infections were embolic in origin. Appendicitis, ulcer of the stomach and duodenum, and cholecystitis were largely embolic infections; Rosenau had shown the selective affinity of the streptococcus for this locality. Again, the bile might be sterile and the wall of the gallbladder infected. Drainage of the gallbladder was seemingly beneficial in a considerable number of cases, but it was doubtful if such seemingly good results were due to the drainage *per se;* possibly they might be attributed to rest and the withdrawal of a small amount of bile. Drainage did not remove the major part of the bile secreted. By drainage one might secure from 90 to 100 c. c. of bile a day while the liver was supposed to secrete 500 c.c. during that

time. He agreed with those who held that cholecystectomy was the operation of choice even though there was little pathology limited to the gallbladder itself. When there was a clinical history of recurrent attacks of cholecystitis or a chronic type of inflammation it was safe to assume the presence of an infection which became active when the resistance of the body was lowered. Dr. Garrow described various types of cholecystitis and spoke of the difficulty of differentiating it from duodenal ulcer in some cases. In differentiating perforated duodenal ulcer from acute cholecystitis it might be well to remember that retraction of the abdomen was never seen except in duodenal ulcer. Fever in acute cholecystitis varied with the acuteness of the infection; chills were unusual, being rather more frequent in common duct infection; routine examination of the blood showed a leucocytosis; vomiting was not usually frequently repeated. The indication for the treatment of an acute attack of cholecystitis was drainage, provided bile was found, and so long as the bile drained away one might look for recovery, but many of these cases treated by drainage had sequelæ; hence many surgeons preferred cholecystectomy. The gallbladder was not essential to life though it might be a factor in the well-being of the individual. The symptoms of chronic cholecystitis were distressing sensation in the epigastrium; pain beneath the right scapula and over the eighth, ninth, and tenth ribs; a bad taste in the mouth in the morning and loss of appetite; some individuals were thin and others obese. Inspection of the abdomen was negative; usually there was well-marked pain on deep pressure in the gallbladder region. Examination of a test breakfast showed about normal acidity. The gastric symptoms had no direct relation to meals and usually occurred late at night. These patients were often quite comfortable for weeks between attacks. In the ordinary chronic forms of cholecystitis the gallbladder was thickened, milky white in color, and there was tenderness and rigidity; occasionally a tumor was present when the cystic duct was obstructed. Dr. Garrow reported a series of 80 cases operated on for gallbladder disease during the past two years. Of these 60 were women. The average age was 44½ years. In 45 the chief symptoms was sour stomach; 50 vomited; 27 were jaundiced; only 11 showed definite rigidity; 40 had stones in the gallbladder. A reliable follow-up was conducted which showed that 8 had recurrences of symptoms. In 44 cholecystectomy was performed. Of the eight having recurrences two followed cholecystectomy and six followed cholecystotomy and drainage. In operation he preferred the right rectus incision high up, disposing the muscle to the right, cutting the falciform ligament and exposing the gallbladder. In removing the gallbladder he began at the fundus and dissected downwards. It was of the greatest importance to secure the cystic duct quite intact from the common duct and to guard the entrance of the cystic duct into the common duct.

Dr. CHARLES L. SKINNER of Port Jervis said he thought if one kept in mind the embryology of this region he could easily see why there was such a tangle of symptoms. The liver and the bile ducts were given off from the duodenum and carried with them nerve filaments that extended to the innermost recesses of the liver and gallbladder. He thought it would be better, instead of waiting too long to make a definite diagnosis, where there had been long continued symptoms of serious disease, to make an exploratory operation.

Dr. F. W. ZIMMER of Rochester said he did not recall having heard Dr. Garrow speak of the use of the *x*-ray in diagnosing cholecystitis. It was true that barium and bismuth rarely entered the common duct, but an *x*-ray aided one in excluding ulcer of the stomach and of the duodenum. He thought it advisable to have a roentgenological examination in every case that could wait long enough for it.

Dr. G. W. COTTIS of Jamestown said the question of the apparently harmless gallbladder was most important. He has seen gallbladders that looked like a robin's egg and were causing trouble. He felt that one could safely remove a normal appearing gallbladder after excluding every other possible cause of the symptoms. There was no harm in operation and he believed this would be the next step in surgery.

Dr. E. MACD. STANTON of Schenectady said that his technique in the removal of a normal looking gallbladder had probably been bad, but he had to confess to having removed quite a number from patients whose symptoms were definitely those of cholecystitis, and in some he had found stones and a definite pathology. He had followed up these patients and found that some of them had benefited for a number of months following the operation, whether because of the rest or the psychological factor he could not say, but he knew that in a year or so they again complained of the same type of symptoms. He was rather skeptical as to the large amount of good that one might expect from the removal of the normal looking gallbladder. In his pathological experience he had found two instances of congenital absence of the gallbladder and both died of cholelangitis. It would be interesting to have the history of a series of patients who had had the gallbladder removed after the lapse of a number of years. For instance, it would be interesting to have the history and pathology of individuals at the age of 60 years who had had their gallbladders removed when they were 30.

Dr. GARROW, in closing, said he was quite satisfied that embolic infection was the explanation of cholecystitis. Frequently in cholecystitis there was an associated pancreatitis which was not recognized, and which might be responsible for the recurrence of symptoms after cholecystectomy. There were two points he wished particularly to emphasize: He did not think it made so much difference whether one dissected the gallbladder from above downward or from below upward, but it had been his experience that he could expose the parts deep down by dissecting from above. The other point was that the ligature should never be passed around the cystic duct until both the cystic and the common duct were clearly exposed and the ligature should not be placed too close to the common duct.

The Value of Position in the Operative Treatment of Hernia.—Dr. HENRY H. M. LYLE of New York gave this demonstration which was illustrated by lantern slides. He described the anatomical relationship of the abdominal and thigh muscles to Poupart's ligament and showed that when Poupart's ligament was relaxed the conjoined tnedon would be relaxed. In operating for hernia he employed a simple procedure consisting of transfixion, high ligation, and transplantation of the cord during which the patient was in the dorsal position. After putting in the first suture through the conjoined tendon, through Gimbernat's ligament and out through the lower portion of Poupart's ligament, the patient's knees were propped up with the leg in internal rotation. The shoulders were also elevated. The hinged bed that had come into use during the war was useful for this purpose. The relaxed position was maintained for seven day sand insured firm union.

Dr. GARROW referred to a method which Dr. Cunningham had used following operations for hernia which consisted in applying a long strip of adhesive plaster which passed liked a figure eight around the thigh forcing the limb up against the dressing. Cunningham claimed that this pressure prevented hematoma. Dr. Garrow said he made it a chief point in teaching students that they should take the greatest care to prevent even the slightest amount of oozing from the vessels when operating upon hernia.

Dr. LYLE said he was not presenting anything new. The same principle had been employed in the middle ages. He had simply taken advantage of a physiological principle.

Mesenteric Vascular Occlusion.—Dr. ROSS G. LOOP of Elmira read this paper, in which he said that this subject from the standpoint of prognosis and treatment had received scant attention in our literature and in the textbooks it was accorded little notice. In the French and German literature it had received much more complete discussion. Mesenteric vascular occlusion was not as rare a condition as was supposed and quite frequently it was mistaken for intestinal obstruction. He had seen seven proved cases within the past two years and was convinced that in the past he had failed to recognize many more. Its existence or non-existence in obstruction cases spelled a bad or

a good prognosis and influenced treatment. Mesenteric vascular occlusion presented two well-defined forms. In the primary form the symptoms presented were not associated with other abdominal lesions. The process was one of thrombosis or embolism due to remote causes, as from the heart valves. Its practical interest lay in the fact that the surgeon might operate for the relief of intestinal obstruction, and at operation would think that he had been dealing with a self reduced volvulus. If, on the other hand, a frank gangrene was found—a rare finding in early cases—he might resect the intestine without suspecting the cause of the condition. The second form occurred as a complication of various septic conditions, and it might be associated with the common forms of intestinal obstruction. As a complication of clean or aseptic surgery it was responsible for many deaths that were attributed to postoperative ileus. The symptomatology of these cases was susceptible of another classification into fulminating and phlegmatic, both of which might be either primary or secondary. There might be found considerable free fluid in the abdominal cavity ranging in color from a light yellowish to a dark brown. The blood vessels were cyanosed and dark. Gangrene might be present or there might be mottled segments of intestine alternating with dark red ones. At times there might be a small oval area of necrosis. The peritoneum, except in areas where there might be local death, had not lost its glistening appearance. The involved coils were not distinct and lay inert and half filled with liquid, looking very much like a rubber glove with a little water in it. If handled the coils gave a peculiar sensation of weight and thickness. The mesentery was heavy and soggy, and thrombosed vessels might be seen if not obscured by tumefaction. One or two folds of the mesentery might hang down over the sacral promontory, and give the impression of being adherent, but this was produced by the weight of the liquid contents. In all of his cases the middle one-third of the small intestine was involved and the mesentery appeared to have a low attachment; whether this had anything to do with the production of the condition he was unable to say. The fulminating cases presented a symptom complex which constituted a disease entity. The phlegmatic types were less easily recognized, and especially if they were associated with preexisting trouble. The fulminating type was characterized by pain, sudden and violent, if primary, or if secondary by the same kind of pain in connection with the preexisting symptoms. The pain was worse on the left side. In the phlegmatic type the pain was not sudden or severe, but varied from a vague unrest to a severe cramp, and when this form was superimposed on another lesion it was very insidious. Vomiting occurred in all the forms, was coincident with the pain, sometimes became stertorous, and tended to cease spontaneously in a few hours, when the pressure above the lesion had been relieved. Bleeding was said to be characteristic but was found in only two cases in this series. The muscle rigidity was not to be compared with that found in other equally severe conditions. The abdomen was not distended as in peritonitis. The condition was afebril, and the pulse soft and irregular. In the fulminating cases the patient was more or less in shock. Mesenteric vascular occlusion was a disease of adult life, more than 70 per cent. of the cases being in individuals over 45 years of age. The condition might be mistaken for pancreatitis or rupture of a viscus. Moynihan stated that in this condition no surgeon could show a mortality of less than 50 per cent. The treatment was purely surgical, consisting of wide excision of the involved coils of intestine and anastomosis.

Dr. JOHNSTON said that where gangrene had not developed one always found a mottling of the mesentery due to ecchymotic spots, and on that the diagnosis could be made.

Some Special Points in the Surgery of the Gallbladder.—Dr. GEORGE W. CRILE of Cleveland, Ohio, made this presentation which was illustrated with lantern slides. He described the experience of his associate and himself in 1,325 operations on the gallbladder and ducts from the standpoint of the difficulties and failures that they had met with. Among the questions considered were: How they might increase the certainty of relief? How they might decrease the risk from hemorrhage? What was the incision of choice? When should the common duct be drained? Hemorrhage might be met by transfusion. The best incision in operating on the common duct was parallel to the costal border; this did not divide many nerve fibres and secured against post-operative hernia. The incision should be long enough to insure adequate exposure. In cholecystotomy the best drainage was from the dependent point, and frequently this was obtained by a counter incision at the bottom of Morrison's pouch. In fulminating acute cases the only immediate procedure was to establish gallbladder drainage. It was very desirable to carry the acute gallbladder to the subacute stage before final operation. When this acute condition subsided and the patient's condition was stabilized cholecystectomy was the procedure of choice in those cases giving a history of recurrent attacks of cholecystitis. In severe cases of acute cholecystitis he used a short incision, a round tube, plenty of gauze about the opening and no stitches. The general principle of adequate exposure held for operations on the common duct as for those on the abdomen. In discussing cholecystectomy versus cholecystotomy, Dr. Crile said that in the absence of the gallbladder the common duct compensated by storing bile and that predisposed to the formation of stone and a recurrence of symptoms, so that the removal of the gallbladder was not without some unfavorable consequences. If the mucous membrane of the gallbladder was gangrenous, if the wall was thickened, or if stones were imbedded, and after drainage there had been a recurrence of periodical attacks of cholecystitis with obstruction and infection, then cholecystectomy was indicated. If the gallbladder and cystic duct were normal, no matter what the size of the stone there would rarely be a cycle of recurrent attacks and cholecystotomy would fulfill the requirements. In removing the gallbladder there should be a free exposure through an ample incision so as to give free access to its base. The gallbladder should be dissected free by sharp dissection without injury to the liver. The entire gallbladder should be freed from its attachments so that ample opportunity might be given for determining where the gallbladder ended. The cystic duct should likewise be dissected free so that the exact point where division should be made between the gallbladder and the cystic could be determined. The cystic duct should be taken off near the common duct. The clinical results following cholecystectomy were as much better than those following cholecystotomy as were those of nephrectomy better thon those of nephrotomy. They were now doing about sixty cholecystectomies to forty cholecystotomies. In doing a cholecystectomy a careful dissection should be done so that the surgeon would not be at a disadvantage later if he were called upon to operate upon the common duct. In stricture of the common duct an anastomosis might be made between the gallbladder and duodenum at a point of selection. Liver shock was a common cause of death after gallbladder operations and was due to failure of the liver cells to perform their function. Its prevention was secured by the avoidance of liver cell depression. The depression of the liver cells was increased by trauma and by low blood pressure, and that meant suboxidation. To prevent this light gas anesthesia should be employed, the operation should be as brief as was compatible with good surgery, blood transfusion should be given early, and heat should be applied over the whole abdomen. The finger should be used as a probe in the common duct. He also objects to the use of a tube in the common duct.

Dr. CLARENCE MCWILLIAMS of New York suggested the intravenous infusion of calcium lactate. One could estimate the coagulation time of the blood and then give 15 grains of calcium lactate, and again test the coagulation time of the blood. On the following morning a second infusion of 15 grains of calcium lactate could be given, and the coagulation time again tested. He cited a case coming under his observation recently in which two infusions of calcium lactate and two blood transfusions were given without any effect, and the patient died.

Dr. PARKER SYMS of New York said he was glad

to hear Dr. Crile take the stand that he did in reference to the selection of cases suitable for cholecystectomy. He was one of those who believed the gallbladder served some important function. Personally he thought cholecystectomy should only be performed for good reasons, as when there was actual pathology of the gallbladder or danger of permanent obstruction of the cystic or common ducts. He had found the maximum amount of bile drained to be about 39 ounces in twenty-four hours. Dr. Syms cited one case in which a gallon of fluid was drained in each of two successive days and the woman at the same time had a watery diarrhea. The report from the laboratory came back stating that the fluid showed a trace of bile.

Dr. J. TINKLER of Buffalo said that as to the question of the drainage of the common duct he was inclined to favor draining it and was also in favor of draining through Morrison's pouch.

Dr. JOHNSON said he would like to hear something about the beginnings of gallbladder disease. He thought the early toxic vomiting of pregnancy was one of the starting points of biliary disease. According to Dr. Mayo 90 per cent. of the cases began in pregnancy.

Dr. CRILE said he felt as one of the speakers had said that we did not know just what to do in these cases. He believed that gallbladder disease was often the result of other processes. Pregnancy made a great demand on liver function. Where there was excessive nausea and vomiting they had been trying the plan of introducing nourishment through the duodenal tube and in that way the patient retained the nourishment. He could not say as yet how valuable this procedure would prove to be.

Application of the Methods Developed During the War to the Fractures of Civil Life.—Dr. JOSEPH A. BLAKE made this presentation which consisted of a lantern slide demonstration of the overhead suspension and traction treatment of fractures which was developed during the war and which was now being used in the treatment of fractures at Bellevue Hospital. He begged pardon for bringing up anything connected with the war, but said they had learned some things worth repeating. At the beginning of the war they had treated fractures by the application of plaster of paris, but they soon found that they would have to develop some method that would permit of better access to the wounds and more susceptible of variation so they came to use wire splints, and in 1917 and 1918 these were well established in the French and English armies. They were at first much hampered by the old opinions as to the treatment of fractures, namely, that they should be fixed as much as possible. However, they found that the further they got away from the old idea of fixation the better were the results obtained. In fractures of the long bones it was perfectly easy to fix the distal fragment, but the difficulty came in fixing the upper or proximal fragment to the lower fragment. The principle upon which the newer methods of treatment were based was that when the proximal fragment was at physiological rest, that was in the position in which antagonistic muscles had brought it, it would not have much tendency to move in either direction, and if the upper fragment was in that position, the other fragment could be readily moved. Having placed the upper fragment in the position of physiological rest the distal fragment was brought into line with it, and then the whole extremity could be moved without moving the fracture. Dr. Blake then demonstrated the use of the overhead suspension frame in high fractures of the humerus. He said it gave uniformly good results, the only objection to it being that the patient had to remain in bed, and that was not an objection considering the rapidity with which repair took place, and the fact that function was absolutely maintained. After a time he left the arm free during the day and put it back in the suspension apparatus at night, and in this way union was often obtained in eighteen or twenty days. In fractures of the forearm the fragments were not suspended in the same plane, one being suspended mesial to the other. In the application of traction they made use of the glued cotton glove with curtain rings sewed to each finger tip. This permitted of even traction, or traction might be applied to individual fingers. The Blake-Keller half ring thigh and leg splint was shown. This splint had proven of great value in the transportation of men with fractured femur. This splint and the Thomas arm splints should form a part of the equipment of every ambulance. The old idea of fixation by plaster and other splints had been exploded, having been found to be not only to be unnecessary but pernicious. He hoped that they would be able to extend some of these methods which had been so valuable in the treatment of fractures during the war to the treatment of industrial injuries. They shortened the period of convalescence and they did away with at least 50 per cent. of the incapacity resulting from other methods. There were at least three-quarters of a million industrial injuries in this country every year and these patients should have the benefit of these newer methods.

The Abduction Treatment of Fractures of the Neck of the Femur.—Dr. ROYAL WHITMAN made this presentation, which was illustrated by lantern slides. He stated that he had presented the method before but that the results obtained by it had been so highly satisfactory that there was no reason for abandoning it. It was essential for the restoration of function that deformity be reduced and for union that the fractured surfaces be fixed in contact. Contact could be assured only by adapting the outward fracture to the inward. To accomplish this the patient must be anesthetized. The shortening was then reduced by direct traction. The thigh having been lifted to the proper plane, was then abducted to the normal limit. Abduction was effected with the perineum against a perineal support. Abduction turned the fractured surface down to meet that head of the femur; it made the capsule tense and aligned fragments; it relaxed muscles whose contraction tended to displace fragments; it apposed the trochanter to the side of the pelvis, or if the fracture was near the head engaged the neck beneath the rim of the acetabulum and provided a mechanical check to displacement. What was classed as impacted fracture was usually a complete fracture. After reduction the body and limb were covered with sheet wadding and cotton flannel bandages, all bony points being carefully protected, and a long plaster spica support was applied. With the fracture thus dressed the patient could be turned completely over on the abdomen so that bed sores could be avoided and also the danger from hypostatic pneumonia. The head of the bed was elevated at an angle of 25°, providing a semi-reclining position which favored the nutrition of the injured parts. The neck of the femur in young, vigorous persons might be broken by but slight violence and the fracture might not cause complete disability. The bad prognosis usually given for fractures of the femur was not warranted, but was largely due to incorrect technique. He had treated many elderly persons by the abduction method with gratifying results. His oldest patient was a woman 89 years of age who lived to be 93. Dr. Whitman said he preferred to treat fractures of the femur rather than other types of fractures because his results were uniformly good and as good were unexpected he received great credit. The traditional teaching that the prognosis of fractures of the neck of the femur was bad was incorrect, since with proper technique one could secure a high percentage of successes.

Dr. JOHN F. CONNERS of New York said that Dr. Blake had done great service in helping to develop these methods. He would like to know his views with reference to the use of the calipers in fractures of the femur. He thought Dr. Blake had sounded the death knell in the treatment of fractures by plaster of paris.

Dr. EDWIN BEER of New York said he had not heard Dr. Whitman give his percentage of successes in the treatment of fractures of the neck of the femur.

Dr. BLAKE said the use of the calipers was extremely important in the treatment of high fractures of the femur. In fractures of the femur there was a tendency for the fragments to be forced outward and consolidation was extremely slow, so these patients should not be allowed to walk until cancellous bone was established. He had been impressed by Dr. Whitman's demonstration and believed that plaster of paris had its place, but he had wished to emphasize that there

were other methods of treatment and that we had gone too far in the use of plaster of paris. There was no question but that Dr. Whitman's abduction treatment of fractures of the neck of the femur was excellent.

Dr. WHITMAN said he could not agree that the death knell of plaster of paris had been sounded. He thought it was going to become very popular. It required skill in application and one had to be sure that the fragments were in apposition. Then, again, one had to use the materials available. As to his results he had refrained from quoting them because he feared he would be accused of exaggeration. The point he wished to emphasize particularly was that fractures of the femur could be treated with the same expectation of good results as other fractures. After fractures of the neck of the femur patients were not allowed to bear weight under six months.

Third Day—Thursday March 25.

A Type of Cystic Kidney Amenable to Surgical Treatment.—Dr. FREDERICK J. PARMENTER of Buffalo presented this paper, which he illustrated by means of lantern slides. He said there were two theories to account for cystic kidney: (1) The theory of congenital maldevelopment which assumed that the secreting and collecting tubules failed to connect so that there was no outlet for the secretion; (2) that epithelial proliferation took place which might go on to true tumor formation. A third theory held that there might be a combination of these two conditions with a predominance of the one or the other. These cystic conditions might increase to such an extent that the entire abdomen would be occupied by the diseased kidney. Cystic disease of the liver was associated with cystic kidney in 28 per cent. of the cases. Polycystic disease of the kidney was always bilateral, and the practical point here was that one should never perform a nephrectomy for polycystic kidney. The condition might occur in infancy or after 40 years of age. Heredity seemed to play a striking rôle. When the condition occurred in infancy it was usually associated with other congenital defects. The symptoms might be associated with renal compensation or renal decompensation. The disease might progress to the stage of renal decompensation without the patient being aware of its presence. There might be dull, aching pain, which might be diagnosed as due to calculus of the ureter or ptosis of the kidney. Hematuria might occur independently of pain. In some of these kidneys the parenchyma might appear to be almost entirely destroyed and yet kidney function might be good. Hydro- or pyo-nephritis might be coexistent due to kinking of the ureter caused by the heavy ptosed kidney. The symptoms during the period of decompensation resembled those of chronic interstitial nephritis. The right kidney was often less extensively involved than the left. The treatment was to relieve pain and suffering, to save the parenchyma, and to prevent further atrophy. Operation was therefore indicated and consisted in puncturing as many of the cysts as possible, and if a ureter was found kinked it was straightened, or if a kidney was ptosed it was sutured in place. The second group of cystic kidneys was rare. This type of kidney did not kill the patient, and here excision of the cyst was indicated and not nephrectomy. Colheim attributed this form of cystic kidney to cell rests which became stimulated and began to secrete with the result that a true retention cyst was formed. The condition was unilateral. The picture presented, however, was similar to that of the polycystic kidney. The disease was slightly more frequent in women, and adults were mostly affected, it being rare to find a case under twenty years of age. Pain and swelling were usually present, and the kidney function was normal. The patients usually appeared in good health. Malignancy could be ruled out by the good general condition of the patient and the absence of metastases. In this form of cystic kidney the prognosis was excellent if the kidney was exposed and the cyst excised.

Urological Diagnosis in the Practice of the General Surgeon.—Dr. LEO BUERGER presented this paper, which was read by Dr. Leo Edelman, who stated that the object of the paper was to show the great amount of light which the general surgeon might obtain by making use of the specialist's knowledge. In no field was this truer than in that of urology. Modern urological investigation with highly developed urological instruments and practice in their use made available to the urologist many special procedures which were not ordinarily employed by the general surgeon. The general surgeon could cooperate with the urologist to his own advantage and to that of his patient. There was great need for educating young men in the field of urological diagnosis, for here many mistakes were made. To mention a few of these, calculus of the ureter might give symptoms simulating intestinal obstruction and even peritonitis, and operation might be performed when it would have been possible to remove the calculus through the urinary tract. Urinary calculus in the lumbar region might be taken for retrocecal appendicitis. When there were signs of urinary retention, with or without a scratch on the wax-tipped catheter, calculus should be suspected. In some cases of supposed subacute or chronic appendicitis a vaginal examination revealed the presence of ureteral calculus low down. Tuberculous nodules in the ureter might be mistaken for calculi. Ovarian trouble had been diagnosed in cases in which a cystoscopic examination would have revealed intraureteral débris. The indications and methods of employing the retention catheter were discussed. A lantern slide demonstration showed what the urologist could discover by means of the shadow-graph catheter; the pyelograph, which though its use was restricted was important in certain cases; the baby cystoscope, which had enabled them to make great advances in the diagnosis and treatment of pyelitis in children; the Buerger operating cystoscope which carried a scissors-like instrument which made possible certain operative procedures on the bladder, and the direct, indirect, and retrograde cystoscope.

Dr. A. W. BRASH of North Germantown said he thought Dr. Buerger should be thanked for his thorough exposition of the subject of urology. The paper might have been entitled the differential diagnosis of acute abdominal conditions. It was quite true that stones in the ureter would give the symptoms of intestinal obstruction. Dr. Buerger had also shown what could be done in the field of pyelography. He had demonstrated that many conditions could be discovered only by means of explorations such as he had described.

The Rôle of the Colon Bacillus in Infections of the Kidney.—Dr. HUGH CABOT of Ann Arbor, Mich., presented this paper by invitation. He said that, having excluded tuberculosis, the colon bacillus was found to be the infecting organism in a large percentage of infections of the kidney. The number of cases of these infections did not seem to be decreasing, so that they could not view their progress in this direction with complacency. The most common and perhaps the most important kidney lesion was pyelitis. Of this condition there were two groups of cases. In the first there was no demonstrable reason for the infection in the urinary tract. He discussed the second class first because he said they presented the least difficulty. They were the cases dependent upon stricture, stone in the bladder, or other obstruction to the urinary outflow in the urinary tract itself. Such obstruction, however, was not only the only factor, but was merely instrumental in preparing the soil for infection. He did not believe instrumentation of the urinary tract was frequently the cause of infection. Where there was residual urine associated with lowered resistance the soil was prepared for infection. The so-called catheter system following operation was open to criticism. It was too much the custom to delay catheterization and trust that retention would not occur, and it was too frequently assumed that catheterization was responsible for infection. So long as patients were catheterized by the clock just so long would infections continue to be a reproach to the physician. All these patients should be regarded as likely to have retention. The bladder should never be allowed to became distended above twelve ounces. If early catheterization were carried out postoperative cystitis would become a rarity. The first group of cases was that in which kidney function might be below normal and the cause lay outside the urinary tract. In this group pressure from the outside produced interference with the urinary outflow, leading to congestion which prepared the soil for the infecting organism. In this group the pyelitis of pregnancy was discussed as

well as the so-called spontaneous cases associated with disease of the large intestine, such as mucus colitis and ulcerative colitis. There were also a group of cases occurring in adult life, particularly in women suffering from constipation and visceroptosis, and another group of female children in which we have been accustomed to blame the condition on the anatomical conformation. If these infections in female children were due to the introduction of the colon bacillus by way of the urethra it was strange that they were not more common. Experiment had shown that introduction of the colon bacillus into the bladder did not produce pyelitis and clinical experience was against this view. It might well be that the colon bacilli affected the kidneys of those who had little resistance. The use of formaldehyde and local irrigation of the kidneys had been much in vogue, but it had failed to live up to its temporary reputation. It was quite strange that patients with a stormy onset and severe symptoms were most likely to go on to complete recovery, while chronic cases were likely to resist treatment. It appeared to follow that the severe cases recovered because an immunity was produced. Attempts with autogenous vaccines might at times relieve the symptoms, but failed to remove the infection. He was not sure they had pushed the use of autogenous vaccines to their logical conclusion. Might it not be better to use them during the acute rather than in the chronic stage? Or might it not be better to push the vaccines until they produced symptoms and sensitization? There was need of further study of bacilluria and perhaps conditions in the large intestine might give a clue to the treatment of pyelitis.

Dr. Edward L. Keyes, Jr., of New York asked Dr. Cabot to say a word as to the influence of the passage of instruments in the ureter in relation to its influence on pyelitis. Attempts to wash out the pelvis of the kidney had not proved satisfactory in his hands. It was possible that a certain amount of benefit might be due to the straightening out of the ureter by the passage of the instrument employed in giving the irrigation.

Dr. A. W. Brash of North Germantown questioned whether the large intestine was the etiological factor in pyelitis. It was his impression that the connection between the colon and the kidney was very limited. In treating pyelitis they removed the foci of infection in the teeth or tonsils if such was present and then employed lavage of the kidney pelvis with silver nitrate, placing the patient in the Trendelenburg position. They passed good sized bulbs that straightened out any stricture that was present, and they believed they cured pyelitis in a large percentage of cases.

Dr. Edwin Beer of New York asked Dr. Cabot to say whether he was of the opinion that preliminary vaccination prevented complications with the colon bacillus following prostatectomy. He would like to hear Dr. Cabot discuss the question of ureteral catheter lavage of the pelvis of the kidney. Personally he had seen absolutely no results from this procedure. In cases of acute pyelitis naturally one did not care to irrigate the pelvis of the kidney, but there might be some benefit from washing out the ureter which might wash out mucus plugs that were causing some interference with the outflow of urine. The reason they did not get results by this procedure was that they did not know what they were treating. The only diagnosis they made was made late when pus made its appearance. The diagnosis of kidney involvement was not made until after the fifth day. He did not believe lavage was effective. With the patient in the Trendelenburg position the silver nitrate might go to the pelvis of the kidney, but he doubted if it reached foci of infection in the parenchyma.

Dr. Cabot said the question he had wanted to hear discussed was the possibility of the sensitization of the kidney with foreign protein. Dr. Keyes had asked a question which he could not answer. It was, however, beyond doubt that occasionally there was a case in one's experience in which the use of the ureteral catheter with or without lavage of the kidney had produced very spectacular results. He could not subscribe to the Huenner doctrine of stricture of the ureter. It did not seem that these cases occurred in his experience. He had been asked whether he had retreated from his position in regard to certain anatomical relations which might account for the frequency of pyelitis in little girls. The difficulty here was that there had not been produced a sufficient amount of good work to settle that question one way or the other. Dr. Grimes and himself had done some work in studying the length and position of the large intestine in females as compared with males; it was possible that it might be shown that there was a definite anatomical difference, but this had not been shown thus far. As to the relation of the intestines to the kidney he did not agree with Dr. Brash. The relation between the intestine and the kidney was very clear. He had a series of twenty-five men between the ages of 25 and 35 years whose urinary tract was sound, men in good circumstances and living out of town, who had had acute illness characterized by fever, diarrhea and evidence of acute colitis, and it was observed that in a few days the colon bacilli were passed in the urine. In many after a time the colon bacilli disappeared from the urine, but later they would again have an acute attack, with symptoms of kidney infection, fever, and bacilluria. The relation between pyelitis and ulcerative colitis was often very striking. Dr. Brash had laid a good deal of stress on the importance of the removal of focal infections elsewhere in the body. Such infections were occasionally due to the colon bacilli, but they were oftener due to the streptococcus group and the condition he was talking about had nothing to do with that, for he did not believe that the streptococcus produced pyelitis. He did believe, however, that focal infection had a part in keeping these people under water, and he believed in a search for focal infection, but he doubted that there was a connection between colon bacillus infection of the kidney and infection of the mouth and teeth. As to the effect of silver nitrate, it might affect the organisms in the superficial epithelium and it might release organisms deeper down, but he doubted if silver nitrate did more than ameliorate symptoms. Unless the colon bacilli were permanently eliminated the case did not stay cured. In the group of little girls he should hesitate to use the cystoscope or to catheterize the kidney; in fact, he did not believe local treatment would be of much help in this group. He seemed inclined to believe hope lay in vaccines, but here the difficulty was that we had no measure of immunity and we did not know whether immunity was produced by the vaccines they were using. There were many strains of colon bacilli and if we were not vaccinating against the strains that were producing the pyelitis, we could not produce an immunity against those organisms.

Surgical and Non-Surgical Treatment of the Prostate and Seminal Vesicles in Arthritis.—Dr. Oswald S. Lowsley of New York presented this paper, which he illustrated with lantern slides. He stated that his communication was intended to encourage men in general surgery and medicine to consider the urinary tract in search for the cause of arthritis. The teeth, the tonsils, the sinuses, and various other focal infections had received the attention in respect to their relation to arthritis and he wished to call attention to the part played by the prostate gland and the seminal vesicles in the production of arthritis. His observations were based on the study of 100 cases of arthritis in the urological department of Bellevue Hospital. The ages of these patients ranged from 17 to 51 years, the average age being 29 1/3 years. The season of the year did not seem to make any difference except that there were not quite so many cases during the summer months. The joints affected in the order of frequency were the knee in 53, the ankle in 44, the wrist in 30, and the foot in 26. The infection was traced to the teeth in 31 cases, to the tonsils in 10. Twenty-three per cent. of the series denied having had gonorrhea. The impression that infection arising from the prostate and seminal vesicles was usually gonorrheal was incorrect. An analysis of these cases showed other organisms predominating in this locality, such as the *Staphylococcus aureus*, *Streptococcus viridans*, and other form of streptococci. In three of the cases brilliant results were obtained with vaccines. A number of cases were successfully treated by the heavy cast and steaming. Ten cases were treated surgically with good result. Where there was chronic seminal vesiculitis seminal vesiculectomy was preferable

to vesiculotomy. Of 50 cases of polyarthritis in which infection from other sources was eliminated, examination of the prostate and seminal vesicles showed these to be the source of the infection. In searching for the source of infection in any case of arthritis the prostate and seminal vesicles should not be overlooked. Autogenous vaccines were extremely valuable in some cases used in conjunction with other methods of treatment.

Dr. Frederick W. Parmenter of Buffalo called attention to the fact that the anterior urethra during an acute attack of gonorrhea might be the source of arthritis. In the treatment of acute gonorrheal infection it was often surprising to see a rapid improvement in the condition of the prostate and seminal vesicles, while the general condition did not improve. A study of some of these cases showed that they had bad teeth and after their teeth were taken care of the gonorrheal arthritis cleared up. It would seem that in such cases the focal infection had replaced the gonorrheal infection.

Dr. Lowsley said he was glad that Dr. Parmenter had called attention to the possibility of arthritis being caused by the acute infection; that was borne out by his experience and he had even seen death from gonorrheal septicemia.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

California State Board of Examiners.

October, 1919.

ANATOMY AND HISTOLOGY.

1. Describe the lacrymal apparatus.
2. Discuss the histology of the cornea.
3. Locate and give the relation of the prostate gland.
4. Give the histology of the prostate gland.
5. Locate and give relations of the parotid gland.
6. Give histology of the parotid gland.
7. If the radial (musculospiral) nerve be severed, what structure distal to the cut will be affected?
8. Indicate by diagram the important tracts, and the distribution of nerve tissue, in a cross section of the spinal cord in the mid-dorsal region.
9. Describe fully the sacroiliac articulation.
10. Give origin, insertion and nerve supply of the sterno-mastoid muscle; action when acting singly and together.
11. Locate and give relations of thyroid gland.
12. Give histology of the thyroid gland.

PHYSIOLOGY.

1. How is body heat maintained? What are the physiological aspects of fever?
2. Discuss briefly (*a*) phagocytosis, (*b*) diapedesis.
3. What is the composition and the action of bile?
4. Classify and give function of white blood corpuscles.
5. Give the physiological action of the pneumogastric nerve.
6. Describe the heart sounds; what causes them?
7. Describe the process and stimulation of respiration.
8. Name the enzymes and describe their function.
9. Discuss the factors which maintain blood pressure.
10. Discuss cerebrospinal fluid.
11. Describe lymph, its function, its circulation.
12. What is the effect of complete paralysis of the (*a*) third cranial nerve, (*b*) trigeminus.

CHEMISTRY AND TOXICOLOGY.

(Answer ten questions only.)

1. What are the metals of the arsenic group?
2. What two solutions of arsenic are official?
3. Silver nitrate. Give its appearance; how prepared; symbol; synonyms. What percent may be used in the eye and in the throat.
4. What do you understand by the term colloidal chemistry?
5. What is a calorie? Explain the calorie method of feeding.
6. Classify foods. Discuss one class.
7. What are enzymes? Discuss their characteristics.
8. (*a*) What constitutes metabolism? (*b*) What is a nitrogenous equilibrium?
9. What is a lethal dose of: Tincture of aconite, tincture of belladonna, tincture of gelsemium?
10. What is the result of a tablespoonful of camphorated oil, if swallowed by a one-year-old child?
11. Give symptoms and treatment of poisoning by wood alcohol.
12. What is the chemical cause of death in inhaling illuminating gas? Give treatment.

ANSWERS.

ANATOMY AND HISTOLOGY.

1. The *lacrymal apparatus* consists of the lacrymal gland and its secretory ducts; the lacrymal canals, which carry the tears to the lacrymal sac, and the nasal duct, which carries them from the sac to the nose.

The *lacrymal gland* occupies a depression in the supero-external angle of the orbit; the anterior margin is connected to the back part of the upper eyelid. The ducts (twelve or fourteen) open by apertures, placed in a row, at the inner surface of the upper lid.

The *lacrymal canals* commence at the *puncta lacrymalia*, which are the openings of the canaliculi, and, arching in the free edge of the lid, pass inward to open into the *lacrymal sac*.

The *lacrymal sac* is placed in a groove formed by the lacrymal bone and the nasal process of the superior maxilla, being behind the tendo oculi and in front of the tensor tarsi; it is the dilated upper end of the nasal duct.

The *nasal duct*, formed by the lacrymal, superior maxilla, and inferior turbinal bones, leads from the lacrymal sac to the inferior meatus of the nose, where it opens, the aperture being partly guarded by a valve formed of the mucous membrane. It is about one-half inch long, and is directed downward and slightly outward and backward.—(*Aids to Anatomy.*)

2. The *cornea* consists of five layers: (1) An anterior layer of stratified squamous epithelium; (2) an anterior elastic membrane, also known as Bowman's membrane; (3) the substantia propria, consisting of connective tissue fibrils which are cemented together to form bundles and lamellæ; (4) the posterior elastic membrane of Descemet, similar to the anterior elastic membrane, but thinner; (5) the posterior endothelium of Descemet, consisting of one layer of flat hexagonal cells.

3. The prostate gland is about the size and shape of a horse-chestnut, and surrounds the neck of the bladder and first part of the urethra in the male. It is surrounded by a dense capsule, and consists of three lobes (two lateral and one middle); it is pierced by the ejaculatory ducts and by the urethra. Its base is attached to the base of the bladder, and its apex is in relation with the posterior layer of the triangular ligament and the compressor urethræ muscle. The posterior surface is in relation with the rectum and is about an inch and a half from the anus.

Relations of Prostate. *Anteriorly:* Symphysis pubis, anterior ligaments of bladder, branches of dorsal vein of penis. *Posteriorly:* Rectum. *Laterally:* Levator ani. *Base:* Surrounds neck of bladder, seminal vesicles, and vasa deferentia. The *apex* rests on triangular ligament.

4. *Structure of prostate.* "The prostate is a compound tubulo-alveolar gland whose ducts open into the prostate portion of the urethra. Smooth muscle fibers not only surround the organ, but interlace radially toward its center, forming a network in whose meshes the glandular parts are located. Areolar tissue and blood-vessels accompany the muscle tissue. The alveoli of the glands are lined by simple columnar epithelium, which sometimes show two rows of nuclei. These alveoli contain a serous acid coagulum and usually oval laminated concretions called *prostatic bodies*. The latter are more numerous in old men. The numerous excretory ducts unite to form twelve to fifteen collecting tubes which open into the urethra, most of them into the *prostatic sinus*. These ducts are lined by simple columnar epithelium, except near their termina-

tions, where it is transitional. The organ dorsal or in front of the urethra is mostly smooth muscle tissue."—(Hill's *Histology.*)

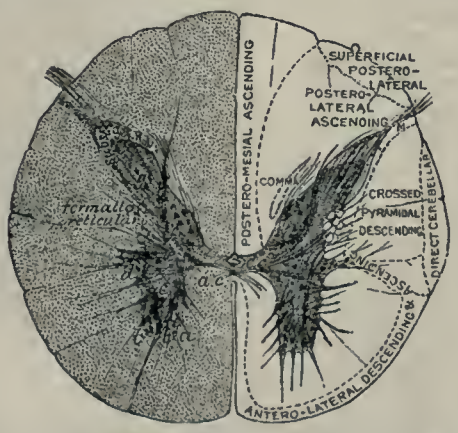
5. The *parotid gland* occupies the space in front of the ear, bounded below by the angle of the jaw, and a line extended from it to the mastoid process, above by the zygoma, in front by the masseter muscle, and behind by the mastoid process, the external meatus, and the digastric muscle. The external carotid artery and branches, the internal maxillary, temporal and temporo-maxillary veins, the facial nerve, and the great auricular nerve pass through it.

RELATIONS: *Externally,* it is covered by the skin, platysma myoides, and parotid fascia; *internally,* it is in relation with the styloid process and its muscles, internal carotid artery and internal jugular vein.

6. *Histology of the parotid gland.* "The parotid gland is a compound alveolar gland and consists of small, serous acini, lined by cells adapted to fit these alveoli. The actively secreting cell has a very granular protoplasm, but that of the resting cell contains but few granules. As the granules increase, the protoplasm decreases, until expulsion of the secretion, and then the protoplasm again increases. Secretory capillaries exist between the cells."—(Radasch's *Histology.*)

7. *Total division of the musculospiral nerve* causes the following symptoms: A. Anesthesia. If the nerve is divided in the upper third of the arm—*i.e.* above the origin of its external cutaneous branch—there is loss of both epicritic and protopathic sensation over the radial half of the dorsum of the hand. Section of the radial nerve in the upper third of the forearm causes no loss of sensation, which is supplied to the back of the hand by the external cutaneous of the brachial plexus; but section in the lower third causes a limited loss of epicritic sense over the back of the thumb. B. Paralysis of the following groups of muscles: (1) Of the extensor of the forearm (triceps); hence the forearm can only be extended by its own weight. (2) Of the long and short supinators; hence the hand is pronated, the only supinator remaining being the biceps. (3) Of the radial and ulnar extensors of the wrist; hence wrist drop. (4) Of the extensors of the fingers and thumb, which either hang limp and motionless, or may be bent up into the palm from the unopposed action of the flexor muscles. If, however, the wrist and proximal phalanges are supported and extended, the terminal phalanges can be straightened by the action of the interossei and lumbricales.—(From Rose and Carless' *Surgery.*)

8.



Section of human spinal cord from the mid-dorsal region, showing the principal groups of nerve-cells, and on the right side of the section the conducting tracts; *a, b, c,* groups of cells of the anterior horn; *d,* cells of the lateral horn; *e,* middle group of cells; *f,* cells of Clarke's column; *g,* cells of the posterior horn; *c.c,* central canal; *a.c,* anterior commissure. (From Schäfer's *Histology.*)

9. The *sacroiliac articulation* is an amphiarthroidal joint existing between the articular surfaces of the ilium and the sacrum. It is connected by three ligaments, the anterior sacroiliac, the posterior sacroiliac, and the interosseous ligaments. The anterior ligament connects the anterior surfaces of the two bones. The posterior ligament is the stronger and consists of the short and long sacroiliac ligaments. The interosseous ligament is completely covered by the posterior ligament. The arteries are derived from the gluteal, sacral, spinal, and ilio-lumbar; the nerves from the lumbo-sacral and posterior sacral cords.

10. STERNOMASTOID. *Origin:* Upper and outer part of the anterior surface of the manubrium sterni, and upper surface of the clavicle at its sternal end. *Insertion:* Outer surface of mastoid process of the temporal bone, and outer part of the superior curved line of the occipital bone. *Action:* To flex the head to the same side as the muscle; the two acting together flex the head on the thorax and also raise the upper thoracic wall in forced inspiration. *Nerve supply:* The spinal accessory nerve and a branch from the cervical plexus.

11. The *thyroid gland* is situated on the sides and in front of the upper part of the trachea, and extends upward on each side of the larynx. The lobes extend from about the middle of the thyroid cartilage to the fifth or sixth tracheal ring; the isthmus generally covers the second and third tracheal rings.

RELATIONS. *Antero-external:* Deep cervical fascia, sternomastoid, sternothyroid, and sternohyoid muscles. *Postero-internal:* Trachea, cricoid, and thyroid cartilages, inferior constrictor muscle, inferior thyroid artery, recurrent laryngeal nerve and esophagus (on left side). *Externally:* Sheath of carotid artery and internal jugular vein.

12. The thyroid gland "is surrounded by a capsule that sends in trabeculæ, which divide the gland into lobes and lobules. These divisions are irregular, and the lobules are composed of a number of short tubules, sometimes called follicles. Each tubule is lined by cuboidal epithelial cells that rest upon a basement membrane; outside of this is the intralobular, or intertubular, connective tissue that supports the blood-vessels. In the tubules is seen a peculiar, homogeneous substance, the colloid substance, that is supposedly the result of the activity of the cells. It has a yellowish color, and as blood cells are frequently seen in it, the color may be due to the hemoglobin from these."—(Radasch's *Compend of Histology.*)

PHYSIOLOGY.

1. The heat of the body is *maintained* by the thermotactic centers in the brain and cord keeping an equilibrium between the heat gained or produced in the body and the heat lost. *Heat is produced in the body* by: (1) Muscular action: (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart; and (6) the thermogenetic centers in the brain, pons, medulla, and spinal cord. *Heat is given off from the body* by: (1) The skin, through evaporation, radiation and conduction; (2) the expired air; (3) the excretions—urine and feces.

Fever. "The rise of temperature in fever depends primarily upon an increase in the metabolic combustion. Oxygen is used in larger amount than is usual, while the combustion products, carbonic acid, and the nitrogenous substances, urea, uric acid, etc., are excreted in greater abundance. This increased combustion is usually associated with disturbances of digestion and assimilation of food, so that the abnormal heat production is effected largely at the expense of the body proteids and the various tissues and organs concerned in metabolism. But with the increased heat production there usually occur, in the earlier periods of fever, such disturbances in the vasomotor control of the cutaneous blood-vessels as lead to their contraction. Thus heat elimination is retarded. In later periods the vessels of the skin may dilate so that, in spite of its persistent dryness and lack of the cooling effect of sweat evaporation, there is an excessive loss of heat from this source. . . . In the great majority of cases fever is due to the presence in the body of deleterious substances, either introduced from without, or, more commonly produced within the body. These are most often formed in infections, and arise either from the growth in the tissues of pathogenic microorganisms or from the disintegration of their bodies; that is, they are toxins or endotoxins. But there is abundant evidence that fever is not infrequently due to perverted metabolism of the tissue cells, leading to the formation of toxic substances. Such self-engendered

substances are called autotoxins. The pyrexia of sunstroke is believed to be an example of this phase of autointoxication."—(Delafield and Prudden's *Pathology*).

2. *Phagocytosis.* The leucocytes (especially the polymorphonuclears) and certain other cells, notably endothelial cells, have the power of ingesting and removing, and in some cases of digesting, dead and inert matter or bacteria which may gain access to the tissues. This process is called phagocytosis.

Diapedesis is the term used by some writers to denote the wandering out of the red blood cells from the blood vessels during the early process of inflammation, that is, before inflammatory stasis occurs. Others use the term to denote the passage of the leucocytes through the vessel walls.

3. *Composition of bile:* Water and solids; the latter, about 15 per cent., consist of sodium taurocholate, sodium glycocholate, mucin, bile pigments (bilirubin and biliverdin), lecithin, cholesterin, neutral fats, and inorganic salts (NaCl, KCl and phosphates).

The *physiological action of the bile* is: (1) To assist in the emulsification and saponification of fats; (2) to aid in the absorption of fats; (3) to stimulate the cells of the intestine to increased secretory activity, and so promote peristalsis; and at the same time tend to keep the feces moist; (4) to eliminate waste products of metabolism, such as lecithin and cholesterin; (5) it has a slight action in converting starch into sugar; (6) it neutralizes the acid chyme from the stomach, and thus inhibits peptic digestion; (7) it aids the pancreatic juice in digesting protein; (8) it has a very feeble antiseptic action.

4. *White blood corpuscles* are divided into (1) small mononuclear leucocytes, or lymphocytes; (2) large mononuclear, (3) transitional, (4) polynuclear, or polymorphonuclear, or neutrophile, and (5) eosinophile. Their *functions* are (1) to serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

5. *Physiological action of the pneumogastric nerve:* "Throughout its whole course the vagus contains both sensory and motor fibers. To summarize the many functions of this nerve . . . it may be said that it supplies (1) *motor* influence to the pharynx and esophagus, stomach, and intestines, to the larynx, trachea, bronchi, and lungs; (2) *sensory* and, in part, (3) *vasomotor* influence, to the same regions; (4) *inhibitory* influence to the *heart;* (5) *inhibitory* afferent impulses to the *vasomotor center;* (6) *excito-secretory* to the salivary glands; (7) *excitomotor* in coughing, vomiting, etc."—(Kirkes' *Physiology.*) It also supplies secretory nerves to the stomach.

6. There are two normal heart sounds which follow in quick succession, and are succeeded by a pause. The first, or systolic, sound is dull and somewhat prolonged, the second, or diastolic, sound is sharper and shorter. The sounds may be expressed by the syllables *lubb—dup.*

The first sound is heard best at the apex beat in the fifth left intercostal space; the second sound is heard best over the second right costal cartilage.

The *causes* producing the *first* sound of the heart are not definitely ascertained; the following are supposed to be causatory factors: (1) The vibration and closure of the auriculo-ventricular valves; (2) the muscular sound produced by the contraction of the ventricles, and (3) the cardiac impulse against the chest wall.

The *second* sound is caused by the vibration due to the closure of the semilunar valves.

7. "Respiration is carried on under ordinary circumstances by the diaphragm and external intercostals enlarging the chest and sucking air into the lungs, followed almost immediately by the recoil of the elastic lungs and ribs forcing out the air so inspired. But when there is a more than ordinary venous condition of blood in the system greater efforts must be made to supply the lungs with oxygen, and muscles not ordinarily employed in the effort must be brought into play. The arms and scapulæ are fixed by seizing hold of some object, and by bringing into action the trapezius, levator anguli scapulæ, and rhomboidei, so as to make firm attachments for serratus magnus, pectorales and latissimus in their efforts to raise the ribs. Labored expiration in like manner brings extra muscles into play. In labored respiration the nostrils are expanded by the dilatores naris during inspiration, and resume their original size during expiration. The glottis is widely open during inspiration, while it is narrowed during expiration. These movements of the glottis occur during ordinary breathing, but are exaggerated during difficult breathing.

"Breathing is a reflex act, capable of being modified by the will. The nerve-center is situated in the medulla, the *afferent* nerves are the vagi; the *efferent* nerves are the phrenics, intercostals, etc. Respiration continues in the absence of consciousness and after the removal of the brain about the medulla; but destruction of a certain small portion of the medulla below the vasomotor center causes the movements at once to cease. This spot is called *nœud vital.* The center is influenced by impulses from without or within—a dash of cold water in the face, a cold bath, an emotion, venous blood in the pulmonary vessels, all call it into action. The center is probably automatic as well as reflex, section of the vagi, thereby interrupting the channel by which the afferent impulses reach it from the lungs, while interfering with the respiratory act does not stop its action. Automatic impulses descend from the center along the efferent nerves. Probably the venous blood circulating through the center itself supplies the stimulus."—(Ashby's *Physiology.*)

8. *Classification and function of enzymes.* Howell (*Physiology*) gives the following: 1. The protolytic or protein-splitting enzymes. Examples: pepsin of gastric juice, trypsin of pancreatic juice. They cause a hydrolytic cleavage of the protein molecule. 2. The amylolytic or starch-splitting enzymes. Examples: ptyalin or salivary diastase, amylase, or pancreatic diastase. Their action is closely similar to that of the classical enzyme of this group—diastase—found in germinating barley grains. They cause a hydrolytic cleavage of the starch molecule. 3. The lipolytic or fat-splitting enzymes. Example: the lipase found in the pancreatic secretion, in the liver, connective tissues, blood, etc. They cause a hydrolytic cleavage of the fat molecule. 4. The sugar-splitting enzymes. These again fall into two subgroups: (*a*) The inverting enzymes, which convert the double sugars or disaccharids into the monosaccharids. Examples: maltase, which splits maltose to dextrose; invertase, which splits cane-sugar to dextrose and levulose; and lactase, which splits milk-sugar (lactose) to dextrose and galactose. (*b*) The enzymes which split the monosaccharids. There is evidence of the presence in the tissues of an enzyme capable of splitting the sugar of the blood and tissues (dextrose) into lactic acid. 5. The coagulating enzymes, which convert soluble to insoluble proteins. Example: The coagulation of the casein of milk by rennin. 6. The oxidizing enzymes or oxidases. A group of enzymes which set up oxidation processes. 7. The deamidizing enzymes, such as adenase and guanase, which by hydrolytic cleavage split off an NH_2 group as ammonia.

9. *Blood pressure* is the pressure of the blood due to the ventricular systole, the elasticity of the arterial walls, and the resistance of the capillaries. The normal arterial blood pressure varies; the systolic pressure being (in males) about 120 to 150 mm. of mercury, and the diastolic from about 90 to 120 mm. of mercury. In females, the pressure is from 10 to 15 mm. lower. Blood pressure is *maintained* by the contraction of the heart, the peripheral resistance, and the elasticity of the arterial walls.

Blood pressure is estimated by a sphygmomanometer.

Arterial pressure is produced and maintained by: The force and contraction of the left ventricle; the volume of blood pumped by the heart into the already full arteries; the action of the aortic semilunar valves in preventing regurgitation of the blood into the left ventricle when it goes into diastole: the elastic resiliency of the middle coats of the large arteries; the peripheral resistance exerted by the muscular wall of the arterioles, which are especially controlled by the

vasomotor nerves; the increased surface over which the blood flows through the capillaries; and the tension of the extravascular tissues. The *capillary pressure* depends upon the condition of the arterioles. If the arterioles to a part dilate, the capillary pressure rises; if they constrict the capillary pressure falls. If, however, the venous pressure is raised, the capillary pressure must consequently rise too. Gravity very materially influences the capillary pressure. The *venous pressure* is influenced by: The presence of valves, which prevent a backward flow; and respiratory movements.—(From Lyle's *Physiology.*)

10. "The *cerebrospinal fluid* is a clear, limpid, colorless fluid, with a specific gravity of 1006 and an alkaline reaction. In taste it is salty, resembling tears and sweat rather than lymph and blood. It varies in amount from 100 to 130 c.c., while the pressure under which it flows fluctuates between 40 and 150 mm. Its main constituents are water and sodium chloride. In addition it contains glucose, albumin, carbonates, phosphates, urea, about 55 per cent. of CO_2, traces of globulin the only protein material present, and a few cells. These cells are mononuclear, lymphocytic, and endothelial; in health their number varies from 2 to 10 per cubic centimeter. The cerebrospinal fluid is neither a mere exudate nor a true secretion. It is derived from the plasma of the blood by dialysis. Its main source is the epithelial cells lining the choroid plexus of the ventricles; additional sources are probably the perivascular system of the nervous tissues and possibly also the arachnoid villi. It has a definite circulation of its own, passing from the choroid plexus into the lateral ventricles, and from them, by way of the foramen of Monro, to the mid-ventricular system. It then escapes by way of the foramina of Magendie and Luschka, into the subarachnoid space. In the subarachnoid space it bathes both brain and cord, flowing from there by way of the arachnoid villi, the dural sinuses, the veins, and possibly the lymphatics into the circulation. The secretion is active and continuous, so that when withdrawn it promptly reforms, passing with each systole of the heart from the cranium to the spinal canal. It renews itself six or seven times in twenty-four hours and consumes from twenty minutes to two hours to complete the circulation.

"The *functions* are:—(1) *Mechanical*, as a water-bed and cushion; it serves to protect some parts of the nervous system from shock, to support others, and to aid in maintaining a uniform pressure. (2) *Chemical*, as a protection of the nervous system against infection. The choroid plexus, from which the fluid is largely secreted, acts both as filter and ferment maker. It bars the entrance of certain deleterious substances; and creates antiferments, which destroy and neutralize other ferments. (3) *Distributory;* it carries to the tissues the active principles of the pituitary body. (4) It *transfers* to the blood, in its passage through the different spaces of the nervous system, CO_2 and water, and it *receives* from the blood oxygen and sugar."—(From Hunt's *Diagnostic Symptoms in Nervous Diseases.*)

LYMPH. *Origin:* There are two theories as to the formation of lymph: (1) That it is formed from the blood plasma by the processes of filtration, diffusion, and osmosis. (2) That in addition to these, the endothelial cells of the capillaries exercise some influence. *Description:* Lymph is a colorless albuminous fluid, alkaline in reaction, with specific gravity of about 1015, containing lymph corpuscles, and coagulating when drawn from its vessels. *Composition:* Proteins (serum albumin, fibrinogen), sugar, sodium chloride and carbonate, water, urea fat. *Function of lymph:* (1) It conveys nutriment to all cells not directly reached by the blood; (2) in the intestines, it absorbs nutrient material (chiefly fat) and pours it into the blood stream for distribution; (3) it takes certain waste matters to the blood to be later eliminated by the lungs, kidneys, and skin.

The lymphatic system consists of: lymphatic glands, lymph vessels, perivascular lymph spaces, the lymph canalicular system, the pericardial, pleural, peritoneal, and synovial cavities, and the lacteals.

The lymphatic circulation is, strictly speaking, not a circulation at all, since the lymph flows only in one direction, namely, toward the heart. The lymph capillaries take up any excess of the blood plasma which is not required for the nutrition of the tissues. These capillaries consist of a single layer of epithelium, and empty themselves into vessels very like the veins. The lymph vessels are well provided with valves, which are so closely approximated as to give the vessels a beaded appearance. All the lymphatic vessels, except those of the right upper half of the body, empty into the thoracic duct, which terminates in the left subclavian vein, where the left internal jugular vein also enters. Those from the right upper half of the body discharge into the right lymphatic duct, which, in turn, empties into the right subclavian vein at its junction with the right internal jugular vein.

The forces concerned in the circulation of the lymph are: (1) The pressure of the blood in the blood-vessels; (2) thoracic aspiration; (3) muscular contractions of the voluntary muscles; (4) contractions of the intestine; (5) the action of the valves in the lacteals and lymphatics.

12. *Effect of paralysis of the third cranial nerve.*—Ptosis, external strabismus, dilatation of the pupil, double vision, loss of positive accommodation, the movements of the eye are limited and the eyeball seems to be a little more prominent than normal.

Effect of paralysis of the trigeminus.—Paralysis of the muscles of mastication and mylohyoid and anterior belly of digastric; impairment of hearing, loss of sensation over scalp, face, nose, eye, mouth, teeth, external auditory meatus, and anterior two-thirds of tongue; destructive inflammation of the eyeball; and sometimes atrophy of the muscles of expression.

CHEMISTRY AND TOXICOLOGY.

1. *Metals of the arsenic group.*—These are given differently by various authors. Thus, Witthaus gives arsenic and antimony; Alexander Smith gives arsenic, antimony, and bismuth; Holland gives arsenic, antimony and tin; Simon gives arsenic, antimony, tin, gold, platinum, and molybdenum.

2. *Two official solutions of arsenic.*—Liquor potassii arsenitis, and liquor sodii arsenatis.

3. *Silver nitrate* occurs as colorless, crystalline tablets; in the presence of light and organic matter it becomes grey or black. It is *prepared* by dissolving silver in nitric acid, then evaporating, fusing and recrystallizing. *Symbol* is $AgNO_3$. *Synonyms*, Lunar caustic, lapis infernalis. In the *eye*, a solution of 0.2 to 1 per cent. may be used; in the *throat*, a 2 to 10 per cent. solution may be used.

4. *Colloid chemistry* is the chemistry of colloid substances, or of substances in a colloid state; practically all biochemistry is colloidal chemistry. The building up of the living tissue from the products of absorption, cell life, all the life processes in the human body, the maintenance of water in the tissues, the phenomena incident to fertilization and the early development of the embryo, the process of growth, the nature of muscular contraction, the problems of secretion, edema, inflammation, and nephritis are some of the more important problems whose solution depends on colloidal chemistry.

5. A *calorie* is the amount of heat required to raise one gram of water from 15° C. to 16° C. This is sometimes called a small calorie to distinguish it from the large calorie, which is equal to 1,000 small calories.

The *calorie method of feeding* is the method of arranging a suitable diet by computing the calorie value of the ingredients taken as food. Thus each gram of protein and of carbohydrates is reckoned as furnishing (approximately) 4 calories, and each gram of fat 9 calories.

The calorie requirements of an individual vary according to his work; a man doing light work requires about 2,500 calories a day, and one doing very heavy work (as a lumberman) requires about twice this amount.

6. *Foods are classified:*

I. Inorganic. { Salts. / Water.

II. Organic. { Non-nitrogenous. { Fats. / Carbohydrates. } / Nitrogenous—Proteids. }

Examples of each: *Carbohydrate*, sugar and starches; *Fat*, fat of meat, and butter; *Proteid*, flesh of animals, and white of eggs; *Salt*, sodium chloride, and calcium phosphate.

Carbohydrates.—The name carbohydrate was originally given to the group of compounds found chiefly in vegetables, and containing the elements of carbon hydrogen, and oxygen; the molecule contained six or some multiple of six times the atom of carbon, and hydrogen and oxygen in the proportion to form water. The name is not a good one, and the definition is not accurate; but the term is still used to denote a group of substances which includes the various starches, sugars, and gums, etc. They are generally divided into three groups: monosaccharides, disaccharides, and polysaccharides. In the body they are mainly used for the production of energy and heat.

Cooked starch is acted upon in the mouth by the ptyalin and maltase of the saliva; the former of these enzymes converts the starch into maltose, and the latter turns this into glucose. The intermediary stages are from starch to erythrodextrin, to achroodextrins, to isomaltose, to maltose. In the stomach the action of the ptyalin continues for a time, until the acidity of the gastric juice prevents its further action. In the small intestine, the amylopsin of the pancreatic juice hydrolyzes starch to maltose through the stages of dextrin and isomaltose. The maltose is converted into glucose, which is diffusible through the membrane lining the intestine, and is absorbed and passes into the circulation by way of the portal vein. Glucose is carried to the muscles, where some of it is converted into glycogen and stored (just as it is in the liver); as the needs of the body require it, this glycogen is reconverted into glucose, which is oxidized in the body to carbon dioxide and water (with lactic acid, perhaps, as an intermediary substance). The bacteria in the intestine split the glucose into fatty acids, methane, and carbon dioxide.

7. *Enzymes* are organized ferments produced by living cells; they cause definite chemical changes in certain substances. They are capable of causing change in a large amount of material, and they themselves remain unaltered; they only act in a medium of certain reaction, some in an acid medium, some in an alkaline; for each enzyme there is a certain temperature at which its action is the most energetic; each enzyme acts only on a definite substance; the products of their activity must be removed, or the accumulation of these products will hinder further activity.

8. *Metabolism* is the sum total of all the physical and chemical changes which take place in the living body and which constitute the basis of life. It consists of two forms: (1) *Anabolism*, which is constructive, and consists of the turning of simple molecules into more complex ones; and (2) *Catabolism*, which is destructive and consists of the splitting up of complex molecules into simpler ones.

Nitrogenous equilibrium is that condition which exists when the amount of nitrogen which is taken into the body is exactly balanced by the amount excreted.

9. *The lethal dose of the tincture of aconite* is uncertain, owing to the enormous variations in the strength of the preparation; Riley says "death has been caused by twenty-five drops of the tincture."

The lethal dose of tincture of belladonna is also uncertain; Witthaus reports the case of a man recovering after taking half an ounce of the tincture.

The *lethal dose of the tincture of gelsemium* is given by Riley at "about half a fluid ounce."

10. The result would probably be death.

11. *Symptoms of poisoning by wood alcohol.*—"Gastrointestinal disturbance, abdominal pain, general weakness, nausea, vomiting, vertigo, headache. The symptoms of ordinary alcoholic intoxication supervene, with delirium, restlessness, unconsciousness, collapse, and coma. The pupils are usually dilated and irresponsive; nystagmus may be present. Dyspnea and cyanosis are marked. The temperature is subnormal. There is optic injury, the symptoms of which are bilateral, and consist in scotoma, dimness or total blindness, the pupils are dilated and insensible to light. The loss of vision may start in a few hours, or be delayed several days; it generally becomes complete; subsequently there is some improvement, which in most cases finally relapses into total blindness." (From Sollmann's *Pharmacology.*)

Treatment of poisoning by wood alcohol: Wash out the stomach, and administer a hypodermic of pilocarpine; strychnine is a serviceable tonic, and the iodides are said to benefit the amaurosis. Rectal injections of normal saline solution are useful.

12. *Illuminating gas causes death* by the action of the carbon monoxide, which displaces the oxygen from the hemoglobin, and itself combines with the hemoglobin, making carbon monoxide hemoglobin, which is a very firm and stable compound. *Treatment* consists in artificial respiration; forced inhalation of oxygen, and bleeding, with transfusion of healthy blood.

(*To be continued.*)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery.....July 13
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix
Arkansas	T. J. Stout, Brinkley	Little Rock.....May 11
California	C. B. Pinkham, Sacramento	
Colorado	David A. Strickler, Empire Building, Denver	Denver.....April 6
Connecticut*	R. L. Rowley, Hartford	Hartford
Delaware		Wilmington.....June 15
Dist. of Columbia	E. P. Copeland, Washington	Washington
Florida*	W. M. Rowlett, Tampa	Jacksonville.....June 14
Georgia	C. T. Nolan, Marietta	Atlanta.....June 9 Augusta
Idaho*	Roht. O. Jones, Boise	Boise.....April 6
Illinois	F. C. Dodds, Springfield	Chicago.....June 14
Indiana	W. T. Gott, Crawfordsville	Indianapolis
Iowa	G. H. Sumner, Des Moines	Iowa City
Kansas	H. A. Dykes, Lebanon	Topeka
Kentucky	J. N. McCormack, Bowling Green	Louisville.....July
Louisiana	E. W. Mahler, New Orleans	New Orleans.....June 10
Maine	F. W. Searle, Portland	Portland
Maryland	J. McP. Scott, Hagerstown	Baltimore.....June 8
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor.....June 8
Minnesota	T. McDavitt, St. Paul	Minneapolis.....April 6
Mississippi	J. D. Gilleylen, Jackson	Jackson
Missouri	G. H. Jones, Jefferson City	St. Louis.....June 14
Montana*	S. A. Cooney, Helena	Helena.....April 6
Nebraska	H. H. Antles, Lincoln	Lincoln.....June
Nevada	S. L. Lee, Carson City	Carson City.....May 3
New Hampshire	C. Duncan, Concord	Concord
New Jersey	A. MacAlister, Trenton	Trenton.....June 15
New Mexico	R. K. McClanahan, East Las Vegas	Santa Fe
New York	G. M. Wiley, Univ. of State of New York, Albany	New York Albany.....May 18 Syracuse Buffalo
North Carolina	H. A. Royster, Raleigh	Raleigh.....June 21
North Dakota	G. M. Williamson, Grand Forks	Grand Forks.....July 6
Ohio	H. M. Platter, Columbus	Columbus.....June
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City...April 13
Oregon	B. E. Miller, Portland	Portland.....July 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia....July Pittsburgh
Rhode Island	B. U. Richards, Providence	Providence
South Carolina	A. E. Boozer, Columbia	Columbia.....June 8
South Dakota	P. B. Jenkins, Wauhay	Deadwood.....July 13
Tennessee	A. B. DeLoach, Memphis	Memphis Nashville.....June Knoxville
Texas	M. F. Bettencourt, Mart	Austin
Utah	G. F. Harding, Salt Lake City	Salt Lake City
Vermont	W. Scott Nay, Underhill	Burlington
Virginia	J. W. Preston, Roanoke	Richmond.....June 22
Washington*	C. N. Suttner, Spokane	Spokane.....July 6
West Virginia	S. L. Jepson, Charleston	Charleston.....July 13
Wisconsin	J. M. Dodd, Ashland	Milwaukee.....June 29
Wyoming	J. D. Shingle, Cheyenne	Cheyenne.....June
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Fatal Vincent's Angina.—That this affection may exceptionally be fatal is not due to any inherent malignancy, but to chance. Conceivably any affection in the throat could be complicated with a secondary infection of serious character and a Ludwig's angina or similar process develop. Siebenmann has seen death follow profuse hemorrhage from a Vincent ulcer on the base of the tongue in which an artery had been eroded by the disease. The condition had spread despite treatment. This was evidently before the introduction of salvarsan treatment for this affection. The author now uses the latter drug in all cases of Vincent's angina, etc., feeling that the remedy is less risky than the disease. —*Schweizer Medizinische Wochenschrift.*

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Original Articles.

A STUDY OF CERTAIN BANDS IN THE RIGHT UPPER ABDOMINAL QUADRANT. ILLUSTRATED BY CASES.*

BY COMMANDER WILLIAM SEAMAN BAINBRIDGE, M.C., U.S. NAVY, R.F.

NEW YORK.

THE object of this paper is twofold. First, to draw attention to some points which have proved of practical value to the writer when operating upon the abdominal viscera. Second, to report, in brief, some selected illustrative cases. The drawings shown were made in the rough when the abdomen was open, and the findings were dictated during operation.

1. The prone position often fails to give the surgeon an exact conception of the conditions present when the abdomen is opened. Early bands and adhesions are often overlooked or their importance not realized. The reverse Trendelenburg will be of aid in arriving at an exact diagnosis. However, this frequently is not sufficient. We must put traction downward on the hollow organs, so as to picture what would be the relations if the erect posture were assumed.

2. It was only after the anatomist placed the body erect, froze it in that position, and made sections, that the exact anatomy of the body cavities and their organs was determined. The roentgenologist early realized that much could be learned by the examination in the upright position. Would not a few dissections made by the abdominal surgeon, with the body upright, be of great value in preparing him for his work? I have found it so myself.

3. Many a small band or adhesion when seen in time, and its significance understood, will, if treated adequately, prevent more serious conditions.

4. "Breaking up of adhesions" is an unfortunate term. In very bad cases that may be all one can do—literally tear these bands and hope that chance will bring those which inevitably reform in places where they will not do as much harm as before. Success sometimes follows such a course, but more often failure. By carefully dividing bands transversely and suturing longitudinally, by flaps of peritoneum or of omentum or skin grafts, many a case of distressing adhesions can be cured.

5. Early adequate attention to bands and adhesions in the right upper abdominal quadrant often makes such operations as cholecystotomy, cholecystectomy, and gastroenterostomy unnecessary.

*Read before American Association of Obstetricians and Gynecologists, at its annual meeting, September, 1919.

6. May it not be possible that by a just estimate of the mechanics of the abdomen and careful attention to the lessons learned, we may better order our lives from the beginning and so often prevent the formation of bands and adhesions, thus obviating their serious sequellæ?

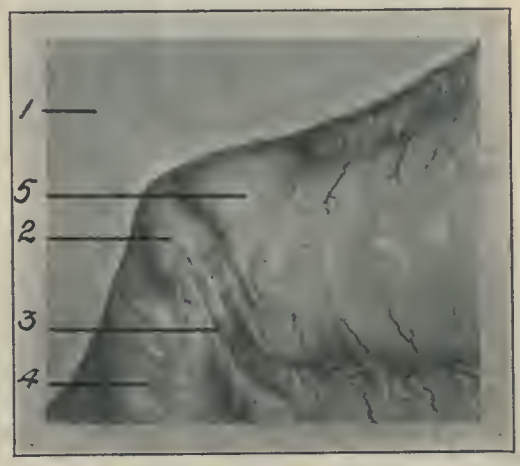

FIG. 1.—1, Liver; 2, Fundus of gall bladder; 3, Bands from gall bladder across duodenum to gastrocolic omentum. Traction on the transverse colon caused these bands to stand out, the gall bladder to be pulled downward, angulating the cystic duct and compressing the duodenum. Practically, the transverse colon was supported by these bands, and the dilatation was proximal to this point; 4, Ascending portion of duodenum distended; 5, Descending portion of duodenum not distended.

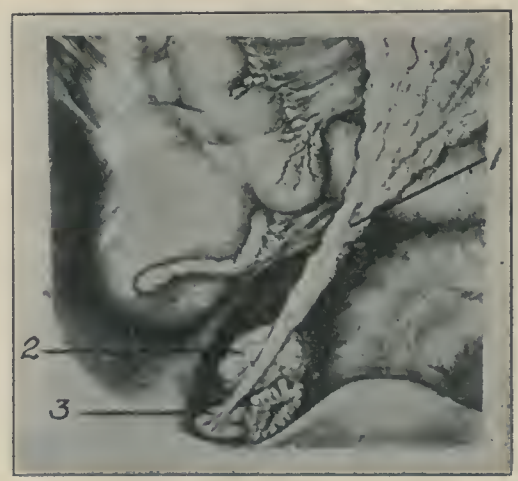

FIG. 2.—1, Omental band; tip of great omentum attached to right ovary and tube; 2, Ovary; 3, Tube.

CASE I.—A. M. Age, 31; female; single. First seen November 29, 1916. *Chief complaint*—"bilious" attacks past two years. At first these came every month, but during the year previous to my seeing her, the average was one a week. Attacks consisted of general malaise, headache, nausea, and vomiting of bile with slightly yellow tint to conjunctiva. No pain. Any

great exercise in the upright posture brought on an attack. Marked constipation. Practically an invalid; unable to work. *Physical Examination.*—Resistance over gall bladder; tenderness over terminal ileum. Poor general condition. *X-ray Examination.*—Dilated ascending colon with ptosis of hepatic flexure. Colonic

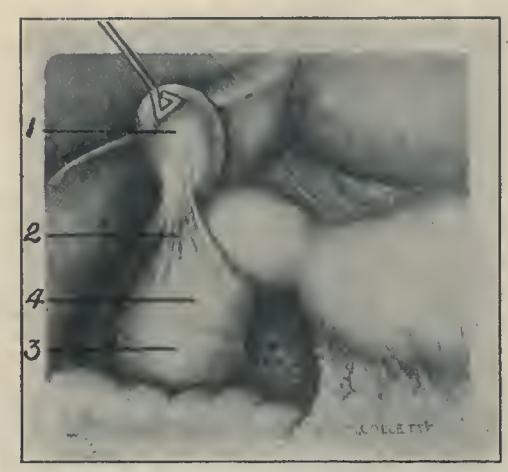

FIG. 3.—1, Gall bladder; 2, Bands, 3, Dilated second portion duodenum; 4, Site of scar of old ulcer. (Picture shown before Railway Surgeons Association, Pennsylvania Lines East of Pittsburgh, at Philadelphia, October, 1916.)

stasis chiefly in ascending colon. *Treatment.*—Six months of best dietetic, medical and physico-therapeutic treatment to avoid operation. Considerable gain in general condition, but attacks persisted. *Operation.*—Polyclinic Hospital, New York, June 5, 1917. Laparotomy. Conditions found as shown in Figs 1 and 2.

The appendix was not diseased, but was removed. Bands relieved in usual way by cutting transversely and carefully suturing longitudinally. On examination after bands were corrected pressure on the gall bladder easily emptied this organ of its contents; no stones found. Attachment of great omentum to right ovary and tube corrected. All raw surfaces covered.

Subsequent History.—Uneventful recovery. Last report September 2, 1919. Teaching or working since September, 1917, continuously. Feels operation has markedly benefited her. Considers herself well. Bowels easily moved by diet.

CASE II.—A. E. Age, 26; male; single. University student. First seen April 6, 1916.

Previous Personal History.—Most of the time for past eight years suffering from hyperchlorhydria. Gastric and abdominal distress with attacks of vomiting and frequent recurrence of symptoms of duodenal ulcer. Marked constipation and loss of flesh. *X*-ray examination in December, 1914, showed some pyloric stenosis. Received medical treatment with little effect. During this treatment was sent to a farm, and in five months lost forty-nine pounds in weight.

Physical Examination.—Tenderness over terminal ileum and duodenum.

X-ray Examination.—Deformity of cap; marked gastric retention, stomach being only half empty at six hours. Descending and horizontal duodenum dilated, suggesting duodenojejunal kink.

Diagnosis.—Old duodenal ulcer and intestinal toxemia.

Operation.—Polyclinic Hospital, New York, April 25, 1916.

Laparotomy.—Conditions found as shown in Fig. 3. Gall bladder adherent to duodenum, with white scar of old duodenal ulcer at base of one of the strong bands. Marked duodenojejunal kink. Cecum dilated. Appendix slightly thickened; removed. Cecum plicated. Bands about gall bladder cut transversely and raw surfaces covered by interrupted longitudinal sutures.

Note.—The retention in the stomach simulating pyloric stenosis was due to a definite duodenojejunal kink.

Subsequent History.—Uneventful recovery. Considered himself perfectly well and entered officers' training camp at Plattsburgh. In the fall of 1917 received a commission in the United States army and was able to go actively into the war.

CASE III.—F. W. Age, 30; female; single. First seen August 7, 1915.

Previous Personal History.—Typhoid fever 1910. Bilious attacks of increasing frequency.

Physical Eaxmination.—Gall bladder tender. Liver slightly enlarged. General enteroptosis.

Treatment.—Diet, medicine, supporting corset and special exercises. Treatment was carried on for a year with the exception of two months when she was placed in reverse Trendelenburg position and given forced feeding and rest régime. Improved, but still complained of attacks of biliousness, with vomiting of bile and gastric discomfort.

X-ray Examination.—General enteroptosis.

Operation—The Lodge, Chautauqua, New York, July 27, 1916.

Laparotomy.—Conditions found as shown in Fig. 4. In addition, marked prolapse of all abdominal viscera; moderate sized duodenojejunal band, kinking the juncture; well developed ileopelvic band. Appendix underhung and adherent to band. Cecum mobile, rotated inward. Ileocecal valve incompetent. Accentuated last kink. Bands cut transversely and sutured longitudinally. Appendix removed. Cecum plicated and anchored. Raw surfaces covered in usual manner.

Note.—When the abdomen was opened and patient was placed in reverse Trendelenburg position, the large intestine became dependent and the band to gall bladder and stomach stood out very clearly, and the kinking of cystic duct was apparent. When the "cholecystocolonic" band was bisected it was very easy to empty the distended gall bladder, which was impossible with a reasonable amount of pressure, before release of the band.

Subsequent History—Patient was given general enteroptic corset and careful régime during convalescence. An automobile ride, soon after leaving hospital, caused pain in small of back for a time. This was relieved by refitting with a new corset and supporting right kidney. In April, 1917, was in excellent condition; gained sixteen pounds in weight; had no more bilious attacks. Last report September 7, 1919. Weighs more than she ever did before. Finished two years work of training for nurse without missing a

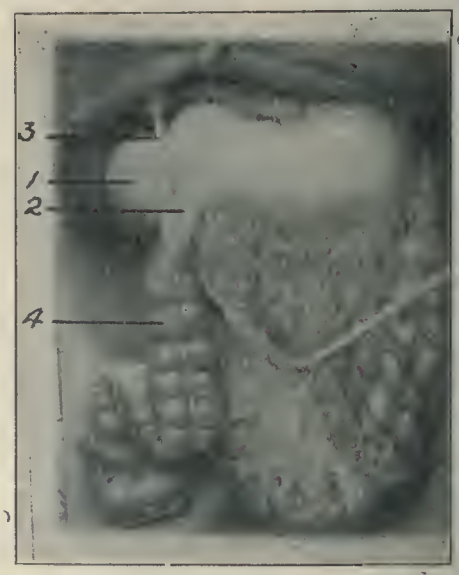

FIG. 4.—1, Dilated duodenum; 2, Band supporting transverse colon; 3, Band from fundus of gall bladder across duodenum coalescing with band from edge of gastrocolic omentum supporting transverse colon; 4, transverse colon.

day. No constipation and no "unpleasant symptoms." Feels better than she ever has in her life.

CASE IV.—S. D. Age, 31; female; married. Referred by Dr. H. W. Schlappi, Fulton, New York. First seen January 12, 1917.

Previous Personal History.—Appendix and right

ovary removed and uterus stitched forward six years ago. Acute attack of tonsillitis in spring of 1916, followed by chills and general yellow tint to skin and conjunctivæ. In November, 1916, had another attack of chills and vomiting of bile, with discomfort in the right hypochondrium; in bed five weeks. She has general abdominal discomfort and nausea. Walks almost with a humpback. After *x*-ray examination recently, previous to seeing me, was told "there were shadows around gall-bladder which were suspicious of gall-bladder trouble."

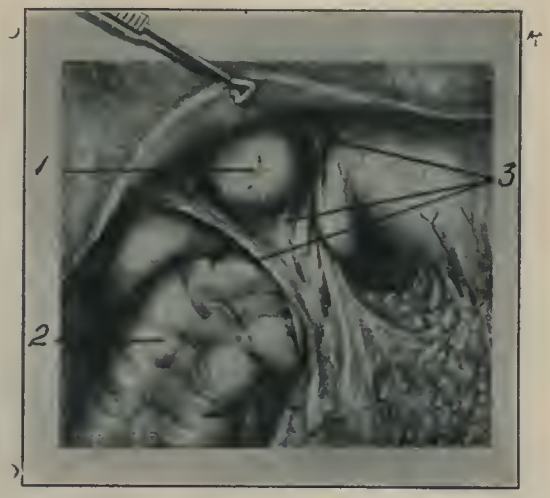

FIG. 5.—1, Distended gall bladder; 2, Hepatic flexure; 3, Bands constricting duodenum.

Physical Examination.—Tenderness over gall bladder, liver and terminal ileum. General enteroptosis. Right kidney floating. Some secondary anaemia. Practically a chronic, nervous, dyspeptic invalid.

X-ray Examination.—Nothing pathological in or about gall-bladder (this contrary to the diagnosis made by the first roentgenologist); pelvic adhesions with some compression of the terminal ileum.

Operation.—Polyclinic Hospital, New York, January 25, 1917.

Laparotomy.—Conditions found as shown in Fig. 5. Great omentum tightly adherent to scar of previous laparotomy wound, which extended from umbilicus to symphysis. Attachment of great omentum fixed stomach and transverse colon to abdominal wall. This easily explains the humpback attitude the patient assumed when standing, which started soon after the previous laparotomy several years ago, and which had become more marked of late. Stomach enteroptic. Pylorus normal. Y-shaped band attached to under surface of liver, in center of which was gall bladder, distended, but containing no stones. Band was very strong; its upper attachment consisted of three forks —one to right of gall bladder, one to gall bladder and one to left of gall bladder. This went almost to gastrohepatic omentum, across transverse colon. Distinct duodenojejunal kink. No adhesions around old appendix stump. Cecum dilated. Pericolic bands along cecum and ascending colon. Right tube and ovary absent. Uterus retroverted and retroflexed. Last kink of pelvic colon markedly angulated. Bands and adhesions were treated in the usual manner, restoring, as far as possible, normal continuity of hollow viscera. Uterus anchored forward by Johnson-Willis operation. Duodenojejunal band stretched, as it was found unnecessary to bisect it.

Subsequent History.—Convalescence prolonged but uneventful. Last report, July, 1919. Old symptoms entirely relieved. Good general condition. Walks perfectly well. Able to do her own work.

CASE V.—A. Z. Age, 35; male; married. Referred by Dr. John A. Breglia, New York. First seen March 8, 1917.

Previous Personal History.—Recurrent mild attacks of appendicitis with constipation, and at times distress in the right hypochondrium.

Examination.—Tenderness over appendicular region; high placed appendix.

Diagnosis.—Intestinal toxemia with relapsing appendicitis.

Operation.—Polyclinic Hospital, New York, March 9, 1917.

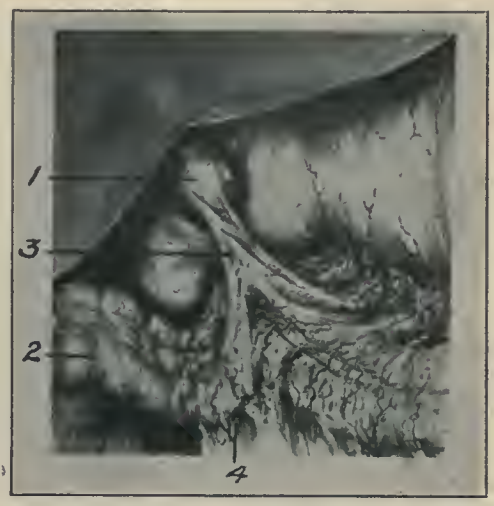

FIG. 6.—1, Gall bladder; 2, Hepatic flexure; 3, Y-band with two arms downward supporting transverse colon across duodenum by attachment to fundus of gall bladder; 4, Thickened edge of great omentum.

Laparotomy.—Conditions found as shown in Figs. 6 and 7.

Appendix found chronically diseased with some adhesions. Beginning diverticulum of cecum. Distinct constriction of transverse colon, even in supine posture, a band from gall-bladder, extending from base to fundus, across duodenum to gastrocolic omentum, folding up omentum which was tightly adherent to gall bladder. Appendix removed; cecum plicated; bands freed in usual manner. Raw surfaces turned in.

Note—This might easily have been taken for a case of mild relapsing appendicitis, and the removal of appendix considered sufficient. The importance of not always accepting the appendix as the cause of all the trouble, and the wisdom of making a careful abdominal examination is clearly demonstrated in this case.

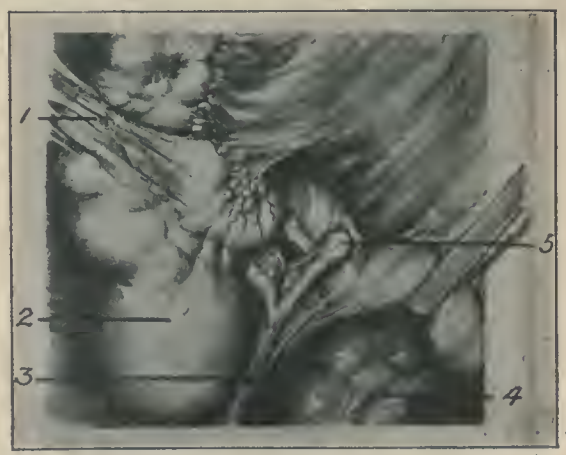

FIG. 7.—1, Pericolic bands, so-called "Jackson membrane," attempting to hold up rotating mobile cecum; 2, Diverticulum of cecum; 3, Ileopelvic band with appendix attached; 4, Pelvic colon; 5, Bulbous end of appendix.

Subsequent History.—Convalescence uneventful. Last report August 4, 1919. Patient looking and feeling perfectly well. The physician who referred the case to me states that the man has not had a sick day since the operation.

Case VI.—H. K. Age, 25; female; single. First seen April 10, 1916.

Previous Personal History.—Compelled to give up college work and was drifting toward chronic invalidism. In January, 1914, had attack of appendicitis. In bed a week; no operation. Six weeks later had another attack. On March 18, 1914, had appendix removed and uterus stitched forward. Markedly constipated. Since operation has felt well for only three or four months, and dropped from 137 to 114 pounds in weight. Has abdominal discomfort, especially referable to epigastrium most of time. Frequent eructations of gas. At times nausea and occasional vomiting.

Fig. 8.—1, Gall bladder; 2, Band at base of gall bladder and along cystic duct across duodenum; 3, Band from liver to cystic duct, tending with gall bladder in dependent position, to rotate cystic duct; 4, Transverse colon; 5, Band extending across pylorus. (Picture shown before Railway Surgeons' Association, Pennsylvania Lines East of Pittsburgh, at Philadelphia, October, 1916.)

Physical Examination.—Some psoriasis. Lumps in upper and outer quadrant of both breasts. Considerable abdominal gaseous distension. Thoroughly toxic. This was such a marked case of chronic intestinal stasis that *x*-ray examination was deemed an unnecessary expense.

Operation.—Polyclinic Hospital, New York, April 14, 1916.

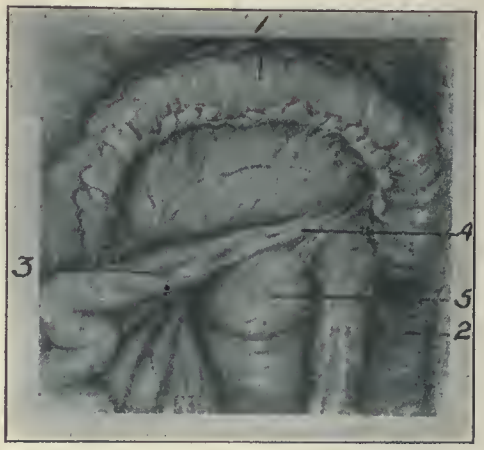

Fig. 9.—Transverse colon held up, exposing region of duodenojejunal obstruction. 1, Transverse colon; 2, Descending colon; 3, Collapsed jejunum; 4, Bands about termination of duodenum; 5, End of dilated doudenum, showing marked distention; effort being made to empty stomach by pressure on gastric organ which markedly dilated duodenum to point of duodenojejunal kink.

Laparotomy.—Conditions found as shown in Figs. 8, 9, 10 and 11.

Stomach prolapsed so that lesser curvature lay below umbilicus. Pylorus and duodenum greatly dilated. A strong band of adhesions attached above to gall-bladder—from near apex of fundus to gastrohepatic omentum—crossed duodenum and extended over pylorus at one point. Main part of band went downwards to prolapsed transverse colon. Lying in prone position on operating table real significance of band was not apparent until traction of colon was made, simulating conditions in standing position. Then a marked indenting of duodenum—almost obstruction—by this band from gall-bladder to colon, was clearly demonstrated. A very strong band which rotated gut outward and caused considerable obstruction, went across ascending colon just below hepatic flexure. Small ileopelvic band. Cecum very mobile and greatly enlarged. Sigmoid redundant with accentuated last kink. Bands treated in usual manner; cecum enfolded. All raw surfaces covered.

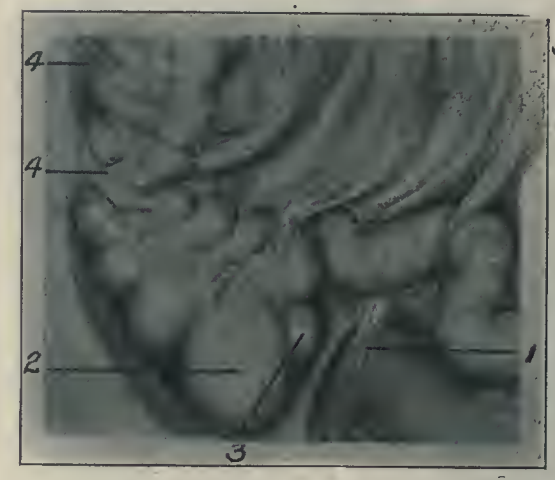

Fig. 10.—1, Small ileopelvic band; 2, Diverticulum; 3, Stump of appendix; 4, Ileopelvic bands. The juncture of cecum with ascending colon forms a point of obstruction when mobile cecum tends, when full, to rotate from above downwards and from without inwards.

Subsequent History.—Convalescence uneventful. Last report July 8, 1919. Perfect condition. Lumps in breast disappeared. Patient states she could not wish for better health.

In the aforementioned cases, many symptoms were referable to the right upper abdominal quadrant and those consulted had considered the probability or certainty of the presence of gallstones. None were found, and there seemed no need of removing a gall-bladder which was not, apparently, diseased. All these cases were treated by the least amount of surgical interference which the pathology seemed to demand.

Fig. 11.—1, Pelvic colon; 2, Accentuation of last kink.

Allow many of these bands to remain and the patient to gain in strength, the points of obstruction become more acute, the toxemia continues indefinitely, and the inevitable added pathology often means conditions requiring far more surgery.

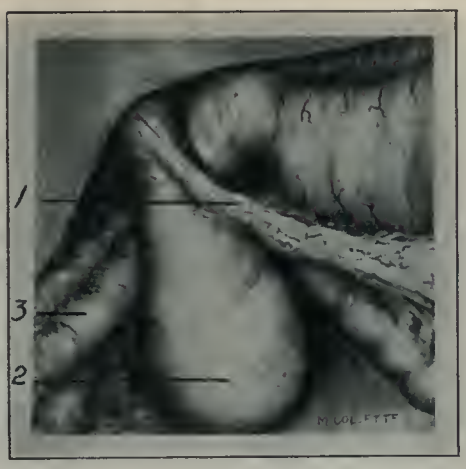

Fig. 12.—1, Band twisting outlet of gall bladder; 2, Distended gall bladder; 3, Hepatic flexure.

The following three cases illustrate this point.

Case VII.—E. R. Age, 45; female, single. Referred by Dr. Wm. Van Valzah Hayes, New York City. First seen December 11, 1915.

Previous Personal History.—Typical of intestinal toxemia with what was called "mild gall stone attacks"; some hemorrhoids.

Physical Examination.—Large, distended gall bladder, extending practically to umbilicus.

X-ray Examination—Large distended cecum with first degree patency of the ileo-cecal valve. The cecum is so dilated that the effort of defecation does not empty it.

Operation.—Polyclinic Hospital, New York, December 12, 1916.

Laparotomy.—Conditions found as shown in Fig. 12. Large, distended gall-bladder. Angulation of cystic duct near base by strong band across duodenum to gastrocolic omentum. This band not only angulated duct but rotated gall-bladder and kinked large gut when traction was made on transverse colon, as in upright posture. Gall bladder removed; no stones. Bands corrected. All raw surfaces covered. Condition of patient was such that it was judged wise to attend only to right upper quadrant.

Pathological Report.—Chronic inflammation of gall sac.

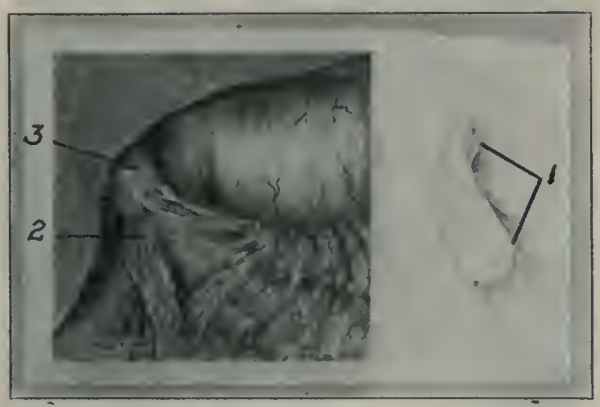

Fig. 13.—1, Gall bladder with seventy-five stones; kinked at base by band over duodenum to region of cystic duct. Band attached to mass of adhesions and situated around fundus of gall bladder; 2, Mass of adhesions; 3, Fundus of gall bladder. (The mass of adhesions around the gall bladder was distinct, although attached to the single band at the base of cystic duct.)

Subsequent History—In February, 1917, after an uneventful convalescence returned to work seemingly perfectly well. Lost sight of at end of 1917 when she was reported by Dr. Hayes as in excellent condition.

Case VIII.—C. F. Age, 60; female; married. Referred by Dr. C. P. Faller, Carlisle, Pa. First seen April 24, 1917.

Previous Personal History.—For seven years off and on discomfort in right upper abdominal quadrant. Marked constipation. Hemorrhoids. Intestinal toxemia. Typical gall stone attack December, 1916.

Physical Examination.—Distinct tenderness over gall bladder and descending duodenum. Some tenderness over ileum and last kink. Anaemic.

X-ray Examination.—"Pathological gall bladder with pericholecystitic adhesions, the probable presence of gall stones, and a tender, partially fixed, stiffened cecum from adhesions which may be the result of a chronic appendicitis."

Operation.—Polyclinic Hospital, New York, May 8, 1917.

Laparotomy.—Conditions found as shown in Fig. 13. Appendix kinked, chronically inflamed and underhung, causing ileal stasis. Great omentum attached to right lateral wall, suspending gut. Gastrocolic omentum near pylorus and lower part of pyloric portion of stomach on greater curvature was attached by a strong band from fundus of gall bladder across duodenum to transverse colon. An extension downward toward common bile duct of thin white fibers caused angulation at junction of cystic duct with common bile duct, making it difficult for gall bladder to empty itself normally. Seventy-five stones of varying sizes found in the gall-bladder. Before opening organ four stones were milked back from common bile duct; one large stone had to be broken between fingers. Appendix removed. Bands treated in usual manner. Gall bladder opened and stones removed. Closure as usual.

Subsequent History.—Convalescence uneventful. Last report September 8, 1919. No recurrence of attacks; has gained twenty-two pounds. Marked constipation relieved. In excellent condition.

Note.—The gall-bladder was not particularly thickened, and the condition of patient was such that it was deemed best only to remove the stones and drain the organ. According to a classification accepted by some, we would consider two types of bands being present in upper quadrant—the smaller, evolutionary, and the mass, inflammatory.

Case IX.—A. B., age, 47; female; widow. First seen March 1, 1917.

Previous Personal History.—Constipation and "indigestion" since child was born, twenty-four years ago—supposedly bilious attacks or gallstones. Severe attacks at first came every six months, stopped for a time, and then came on once every two or three years. Jaundice eighteen years ago. Operation for rectal fistula fifteen years ago; drained for a year; cured after second operation. Recently discovered a lump in left breast.

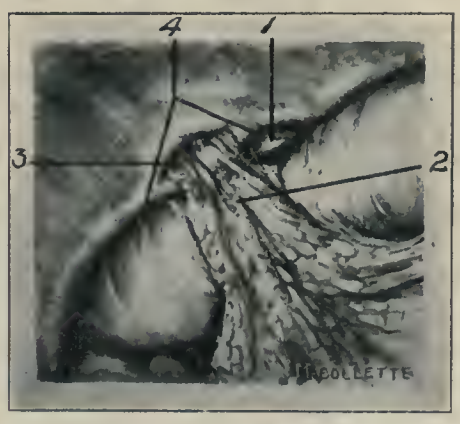

Fig. 14.—1, Gall bladder; 2, Mass of adhesions; 3, Scar nodule very suspicious of malignancy; 4, Small section of liver removed with nodule.

Physical Examination.—Lumpy condition of upper and outer quadrant of breasts, particularly left one. Tenderness over gall bladder and appendix. Cystocele and rectocele.

X-Ray Examination.—Practically negative.

Operation.—Polyclinic Hospital, New York, March 27, 1917. Laparotomy. Condition in gall bladder region as shown in drawing XIV.

When the abdomen was opened a small nodular mass at edge of liver, close to gall bladder, was discovered. This was situated where a strong band of adhesions found attachment above, extending over duodenum down to transverse colon—hepatocolic band. The possibility that this was malignant and the presence of so much needing attention elsewhere in abdominal cavity made operator decide to remove this section of liver for examination after relieving all other pathology, except in right upper quadrant. Accordingly, section of liver as shown in Fig. 14 removed, and iodine gut sutures used to close gap and stop hemorrhage. Other conditions found and corrected: Terminal ileum fixed by ileopelvic band. Appendix thickened and under inner margin of dilated cecum. Accentuation of last kink, fastening about two inches of terminal colon to left lateral wall. Upper four inches of ascending colon adherent to corresponding length of first portion of transverse colon. All bands carefully cut and raw surfaces covered in usual way. Appendix removed. Cecocolonic plication with anchoring of gut.

Pathological Report.—Scar tissue at edge of liver—chronic inflammation, apparently beginning to undergo degenerative changes.

Second Operation.—Polyclinic Hospital, New York, April 13, 1917. Matters attended to at operation, March 27, 1917, satisfactory. Great omentum adherent over liver scar and about site where small drainage tube had been employed for few days after previous operation. Omental adhesion relieved and gall bladder exposed. Many adhesions divided. Duodenum at one point markedly constricted by bands. Released. Gall sac with mass of stones and inflammatory tissue around two calculi, which had ulcerated through gall bladder, removed en masse. Drainage. Closure in usual manner.

Subsequent History.—Convalescence uneventful. Saw patient July 14, 1919. Breasts normal. States she is perfectly well as far as she knows.

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OBSERVATIONS AFTER SEVERE GUNSHOT FRACTURES OF THE LONG BONES.

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It is not the purpose of this paper to infringe in any way whatsoever upon the field and activities of either the internist or the surgeon in diagnosis and treatment; however, I have always maintained, and I think justly, that the mental flexibility of the Roentgenologist must be as broad as either one of them; for without adequate medical and surgical knowledge he is unable to cope with the medical problems of the day, as portrayed on the *x*-ray plate or screen.

Too high praise cannot be given the Thomas arm and leg splint in its essential uses both on the field and in Base Hospital treatment. The ease with which wounded men with smashed fractures could be handled with a minimum amount of pain in the *x*-ray laboratory was a dominant observation. With the use of this splint, pain was not only diminished or prevented, but bleeding was checked and the immobilization of the fragments prevented further injury to the soft tissues and bones and subsequent spreading of sepsis. Another observation which often presented itself was the value of the trained hands of a physician of experience, in the personal handling of patients upon the *x*-ray exposure table. Such work should not be left to one without medical training.

Fig. 1.—For description of the illustrations see page 601.

Sir Anthony Bowlby has recently stated that many things have been taught us in the treatment and the handling of fractures in this War. In following

Fig. 2.

up patients I have frequently observed, along with my colleagues, that the loss of bone substance to the extent of 1 to 2 inches may be replaced without appreciable shortening of the limb; that is, if suit-

able treatment with splints and the proper extension is applied. *X*-ray examination has proven many times that it is not necessary to approximate bone ends in order to obtain complete union, providing proper alignment and position are obtained and

Fig. 3.

maintained with apparatus designed after the Thomas splint. Bone will practically always fill in the intervening space, if sufficient time is allowed. This same osteogenesis will also follow a severe

Fig. 4.

osteomyelitis. In fact, bone will replace itself even while infection remains in the wound.

The question of bone removal after severe gunshot injuries was not settled when the Armistice occurred; however, there is no doubt that the removal of all fragments which might necrose will hasten wound healing, while on the other hand removal of fragments delays union of the fracture. It therefore appears that many of the bone frag-

Fig. 5.

ments, in spite of infection, aid materially in the reconstruction process. The others become necrosed and slough out. Evidently those pieces of bone with portions of the periosteum remaining become part of the new bone, fusing with it, and act as the patient's own bone graft. Frequent *x*-ray examinations have driven home this observation.

The lessons of War Surgery are becoming more apparent daily in their applicability and usefulness in the industrial field of work, where thousands of men are employed in the industries and frequent accidents occur that simulate gunshot injuries. Much has been taught the surgeon by the frequent following of such cases by means of the *x*-ray examination. I believe that industrial surgery will receive a new impetus, as the result of the experiences in the War, in the treatment of severe crushed bone injuries with infection.

Fractures as a class, according to many authorities, require more skill and judgment in treatment than the ordinary laparotomy; the latter operation has its dramatic side, but I believe it does not call for the responsibility and ingenuity in treatment that a difficult fracture does. In civil life two varieties of fracture are noted, the displaced and the nondisplaced variety, the latter of which needs little adjustment. Practically all war fractures are of the compound comminuted type. Every effort should be made to save the bone fragments. Sequestra and devitalized fragments can be recognized by fre-

quent Roentgenological examination. Such examinations were always made of severe comminuted fractures for the purpose of viewing the position of the fragments and the progress of union, as well as to determine the presence or absence of osteomye-

Fig. 6.

litis. The observation of callus, sequestra, gas gangrene, and pus pockets was the special field of the *x*-ray. Proper treatment was therefore given according to the findings.

Amputations were less frequent in this war than in previous wars. If the vascular supply was intact wonderful results were obtained by conservative treatment, even when the bones were horribly smashed; therefore many observers came to the conclusion that primary amputation, especially of the hip, was so uniformly fatal that it had better not be done.

Fractures of the femur, especially of the upper third and into the hip joint, were frequently observed in our Base Section. Many of the wounds showed the explosive effect of bullets not only on the femur itself but on the associate bones in the hip-joint region, some of which were frightfully comminuted. Many of the patients came under observation 2 to 4 months after being wounded, having been collected from various sectors and finally centralized at the large Base in Savenay. The *x*-ray examinations often showed severe osteomyelitis on the road to recovery or healed. Severe fractures were often noted healed or on the road to recovery, with shell fragments and machine gun bullets *in situ*, and all external evidences of infection removed. Experience had taught the surgeons that an old osteomyelitis may be awakened if an effort is made to remove the foreign body. A conservative attitude was always maintained in such cases.

It was surprising to note how often after a severe splitting injury resulting from a bullet or shrapnel impact, many fragments will appear to be intermingled with pieces of a foreign body, illustrating the explosive effect of a bullet, yet the bones will heal with good union and functional results, although the foreign bodies remain in situ. I remember very well the case of an officer who received a machine-bullet wound in the upper third of the femur. The entrance and exit bullet wounds in the muscle and skin were of the ordinary punctured character, but upon examination with the *x*-ray the bone was seen to be shattered into what appeared to be a hundred pieces; still the patient's thigh healed after several months, with a good result.

The difficulties to be overcome in operating an overseas *x*-ray laboratory were many. Irregularities of electric supply were ever present and were very annoying to say the least. Adverse climatic conditions coupled with insufficient water and heat supply, aside from cramped quarters to work in, made it ofttimes seem impossible to develop so many as one to two hundred exposures per day. Naturally under such adverse conditions, the technical results obtained in the laboratories at home under normal surroundings could not be duplicated.

In conclusion it must not be forgotten that we were dealing with a single class of patients, the

Fig. 7.

pick of the country for physical vigor, trained young men selected for their health and physical prowess. Many times even though stricken with grave and apparently mortal injuries, they would show a re-

siliency and "come back" not seen in the average individual. This factor must always be considered.

DESCRIPTION OF THE ILLUSTRATIONS.

FIG. 1.—Illustrates osteogenesis and fusing of the bone fragments after the sequestra have been thrown

FIG. 8.

off or removed. The callus formation and bone reconstruction process are clearly depicted between the distant bone ends. Note the perfect bone alignment which was found to be necessary for perfect filling in of the space between the shafts. There is a small fragment of a foreign body in the upper part, which was too small to be removed, and the attempt at its removal would cause more damage than good to the patient. This photograph illustrates firm union with practically little or no shortening of the limb. Time, about four months after being wounded.

FIG. 2.—Shows a compound comminuted fracture of the lower third of the femur with outward and backward displacement. This is held in position by the Thomas splint with traction. Note the bony bridge of callus between the two distant bone ends; the shady and not so dense portion between the fragments. There is present a small fragment of shrapnel with numerous other tiny portions too small to be removed. There still remains a moderate degree of osteomyelitis in the upper portion of the lower fragment. This will clear away.

FIG. 3.—Demonstrates a definite dense bridging in of two distant bone ends held in position and alignment by means of the Thomas apparatus. There is firm union in this case, with very little if any osteomyelitis remaining. Note the numerous pieces of foreign bodies too small to be taken out in the lower part of the shaft. This patient will undoubtedly have good union with little or no shortening of the limb.

FIG 4.—Shows a compound comminuted fracture of the upper third of the femur, in good alignment and position. Distance of bone fragments about one and one-half inches. A few tiny bullet fragments are present in the wound. Note how all the fragments are fused or absorbed. The interesting feature in this case is the bony bridge on the inner side which simulates a bone graft it may be called Nature's own graft. The pointed ends of the approximating shafts show erosion of an old osteomyelitis, which has cleared away to a certain extent. The prognosis of such a case, as to firm union and very little shortening of the femur, is very good.

FIG. 5.—Shows a compound comminuted gunshot fracture of the lower third of the femur well on the road to recovery. There was good alignment and position with firm union at the time the Roentgenograph was taken. This was originally a severe shattered fracture, but nearly all the fragments are now reunited. The periosteal bone bridges on both the outer and inner sides are firmly united with the upper and lower portions. In the center the arrows point to a sequestrum, in a pocket, which was removed. A good result can be anticipated in such a case with practically no shortening of the limb.

FIG. 6.—Shows a fractured femur similar to that in Fig. 5. There was good alignment and position with firm union. The periosteal bone bridges on both the outer and inner surfaces are firm and dense, which denotes excellent bony union. These bony splints hold the upper and lower fragments with great firmness. The arrows point toward a sequestrum and also a focus of osteomyelitis which still remains in the medulla. This is from all practical purposes walled off and only necessitates removal of the sequestrum and subsequent healing will follow. This Roentgenogram was taken about four months after injury. A few very small foreign bodies still remain in the wound.

FIG. 9.

FIG. 7.—Illustrates a severely shattered fracture of the middle of the femur due to the impact of a soft bullet or shell fragment. There are numerous flattened-out foreign bodies throughout the wound. They are too thin and scattered to be removed. Callus de-

posits are taking place, and the original fragments are being fused to form a new shaft. The upper and lower fragments are in good alignment.

FIG. 8.—A healed fracture of the compound comminuted type. The line of fracture is just below the neck and the greater tronchanter. The soldier presented good function with practically no shortening. The *x*-ray appearance of the healed part is dense and normal throughout. There is very little deformity, and the alignment is excellent. There are a number of thin foreign bodies imbedded in the bone which are doing no harm. Osteomyelitis in the bone has disappeared entirely.

FIG. 10.

FIG. 9.—This is the most remarkable linear split fracture that I have seen or heard of being recorded. It may be called a "rail split fracture." It was probably received while the soldier was lying in the direction of the bullet. The femur was split throughout its whole length by the course of the bullet. There is still present osteomyelitis in the bone, but the injury at this time, four months after, had every evidence of the patient recovering eventually. The fracture is in a Thomas splint.

FIG. 10.—Shows a very severe comminuted fracture of the lower two-thirds of the humerus. There is still osteomyelitis present. The fragments are retained, and

FIG. 11.

FIG. 12.

FIG. 13.

FIG. 14.

in spite of the osteomyelitis are fusing together. The arm is retained in a plaster cast. There is considerable deformity present. As this *x*-ray picture was taken about four months after the injury, there was hope at the time that the arm could be saved. It was impossible to follow this case as in many others, for the patients

FIG. 15.

were as soon as possible evacuated to the United States.

FIG. 11.—Another severely comminuted fracture similar to that shown in Feg. 10, except that it is in the lower tibia and fibula. All the fragments in this case were retained and are now fusing. At the time the patient had fairly good union with little deformity. The effect of shrapnel impact is distinctly demonstrated in this case. A few tiny foreign bodies are still in the wound. A moderate degree of osteomyelitis is present but in spite of this the patient is now well on the road to recovery.

FIG. 12.—The arrows point to a bridge of bone about three inches long in the middle of the radius, uniting the upper and lower portions. The upper third of the ulna also shows an oblique fracture. This case is specially interesting for it demonstrates the new shaft of bone reforming when the mid-portion of the radius had been shot away. The radiograph was taken four months after the receipt of the injury. The whole arm is in a plaster cast.

FIG. 13.—Shows a fracture of the upper third of the femur healed; there is practically no deformity, only slight outward displacement of the upper fragment. The interesting feature about this patient is the imbedded machine gun bullet in the region of the greater trochanter and neck. There is no osteomyelitis surrounding the bullet, therefore no effort was made to remove the projectile, as an old osteomyelitis might be awakened with such a procedure. The soldier was not suffering any inconvenience from it, and was not aware of its presence until his hip was *x*-rayed. The picture was taken several months after the receipt of the injury. He had received treatment for the fracture in a forward area, where, I believe, the *x*-ray was not available at the time.

FIG. 14.—A severe fracture of the upper third of the humerus; from the surgical neck, three to four inches of bone down the shaft had been shot away. The bone ends have been kept in perfect alignment as seen by the splint in position. There is good bridging in on the

outer and inner sides with a new periosteal wall, the medulla shows the fine granular type of callus present. All osteomyelitis has disappeared and it is only a question of time when the bone becomes dense enough so that the splint can be removed, and the patient will have an excellent shaft of the humerus as a result. The

FIG. 16.

case very clearly demonstrates the fact observed in the War, that if bone fragments are kept in alignment and position the intervening space from two to three inches may be filled in, forming a new shaft, with practically no shortening, as an end result.

FIG 15.—Nonunion of the middle of the shaft of the femur. There is, however, an attempt at union as seen by the callus on the inner side and scattered callus between the bone ends. The dark area on the outer side represents a pocket of pus. The bone ends are serrated, showing oseomyelitis present with erosion. This case demonstrates more the unusual result, than the usual as seen in the majority of long bone fractures. However, there is hope that with the treatment and time union will be obtained, as the upper and lower portions of the bone appears to be quite healthy. *A bone graft in this case would be useless, as osteomyelitis is present.*

FIG. 16.—This is a compound comminuted fracture of the whole upper third of the femur, the result of the explosive effect of a bullet. The shaft has been shattered into what seems hundreds of small fragments. The entrance and exit of the bullet were of the ordinary punctured type of wound. This Roentgenograph was taken four months after the injury and shows well the fusion of fragments and osteogenesis. There are numerous small portions of metal in and around the bones, but they are too small to warrant an attempt at removal. The wound was healed when this photograph was taken. The patient, an officer, was evacuated for the United States a few days following, having at the time good function of the limb. The ring of the Thomas splint is seen in the upper portion of the photograph.

180 WEST FIFTY-NINTH STREET.

REPORT OF A CASE OF BILOCULAR UTERUS WITH CARCINOMA IN THE LEFT HORN.*

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CASE 59169.—Mrs. G. R., aged 50, was first examined at the Mayo Clinic in September, 1911. She had been married 25 years, and had never been pregnant. During the year prior to her coming to the clinic her menstruation had been irregular, at intervals of from two to three months, the last period occurring six months before. Except for typhoid at the age of 19 there was no history of illness until her present complaint.

When the patient presented herself for examination she complained chiefly of constant aching in the left leg, knee, and thigh, and of swelling of the entire extremity. This had occurred at intervals for two years, varying in severity. A feeling of fullness and distress with gas was present after eating. She thought her abdomen was enlarged generally and had known definitely of an enlargement in the left iliac fossa for two or three years.

Physical examination except of the pelvis was practically negative. There was a soft systolic cardiac murmur. A tender mass could be palpated in the left iliac fossa. The superficial veins of both legs were varicosed. Bimanual examination disclosed the presence of an irregular, hard, movable mass, apparently attached to the uterus, which practically filled the pelvis. A diagnosis of pelvic tumor, most likely uterine fibroids, was made, and a subtotal abdominal hysterectomy was advised. The patient was not able to remain for the operation, but she returned five years later, October, 1916. She had passed the climacteric at 52 and had had no vaginal bleeding until three weeks before her return, when she noticed a small amount of blood; the bleeding had recurred every day. The growth of the tumor had been slow but progressive and the patient had experienced varying types of pain in the pelvis and thighs, at times aching, at others, very sharp, and occasionally, of a bearing down nature. She also complained of a frequent desire to urinate.

Physical examination produced no new findings, but the mass in the pelvis appeared less freely movable. A diagnosis of uterine fibroids was again made and a total hysterectomy was advised.

The patient was not operated on until November 7, 1917, at which time Dr. W. J. Mayo performed a total abdominal hysterectomy, with removal of both ovaries and tubes. At operation the tumor mass was found to be fibroids of the uterus extending well up to the umbilicus. The entire uterus, both tubes, and ovaries were buried in a mass of adhesions involving the sigmoid. A diagnosis of multiple fibroids of the uterus, which in view of the recent bleeding were regarded as suspicious of malignancy, was made. In removing the uterus it was found to have two cervices. The vagina also was double.

In the pathological laboratory the specimen was found to be a double uterus (uterus bilocularis) complete, with the exception of the tubes (Fig. 1). Three large fibroids, measuring from 8 cm. to 12 cm. in diameter, obliterated the normal contour of the uterus; one was situated on the right, one on the left, and one between the two portions of the uterus. Two normal appearing cervices were separated by a well defined septum.

Upon section of the gross specimen two distinct uterine cavities were encountered, separated by a septum varying in thickness from 1 cm. to 3 cm. The right cavity was lined throughout by slightly hypertrophic endometrium. In the left horn of the uterus was a tumor 2 cm. in diameter, with the gross appearance of carcinoma of the fundus of the uterus without ulceration (Fig. 2). It was well

*From the Section on Surgical Pathology.

circumscribed and appeared to be composed of multiple papilliferous formations of the endometrium. The tumor when cut appeared to involve chiefly the mucosa, but the microscopic section showed that the uterine wall penetrated almost to the serous coat (Figs. 3 and 4).

Wertheim[6] describe similar cases. Biehl[1], in 1893, demonstrated a specimen of a malignant adenoma in a bicornate uterus. Penrose, in 1894, reported a case of carcinoma of the fundus with extension of the bladder and vaginal wall. The condition was found to be inoperable on exploration. Necropsy

FIG. 1.—Photograph of gross specimen showing two cervices and the right uterine cavity opened through the anterior uterine wall. The left cervical canal is partially visible.

FIG. 2.—Uterus bilocularis with four myomas. The uterine cavities are laid open, exposing a carcinoma in the fundus of the left body.

In most of the cases of anomalous uterus reported thus far the lesion has been in the cervix and the anomaly a bicornate uterus. Zweifel[7], Orthman[4], and

revealed a bilocular uterus with two cervices and two vaginas. Buist and Valentine[2], in 1914, reported a similar case in which there was glandular

involvement, and reviewed the literature on the association of carcinoma with double uterus. Perhaps the only case of a real double uterus in association with a carcinoma was reported by Czwerwenka[3], in 1904. The fundi were separted and there were

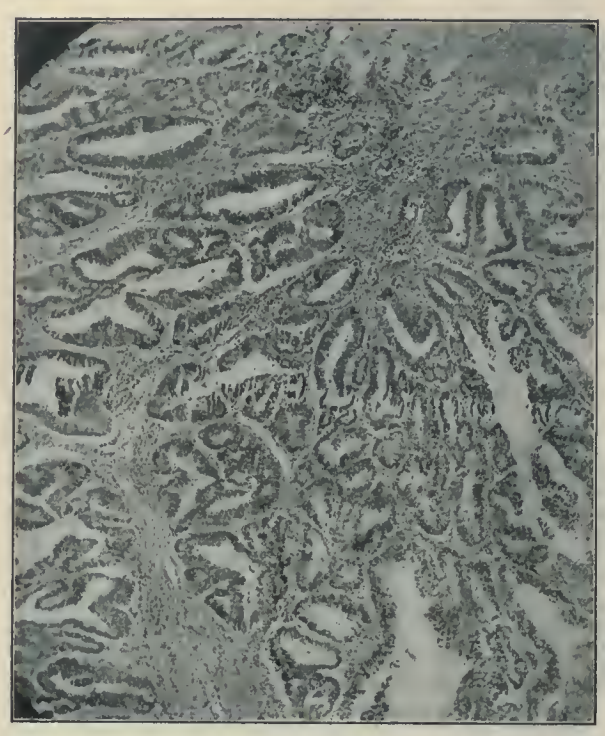

FIG. 3.—Low-power photomicrograph of carcinoma. The area shown was situated just beneath the serosa; it shows the extent to which the carcinoma has invaded the uterine musculature. (X 50.)

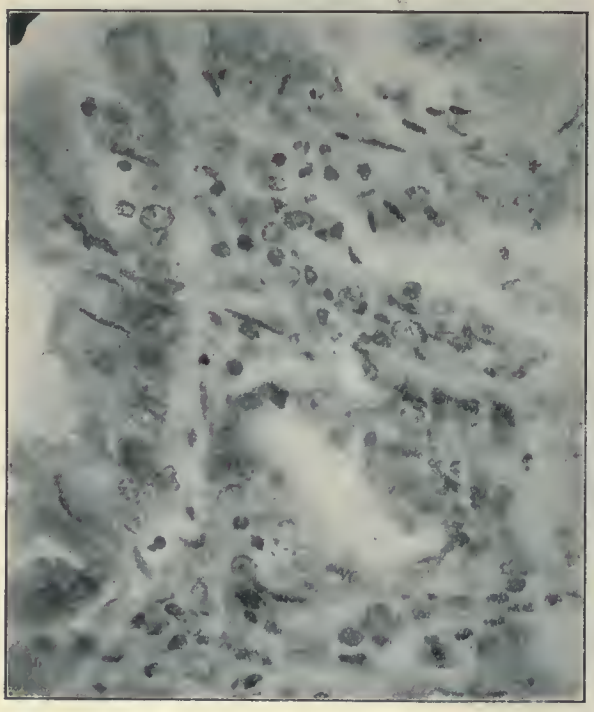

FIG. 4.—High-power photomicrograph showing the typical carcinomatous characteristics of the cells lining the uterine gland acini. (X 500.)

two cervices and two vaginas. The carcinoma was situated in the left fundus. The other cases demonstrate only partial formation of the anomaly.

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DIFFERENTIAL DIAGNOSIS BETWEEN THE PAINS OF TABES DORSALIS AND THOSE OF FOCAL INFECTION.

REPORT OF A CASE PREVIOUSLY TREATED UNSUCCESSFULLY FOR SYPHILIS, WITH COMPLETE RELIEF OF SYMPTOMS FOLLOWING EXTRACTION OF ABSCESSED TEETH.

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CASE NO. A-577.—An American, male, railroad examiner, aged 40, entered with a complaint of "rope sensation around the waist, and pains in all parts of the body."

Family history: Negative as to similar conditions, carcinoma, or tuberculosis. He had been married sixteen years. He had one daughter, 14 years of age, who was in good health. His wife had had one miscarriage.

Previous history: Twenty-four years ago the patient had had diphtheria. Twenty years ago he had had a "soft chancre," which lasted but three days. It was treated with calomel powder. Eighteen years ago he had an attack of gonorrhea. He had had no previous operations or injuries.

Habits: Coffee, 2 cups; tea, 1 cup daily. He had formerly smoked cigars excessively, but had not used tobacco for the past year.

Present illness: Nine years ago the patient began having "lightning pains." These started in the knees and gradually became general. He had also had a "rope sensation" around the waist.

Previous treatment: Nothing had ever stopped the intense pains from which he suffered severely. Within the past nine years he had been treated for syphilis, having taken several courses of salvarsan, mercury injections, and inunctions, but with no relief of his symptoms. Several Wassermann tests had always been negative.

Physical Examination.—The patient was tall and thin. His height was 6 feet 1 inch; weight 160 pounds. His complexion was moderately pale. Scalp examination was negative. The nose and ears were apparently normal.

Teeth: There were present a moderate degree of pyorrhea, several fillings, and crowns. Dental *x*-ray examination (Figs. 1 and 2) showed the upper left central and lateral incisors, the upper left first bicuspid, and upper right central incisor to be abscessed. There was a massive abscess at the root of the lower right first molar. The lower left second molar showed rarefaction at its root, due to infection traveling downward from a pyorrhea pocket. The lower left third molar was devitalized.

Tonsils, moderate in size. There was a very slight chronic pharyngitis present. The submaxillary lymph

nodes were prominent on both sides. The heart presented normal physical signs; systolic blood pressure, 120; diastolic pressure, 80; pulse, 86. The lungs were apparently normal except for a few râles on both sides. The abdomen, genitourinary organs, and rectum revealed nothing abnormal. There were two small, hard

Fig. 1.—A-577; *x*-ray views of upper teeth showing advanced pyorrhea, abscesses at the roots of the left central and lateral incisors, upper left first bicuspid, and upper right central incisors. These teeth were extracted.

lymph nodes in the right inguinal region. There was a small red cicatrix over the right scapular region. The pupils were equal; sluggish reaction to light. The patellar reflexes were somewhat diminished. Romberg's sign was slightly positive. There was a slight suggestion of an ataxic gait.

The résumé on the day of examination was set down as follows: Focal infection; possibly a cured case of syphilis.

Laboratory Reports.—Urine, acid; specific gravity, 1020; negative for albumin, sugar, and casts. Blood, hemoglobin, 85 per cent.; leucocytes, 12,000; Wassermann test, negative. The spinal fluid Wassermann and a Nonne test were both previously found to be negative; six small lymphocytes in the spinal fluid count.

Treatment.—The abscessed teeth were all extracted and the patient has undergone rigid prophylactic treatment for pyorrhea.

Results.—The patient returned in three weeks completely relieved of the pains he has had for the past nine years. It is now two months since the abscessed teeth were extracted. The patient states that he is

Fig. 2.—A-577; *x*-ray views of lower teeth showing the massive abscess at the root of the right first molar. The left second molar shows rarefaction at its root. The lower left third molar is devitalized. These teeth were also extracted. Relief was most pronounced after extraction of the right first molar.

steadily gaining strength, his pains and "rope sensation about the waist" having entirely disappeared.

This case presents many interesting features. First of all, the necessity of a differential diagnosis is something of unusual occurrence. It is perfectly possible that this patient might have had syphilis, and just as probable that he did not have it. Assuming that he did have syphilis, he has had such intense antisyphilitic treatment that it seems improbable that his present symptoms would have been due to that disease. Also, for the past nine years, in spite of the intense treatment, he had not improved, but on the contrary he had gradually become worse.

The physical findings were very suggestive of tabes dorsalis, and yet no sign was at all positive. The pupils reacted sluggishly to light, but it would be incorrect to call them Argyll-Robertson pupils. Romberg's sign was merely suggested, and not strongly positive as we should expect nine years after the onset of tabes. The patellar reflexes were diminished, but not absent. The gait was suggestive of the ataxic type, but was by no means positive.

There was a strong possibility that he might have had syphilis, and that the condition was arrested by the intensive treatment; however, his present symptoms could easily have been due to another cause, and the most probable one was focal infection. The fact that the "rope sensation around the waist" disappeared following the above treatment is sufficient to prove that syphilis alone was not the cause of it.

Conclusion.—I have presented this case to illustrate the importance of a more careful consideration of focal infection. This patient's condition had several times previously been diagnosed as tabes dorsalis, and on none of the occasions had focal infection been considered as a possibility in its etiology.

A PRELIMINARY REPORT ON THE USE OF A NEW ARSENICAL COMPOUND IN THE TREATMENT OF SYPHILIS: "MON-ARSONE."

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LIEUTENANT L. A. KENNELL, M.C., U.S. NAVY,
AND
L. M. HUSSEY.

Not being satisfied with our results in the treatment of syphilis with arsphenamine and neoarsphenamine we began a search for a new arsenical compound embracing certain qualifications that would render it superior to both of the older preparations, in regard to safety, ease of administration, and parasitotropic action.

With this in view we determined that the new compound must be less toxic than arsphenamine or neoarsphenamine, perfectly soluble in water, and capable of intravenous administration in concentrated solutions without the use of apparatus other than a suitable syringe; that it should, if possible, contain more arsenic than the older compounds, and that it must be stable enough to resist the decomposing action of time, extremes of temperature, and sterilization by autoclaving or boiling, and that this stability must be maintained as permanently as possible when the compound was placed in solution.

By July, 1919, one of us (H) had deveolped and perfected what appeared to be the desired compound, viz., disodium monoethylarsone, CH_3CH_2AsO

$(NaO)_2$ in which the arsenic content is 38 per cent. as compared with arsphenamine 31 per cent. and neoarsphenamine 20 per cent. For brevity this compound has been called Mon-arsone.

Mon-arsone is an aliphatic compound of arsenic, and the aliphatic compounds were chosen for investigation because of our persuasion that the cyclic compounds, of which arsphenamine and neoarsphenamine are examples, owe a part of their instability and toxicity to the linkage of arsenic with the benzene radical. It is well known that the aliphatic compounds are more stable and it was our belief that we could find one in which this stability would not interfere with parasitotrophic activity.

Mon-arsone was finally chosen as a compound of simple, stable nature, containing an ethyl instead of the customary methyl groups of the aliphatic arsenic compounds heretofore proposed in Medicine. By the introduction of the ethyl group we believed that not only would toxicity be reduced, but that surprising differences in chemical and pharmacological activity would be observed, in accordance with the fact that in homologous series of compounds, wide differences are observed between the methyl and ethyl compounds, although otherwise such series maintain their homologous characteristics.

Mon-arsone is a pure white, somewhat crystalline powder. In air it deliquesces with the absorption of moisture but does not oxidize. It has no odor, a salty taste, and is extremely soluble in cold or hot water. Its solution is colorless and when properly stoppered is perfectly stable and may be kept without decomposition for long periods of time. These solutions may be boiled or autoclaved without alteration.

With varying amounts of water it forms a series of semicrystalline hydrates, which are decomposed, yielding the anhydrous salt, by desiccation in a vacuum.

Determination of Toxicity and Dosage.—To determine its toxicity experiments were conducted upon thirty-two healthy rabbits, all of which were injected finally with an amount of the compound equivalent to four grams based upon a man of a hundred and fifty pounds weight and reduced proportionately to the body weights of the animals used.

Not a single death or observable reaction occurred in any of the animals, which were later killed, and at necropsy there was in no case any evidence of pathological conditions found, especial attention being paid to the kidneys, heart, liver, and meninges.

Examination of the rabbits' urine failed to show the presence of albumin or red blood cells.

Following this animal experimentation, two of us submitted to intravenous injections of the compound, also to subcutaneous injection, the later to determine its corrosive action on tissue. Subcutaneously there was but a slight sensation of burning pain which lasted only a few minutes, and did not produce any local inflammatory reaction.

By these means and through volunteers (syphilitics) who submitted themselves for treatment, our main efforts have been directed toward establishing the proper dosage.

At the present time we have been using 2.4 grams in 12 c.c. of sterile water at blood temperature once every seven days. In no instance have we observed the semblance of a reaction or arsenic intolerance.

Mode of Administration.—In each case, just before the injection and twenty-four hours later the urine was examined and no evidence of pathological changes in the kidneys noted.

Blood counts were made just prior to and five hours following the injection and showed no change in the count except in the total white in which an increase of 2,000 to 3,000 invariably occurred and remained for about thirty-six hours. At no time was hemolysis of the red blood cells introduced into the solutions.

We prepared and administered the compound as follows: A solution containing 200 milligrams in each c.c. of distilled water was filtered and sterilized either by boiling or autoclaving.

The dosage desired was then drawn up into an allglass graduated syringe, using a platinum-iridium needle of 22 or 23 gauge. The solution was previously warmed to blood temperature. It was then injected slowly into the vein, usually the median basilic.

It is probable that in females the dose should be smaller than the one we advise for males, viz., from 2 to 2.4 grams.

In our studies we have not supplemented the arsenical treatment by intercurrent administration of mercury, and the results noted below are entirely due to the compound under discussion.

Treatment of Specific Infections.—To date (December 24, 1919) we have treated 20 cases. In but few of these has the maximum dose been primarily administered. In all of the cases the treatment extended over a period that was not more than two and a half months at a maximum.

Eleven presented negative Wassermanns, two were two plus, two were one plus, and five still remain four plus. In all but one case, however, the clinical symptoms have entirely disappeared.

As it was our purpose in the beginning to establish the optimum therapeutic dose, which was necessary before we could give especial attention to the therapeutic properties of mon-arsone, all these cases were given their initial treatment with doses that were less than two (2) grams. Our first dose was half a gram which was increased by two-tenths of a gram increments weekly. The maximum amount of Mon-Arsone given any one patient during the course of treatment was fourteen grams. The minimum amount given any one patient before the Wassermann became negative was one and four-tenths grams.

The average number of injections given each man in the twenty cases was 4.7 two-gram doses.

Of the eleven cases presenting negative Wassermanns the average number of injections required was 3.5 two-gram doses.

It seems probable, in those cases in which the Wassermann is still positive, that through the administration of small initial doses, gradually increased in the experiments to determine dosage, the patients became Wassermann-fast. This has been borne out by the fact that when these patients were taken off the mon-arsone treatment, during

which time they had received no mercury, and placed upon a mercury treatment they showed rapid reduction of the Wassermanns to negative. As it is the purpose of this paper to discuss only the action of mon-arsone alone, the treatment of a series of patients with combined mon-arsone and mercury will be presented in a subsequent communication.

The abstract of the case records of the following six cases will demonstrate the therapeutic value of mon-arsone unaided by mercury, in the treatment of syphilis.

CASE I.—C. H. F. Untreated syphilis of fifteen years' standing which had been repeatedly diagnosed and treated as non-specific arthritis deformans. Coming under our observation September 11, 1919, when the blood showed a four plus Wassermann, he received two injections of 0.6 and 0.8 gram respectively of mon-arsone, following which the Wassermann became negative and has remained so to date. All symptoms disappeared and from a bed-fast patient he is now performing his full duties.

CASE II.—R. L. Exposed September 1, 1919, initial lesion September 18. On October 2 a four plus Wassermann. A total of 13.8 grams of mon-arsone in nine injections was administered to this patient, by which time the Wassermann was negative and all clinical symptoms had disappeared.

CASE III.—E. H. E. No history of primary or secondary lesions. Reported complaining of a growth on the external condyle of the left humerus, seriously interfering with joint action. *X*-ray diagnosis was "either sarcoma or gumma." On October 1, 1919, Wassermann four plus. He received a total of twelve grams of mon-arsone in six injections, when the Wassermann became negative. During the period of this treatment he received fifteen grains of potassium iodide *t.i.d.* At the time the Wassermann became negative the growth had about disappeared and he had almost complete motion in the elbow joint.

CASE IV.—J. R. H. Initial lesion September 26. Chancre on coronal sulcus. Dark field examination negative to spirochetes. Wassermann negative on Sept. 29, October 6 and 16, becoming four plus on November 3, 1919. Beginning with November 6 he received 3.6 grams of mon-arsone in two injections, the Wassermann becoming negative on November 11. At this time there was no symptomatic evidence of syphilis.

CASE V.—C. D. Initial lesion June 15, 1919. First seen on October 11, 1919, at which time he had a macular eruption on belly and chest. Blood gave a four plus Wassermann. Beginning October 16 he received a total of 4.8 grams of mon-arsone in three injections. The week following the Wassermann was negative and all symptoms of syphilis had disappeared.

CASE VI.—W. E. Exposed August 1, 1919. First seen September 11, 1919, presenting a large indurated ulcer on the penis. Three dark field examinations at four-day intervals were negative for spirochetes. On September 22 the blood presented a four plus Wassermann. Beginning September 25 he received a total of 3.4 grams of mon-arsone in four injections. Chancre promptly healed following the first injection. A week following the fourth injection the blood presented a negative Wassermann. No secondary symptoms.

Conclusions.—From our investigations we believe we have demonstrated that the standard we laid down for an ideal arsenical compound in the beginning of this paper has been fulfilled in Mon-Arsone. It is decidedly less toxic than the arsphenamine compounds as evidenced by the fact that 0.6 of a gram of arsphenamine, containing 186 milligrams of arsenic (2.8 grains), the maximum dose of this drug, frequently produces distressing and sometimes fatal reactions, while mon-arsone, in 2.4 gram doses, containing 1.064 gram arsenic (16.7 grains) has failed to produce a reaction or a toxic symptom of any description.

Mon-arsone is perfectly soluble in small amounts of hot or cold water and may be administered in solutions in which each c.c. represents 200 milligrams of the dissolved solid without the slightest danger. Its singular property of having no hemolytic action upon the red blood corpuscles in this heavy concentration makes such a concentration unobjectionable.

It requires no special apparatus for its administration.

It contains approximately seven per cent. more arsenic than arsphenamine.

The solution of mon-arsone are so stable that they completely resist oxidation or decomposition when boiled or subjected to the higher temperatures and pressures of the autoclave.

While mon-arsone is designed to be administered intravenously, accidental extravasation from the vein need not be feared, for from our premiditated subcutaneous injections of this drug and from several accidental leakages from out the vein no untoward results have been noticed.

These manifest advantages make it possible for any well qualified physician to administer this treatment as a routine office or bedside procedure, and render it possible for the naval and army surgeon to have this desired therapeutic agent at his command at all times whether at sea or in the field.

Mon-arsone has passed all the requirements demanded for arsenicals by the Public Health Service, having successfully met the established tests prescribed, and made in the Hygienic Laboratory, Washington, D. C.

A NOTE ON CASES OF SUDDEN CANITIES IN HISTORY.*

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THE cases of sudden emotional canities which history has transmitted to us are derived from the most varied sources; the majority of them have been furnished by historic annals, gazettes and collections of curious and extraordinary occurrences. They only penetrated the medical world at a later date, and even the oldest accounts have simply passed down to generation from generation, each writer quoting them without himself investigating the source, and imparting to them under all possible reserve before consigning them to science. They have consequently been handed down with that character of indecision, that absence of detail which are invariably to be found in accounts of acts insufficiently observed and incompletely described.

The historian seized upon them before the physician, because he saw in them curious and unexplained phenomena, capable, for this very reason, of interesting and astonishing the reader. The sage, being in the impossibility of verifying them, could only accept them with a very limited credence. My absolute ignorance of the modern pathogenesis of canities in general, as well as the present status of the subject, prevent me from offering any remarks,

*Read before the Medical Society of Geneva, Dec. 3, 1919.

and I most willingly leave to those among you who are competent in the matter of dermatological pathology the task of bringing the subject up to date.

One of the oldest documents relating to sudden emotional canities is the following, extracted from the *Histoires admirables et mémorables de nostre temps"* (*Chronique d'Arras,* 1604). (It is difficult to translate the old French texts into English; therefore, indulgence must be given to the writer in his rendering, but the accuracy of the English version he will vouch for.)

"Several persons who were imprisoned for crime, and believing that they were in danger for their lives, in a single night, from black, red, or blond haired that they were as people are in the fullness of maturity, all became as white as aged persons."

"A young gentleman of the court of Emperor Charles V, becoming in love with a young lady, went so far that, partly from love, partly by force, he plucked her flower of virginity: which having been discovered, he was imprisoned especially because the act was committed on the premises of the Emperor, and was condemned to lose his head; then having been informed in the evening that his life would be ended on the following day, this very same night was for him so fearful and had such an effect upon him, that the next morning, leaving the gaol to appear before the judge of justice in order to hear the death sentence, nobody recognized him, not even the Emperor, because fright had so changed him that instead of having as yesterday a fine red color, blond hair, pleasant eyes, a face to be looked at (with pleasure), he had become like an unearthed corpse and had the hair and beard as white as a septuagenarian and appeared more like a hanged man than a living one. The Emperor suspecting that some fraud had been practised and that this was some other criminal who had been substituted in the place of the gentleman (who had not attained the age of twenty-eight years), suddenly ordered an inquiry to be made in order to discover how came this wonderful and sudden change and to consider the affair carefully; then looking upon the poor frightened criminal, the desire of just vengeance changed to that of pity, and when his mind had returned from the depths of thought, said to him: 'I pardon thee for thy crime,' and ordered that he be released, saying that he had already been (the prisoner) sufficiently chastized for his crime without leaving his head (on the scaffold)."

"Another young Spanish gentleman, by the name Jacques Orsario, of illustrious family, became in love with a maiden of the court, having made a plot with her, climbed a tree in the king's garden and hid there awaiting his time. Thereupon, a little dog appeared, which by his barking caused the discovery of the personage, who was made to come down (from the tree) to go to prison, in order to make good by the loss of his head this mistake, regarded as capital (offense) in this country for divers reasons. The sentence of death given him frightened him so that the next morning, having become as white as an old man of eighty, no one knew him. Thus he obtained pardon from the King of Spain, ancestor of Charles the Fifth."

"A hunter searching for the young of a sparrow-hawk on a high rock, feeling the rope which helped him to descend was giving way, had such fright that suddenly his hair became entirely white."

The work of Schenkius, *Observationum medicurum rariorum libri vii,* contains quite a number of instances of sudden emotional canities. I here append some extracts.

Hadrianus Junius (*Comment. de Coma, c. 10*) states that he had seen shipwrecked persons, who, having lost all hope of being saved, had become white in a short time. He also says that he had seen the hunters of Cappadocia climb from rock to rock and become white (the hair) when the rope holding them began to give way or broke. He likewise relates the case of Osario, an extract of which I have given above, from the *Chroniques d'Arras.*

Vines (*in Praefat, in somn. Scipionis*) relates the case of a certain Jacobus Orsorinus, a young man one, thrown in prison, became completely white in one night. This is undoubtedly the same Osario already referred to above with an orthographic error.

Scaliger (*Exercit, 312, ad subtilit, Cardani*) says that Francisco Gonzague ordered that one of his relatives, suspected of conjugation, should be confined in the tower of the imperial gates, in order that he might be put through an examination (questioning) or be put to torture. When this was announced to the guilty person, he became quite white. Moved by this prodigy, Gonzague pardoned him.

Aventinus (*Annalim Boiorum liber vii*) tells the following: Louis of Bavaria, on the Rhine, was repressing the towns in revolt. He learned that his wife was unfaithful; he returned in great haste, caused her to be thrown from the top of a tower and married another. In the night he had a vision which revealed to him his error; all his hair turned white. From remorse he founded a monastery in Bavaria, which he named Furstfeld.

Crantz (*lib. ix, Metrop., c. 47*) refers to a certain monk, by name Ubipertus, who, being found too young by the sovereign pontiff for occupying the chair of a bishopric, *made himself white in the night* (italics are mine), and thus forced the assent of the Pope. This observation is very obscure, as the text says that he "made himself" white.

Nicolas Florent (*Serm. 7, trac. 6, sum. 3, c. 24*) says that he had seen the son of one Mathai Lippi of Scarparia and a shoemaker of the market town of St. Laurent, Zechium by name, both of whom whitened from fright.

Speronus Speronius (*Dialog. de partu mulierum*) states that a noble of Papavium, to whom it was announced in the evening that he would lose his head the following day, turned white in the night.

In Mart, *a Delrio e societate,* the writer says that his father, when ill, heard the doctors say he was lost; he was at the time fifteen years of age. From the fear of death his hair suddenly whitened.

The following is extracted from Lorry: *De morbo cutaneo.* "Pleni sunt auctorum libri exemplorum canitiei præ fimore intra breve spatium accersitæ. Famosa est historia illa ab Hadriano Junio reversita nobilis Hispani Didæi qui, cum ob furtivos amores illicitos practaque claustri regii jura, capitali supplicio plectendus esset, ita canitiem unde quaque contraxit, ut Fernandus rex, misericordia motus, ipsi caput remiserit. Simile habet

exemplum Julius Scaliger; et in nostra historia viro nobili de Saint-Vallier cujus ingratiam Diana Pictavis ejus folia regios concubitus passa est, eadem improvisa canities adventasse legitur. Aut nil memorandum magis quam quod aulicis narrabat æternæ memoriæ rex noster Henricus IV, se scilicet mœrore et metu incubuisse per xxiv horas, linienæ illus Bartholomæanæ tempore, eoque exacto, hanc et barbæ et capillorum partem fuisse in canitiem conversam, quam ostentabat."

The two examples, of the Spaniard Didœus, who indulged in fleeting amours in a royal cloister, and of Saint-Vallier, whose daughter could not obtain his pardon until she had served as the king's mistress, are good examples of the historic tales of canities. The third, that of Henry IV, is an instance of partial canities.

Guarini, of Verona, one of the restorers of the classical Greek learning in Italy, was suddenly attacked by canities at the instant that he was told of the loss of his Greek manuscripts at sea, which he had been at great pains to collect at Constantinople.

Concerning Ludovic Sporza, called the Moor, it is said that his hair became suddenly white during the night following the day when he fell into the power of his mortal enemy, Louis XII.

In the night of July 3, 1534, which preceded his execution, Thomas Morus, Chancellor of England, became white, both in beard and hair.

It has been stated that Marie-Antoinette grew white during the night preceding her execution, but this is inexact. The Goncourt brothers say in their *Histoire de Marie-Antoinette, Paris*, 1858, that the Queen had perfectly white hair when she was beheaded, but that she had become gray at the time of the death of the King.

A certain Nicolaus Micholdius d'Indevelda, one day asked the learned Schenkius to explain a case of sudden canities that he had heard related. The learned doctor compared the hair to the leaves of trees or to vine leaves which are fed by the juices of the soil, which are united to the tree which bears them, although they are not inherent parts. Dryness and the winds may strike them with decay, dry them, and cause them to fall, without involving the vitality of the trunk, which is no longer able to nourish them.

Daniel Semertus said the same in 1676: "Si enim ex nubula, vel aere, aut vento vitioso arbores affluente, foliorum color mutatur et ea enarescunt ipsa arbore et partibus aliis salvis menetibus, non impossibile est, capillorum etiam, ut corporis nostri partium ignobilissimum, colorem vel spiritu eos subito pervadente mutari."

We no longer live in the days of hypotheses of such poetical nature as those emitted by the good Schenk and Semertus. In modern times sudden emotional canities has been denied by many writers. Pincus, for instance, says that a man walking by a river saw a child fall into the water; he threw himself in after the child to save it. At the instant that he caught it he recognized his own offspring, and when he reappeared his hair and beard were gray. Pincus concludes, however, that the man had dyed his hair and beard, and that the water dissolved the dye.

3, Rue Bellot.

SOME PERSONAL VIEWS OF BRONCHIAL ASTHMA.

By EDWIN ZUGSMITH, M.D.,

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The writer feels that in the following brief and informal paper there will be presented a viewpoint sufficiently at variance with the accepted ideas on asthma to prove of interest. These views upon the subject of bronchial asthma are the outcome of experience and apply only to the so-called idiopathic or bronchial asthma, to the exclusion of other forms of dyspnea, such as cardiac and renal asthma and likewise the so-called pollen asthma.

Asthma may be defined as a non-febrile disease manifesting itself chiefly by severe dyspnea with expiratory difficulty, cough, and expectoration. It is essentially chronic, although its manifestations vary greatly from time to time and in their relative prominence.

It is marked by paroxysms which under ordinary circumstances last but a short time—a few hours to a day or two—but which under aggravated conditions may continue for weeks and even months without any relief worthy of the name.

The onset of the attack is insidious and mild, but in a very short time the symptoms increase progressively to a severe degree, the patient is compelled to sit, preferably leaning forward; there develops the greatest difficulty in breathing, there is a frequent hard cough without expectoration, and the chest is a bedlam of coarse noises which can be heard at a distance. After a while the cough becomes productive and the mucus thrown off is more or less tinged with blood—an evidence of the intense engorgement of the bronchial tubes.

The temperature does not rise, the pulse does not increase much in rate and is of low pressure. The skeletal muscles are called to the aid of the patient in breathing, the neck enlarges therefore and the patients often complain of severe pains in the throat and chest.

No characteristic pathology has been found and therefore asthma has usually been placed among the functional disorders. Of course the bronchitis is present, but there is nothing to distinguish it from bronchitis occurring under other circumstances. In long-standing cases the bronchial tree is thickened. There is no connection between asthma and tuberculosis or syphilis.

Much thought has been given for a long time to the explanation of the production of the phenomena constituting asthma, and of recent years infinite industry has been applied to the solution of its problems. The previous neurotic theory has been pretty generally replaced by the newer and more attractive and, it may be added, more satisfying anaphylactic theory. The evidence showing the necessity of assuming anaphylaxis as the fundamental in explaining the existence of the form of asthma under discussion is not convincing.

Asthma is unquestionably a manifestation of toxemia, but whether it results from a direct action of the poisonous material, such as we find, for example, in the effect of digitalis on the heart, or of strychnine on the central nervous system, or whether it acts primarily by sensitizing the in-

dividual, cannot be said. Only the isolation of the toxic substance and observation of its effects can solve that question.

Two metabolic studies made upon one patient gave different results, a third study on a second patient agreed with neither, so that it would seem that no metabolic disturbance gross enough to be determined by present methods lies at the bottom of the trouble.

Nasal polyps, deflected septa, hypertrophied turbinates are removed or corrected without any decided influence upon the course of the disease. Pus about sinuses, and more recently about the teeth, gums, and tonsils have each and all had to bear the odium of etiology, but these conditions too are corrected without result.

Climatic influences are supposed to be responsible for asthma, but when one finds the same patients with outbreaks coming irrespective of season and irrespective of location with reference to sea level or to temperature, one cannot but feel skeptical about such factors.

The favorite attitude at present is to look upon bronchial asthma as the result of one of two anaphylactic agents either bacterial or alimentary. And treatment has been in accordance. A vaccine is made from the predominating bacterium found in the sputum and injected in gradually increasing amounts at selected intervals. The vaccine is changed as the predominating organism changes.

The alimentary form is determined by scratching the skin and rubbing into the abrasions dried protein extracts of foods and noting those producing redness and swelling as the offending agents. Remarkable results have been reported by men who have used these as the basis of treatment.

However, these methods sometimes fail and it becomes necessary to look further for means of aid, and the search has led the writer to this conclusion, namely, that the large bowel is a prominent place in which originates a poison that causes asthma. It is not claimed as the only place of origin but there is convincing evidence that it is one that must be reckoned with. To one on the lookout for it there will be surprise at the number of asthmatics with colitis as indicated by mucus in the stools. He will be struck likewise by the frequency of constipation and rarely of diarrhea with retention in these patients. He will be astounded from time to time if he will observe the magical and instantaneous effect of a well administered enema, even during the severest attack.

In asthma it is of primary and essential importance to be most solicitous concerning the bowels. They must be kept open and care must be taken to know that the lower bowel has emptied itself completely. It will not serve the purposes of the asthmatic to have a fractional movement, and he must be taught to look after the evacuations with the same persistency that the diabetic is urged to use in regard to his diet.

Observation over a lengthy period has shown that it is advantageous to use castor oil routinely every six or seven days; laxatives are used daily where required, and at the onset of an attack patients are instructed to take an enema.

Under such treatment it is not necessary to restrict the patient to a meat-free diet, since it is likely that a meat diet exerts its evil effect through its constipating tendency.

No reference has been made to the use of drugs, since the writer has nothing to add to the common knowledge on that subject. Potassium iodide still remains the most effective medicinal remedial agent. Beyond its effect upon the bronchitis itself, the writer would suggest the possibility of its exerting some action within the intestine.

8030 Jenkins Arcade.

Medicolegal Notes.

City's Power to Establish and Receive Benefactions for Tuberculosis Hospital.—The Louisiana Supreme Court, in a suit to enjoin the City of New Orleans from establishing and maintaining a tuberculosis hospital, holds that such a hospital, 600 feet removed from a residence, is not a menace to the people living in the residence. The evidence was held to show that a well-kept tuberculosis hospital is not a menace to the health of the people living in its vicinity, and it was presumed that the hospital would be well kept. The medical evidence, detailed in the court's opinion, was held to show that the hospital was an imperative necessity. "This necessity," the court said, "while not creating an enforceable legal duty, does create a municipal duty, and a clear one at that. The regular way of discharging this duty would be, of course, by means of the establishment and maintenance of a municipally owned and controlled hospital. But suppose the city is financially unable to do that; is this deplorable condition of things to be left to continue and daily grow worse? It would be strange, it seems to us, if any city, confronted by a situation of that kind and yet unable from lack of funds to cope with it by means of a municipally owned and controlled instrumentality, should be simply helpless, because destitute of power to adopt some other means ready to hand such as a contract like the one involved in this case." The contract in question was with a benefactress, who donates $153,000 for the construction of the building and an endowment fund of $150,000 for the maintenance of the hospital, whereby the city agrees to perpetually dedicate to a perpetual board of trustees a site for the hospital and perpetually appropriate a certain sum annually for its maintenance, but is to be given a yearly report by the board. Probably no city in the United States has broader powers than the city of New Orleans. By section 6 of its charter it is expressly authorized "to adopt such ordinances and regulations as shall be necessary or expedient for the protection of health and to prevent the spread of disease." By Section I, par. g. "The city shall also have all powers, privileges and functions which, by or pursuant to the Constitution of this State, have been or could be granted to or exercised by any city." It is held that in view of these provisions the contract was not void as granting the city's funds and property in violation of Constitution Act 58, since the establishment of the hospital is a municipal duty and, though the contract did not so provide, its apparent purpose was to render services free of charge to the poor and needy.—Le Bourgeois v. City of New Orleans (La.), 82 So. 268.

Keeping Duplicate Prescriptions of Habit-Forming Drugs.—A practising physician in Tennessee prescribed morphine for a habitual user, after personally attending the patient, but kept no copy or duplicate of the prescription. He was convicted of distributing, dispensing, and prescribing morphine without keeping a duplicate of the prescription. The Tennessee Supreme Court has reversed the judgment and dismissed the case, for the following reasons. The Tennessee act of 1913 bearing upon the subject is as follows: "Physicians who shall dispense or distribute any of the aforesaid drugs provided by this act shall keep a duplicate of all prescriptions issued by them for a term of two years." The court holds that all physicians are not included within this provision, but only those who dispense or distribute the drugs. The defendant did not dispense or distribute morphine, therefore he did not violate the act.—Friedman v. State (Tenn.), 213 S. W. 418.

MEDICAL RECORD.

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POLYMORPHISM OF ENCEPHALITIS LETHARGICA.

EVERY month brings new evidence of the polymorphism of this disease. At a recent session of the Paris Academy of Medicine reported in the *Progrès Médical* for February 28, 1920, xlviii, 9, Marie describes the meningeal reactions recently seen in six cases of the malady. The number of lymphocytes in a cubic mm. of spinal fluid varied from 8 to 24, and this corresponds to moderate lymphocytosis. Thus far neither ependymitis nor meningitis has been found at autopsy. Achard described a series of degrees of somnolence varying from terminal coma to intermittent somnolence. Another peculiar mental state is one of astonishment or wonder. The head is not rested on the pillow but held fixed, the gestures are catatonic, and winking occurs only at long intervals; the subjects fear to move, do not comprehend, and the face is an inexpressive mask. This simulation of astonishment is akin to sleep and the subject may come out of it suddenly. The condition suggests the astonishment of a subject just roused from slumber, but is persistent. Motor disturbances comprise flaccid paralysis, spastic states, myoclonus, etc. Netter originally believed that these patients did not have a lymphocytosis, but has since learned that this phenomenon is present at the outset and wears off, while in tuberculosis of the meninges it increases with the progress of the disease.

Myoclonic, myotonic, and neuralgic forms of lethargic encephalitis have been isolated and in the *Bulletin Médical* for March 6, 1920, xxxiv, 13, Sicard, Salmont, and others graphically describe the last named.

The algic form may occur alone or with the myoclonic form. The suffering is acute and Sicard believes that severe neuralgia in some one nerve distribution may sometimes be the sole symptom of the disease. On the other hand the entire neuraxis may seem to participate in motor or sensory manifestations. Salmont in a case with neuralgia of one arm made a diagnosis of radiculitis cervicobrachialis. It served as a prodrome of a typical case of the fully developed disease. Léri speaks of intense facial or radicular neuralgia as an abortive expression of the disease. Netter saw terrific neuralgic pains subside under mild measures or spontaneously. On the other hand, Claude describes the myotonic form as he saw it, one patient resembling greatly a subject of paralysis agitans. This was manifest in the facial expression, gait, and tremor. Along with this syndrome was the ocular disturbance of encephalitis lethargica. The tremor of the myotonic syndrome was seen in one case in association with myoclonus. Catatonia has also been seen. Death with persistent hiccough may have stood in some relationship with diaphragmatic myoclonus. As an example of the rich symptomatology of the disease, a case of Galliard's may be cited in which the presence of a severe stitch in the side led to a diagnosis of pleurisy, but this apparently was only a forerunner of encephalitis—one of the neuralgiform prodromes which tend to involve the intercostal nerves.

In the *Bulletin Médical* for March 6, 1920, xxxiv, 13, Guillain gives the results of a study of six cases of this malady with reference to the behavior of the reflexes. In four subjects he found abolition of reflexes of the lower extremities—patellar, tendo Achillis, medioplantar, posterior tibiofemoral, posterior peroneofemoral—while in the upper extremity there was abolition of the styloradial, radiopronator and cubitopronator and olecranian reflexes and those of the flexors and biceps. The cutaneous and so-called defensor reflexes and those of medullary automatism were normal throughout. This abolition of reflexes seen in certain cases only with preservation of other reflexes may have a prognostic significance, for of the four cases which presented this dissociation all ended fatally, while the two which did not present this abolition recovered.

"FULL-TIME MEN" AND GENERAL PRACTITIONERS.

MEDICAL education has reached a point where the status of practitioners in the medical schools should be defined. "Full-time men" are getting to be all the rage. In the few schools which can afford it, even younger instructors and associates are to an increasing extent men who have no private practice, who divide their time between laboratory, wards, dispensary, and classes. Obviously, with this assortment of activities, the full-time man's time is full indeed. He is working in a place where no test is too difficult to perform, no procedure too complicated to carry out. Instead of dealing with the heartaches and the thousand natural shocks of family life, he deals with patients who are under orders, with doctors and nurses who have been trained and who have no other cares. He need not feel obliged to give medicine just for the sake of "doing something." In short, he is a relatively free agent who can spend all his time being scientific.

Now, so far as the students are concerned, this reacts most beneficially. Students should see medicine at its best. They should be taught by men who have time to be investigators, who do not have

to fight and harangue in order to get their directions carried out. From an educational point of view this arrangement is far better than that of taking the man with the largest practice and reputation, making him a teacher, having him rush from his practice to his classes, never giving sufficient time to his teaching, always giving the same lectures from year to year.

Are we, then, to do what we can to speed the extinction of the practitioner-teacher and bestow our favors upon the full-time man? This would clearly be bad policy unless we intend to make medicine altogether an institutional affair and eliminate private practice, an idea so impracticable that it deserves no sponsors. In the first place, the men who are selected for full-time teaching and research are, professionally speaking, practically all born in laboratories. Chemistry, bacteriology, and pathology figure so largely in medical teaching to-day, that a man without some achievements *in vitro* had better not regard himself as suitable material for a full-time teacher. This being the case, the schools are running the risk of turning out men even worse equipped for private practice than they are now. Graduates will be likely to continue regarding diagnosis and pathology as be-all and end-all, and those measures practicable for the relief of those patients who are sick at home, with a busy, worried wife or mother for a nurse, will be foreign to them. However much the full-time man with a laboratory past may realize the limitations and demands of medicine practised in private homes, this man cannot give the student the point of view which one well-trained in private practice can give.

To supply this point of view we have our choice of requiring that full-time teachers shall have engaged in private practice for a period of years before entering upon their professional work, or of continuing to rely upon professors of clinical medicine or surgery, etc. Probably the latter alternative is to be preferred if the men chosen have not the kind of practice where quality of work is sacrificed to quantity, in the interests of the exchequer. Far better use for purposes of clinical teaching the man who is "too good a doctor to make money"—in other words, the man who gives each patient such careful attention that he cannot have huge numbers of names in his appointment book. Diagnostic speed kings may do well enough financially, but they are not qualified to head students toward good medical work. Full-time men are indispensable to the best medical teaching. They should guide the teaching policies of their respective departments. But the instruction they give must be supplemented by the personal teaching of conscientious practitioners, who do more than anyone else to bring modern medicine into the homes.

THE PHYSICIANS' HOME.

THE family physician, like the family horse, having carried the family burdens, the one on his mind and in his heart, the other on his back or by his muscle, through the best years of his life, is not always made the object of solicitude and care when the days of burden-bearing are nearing an end. This was true in the "good old days," when the "village doctor," and the country "saddle-bags" played so important a part in the life of the community; it is none the less true in these days of organized medical care and public health service, of "scientific philanthropy" and welfare societies.

It has long been the accepted belief that physicians, as a class, are not specially adept at money making and money saving. Even the high-priced specialists of the larger cities, with few exceptions, have given the public little cause, by virtue of their large holdings or keen investments, to change this estimate of the business acumen of the medical profession. And yet, strange as it may seem, little thought has been given the how and where of the doctor's livelihood in the latter years of his life, when he can no longer respond to the urgent and strenuous demands of the sick room or operating amphitheater. It is possible, therefore, to look about and to see or to learn of many a physician who is eking out a threadbare existence after having served his part of the community long and well.

Now, however, there is promise of better things for physicians who, through age or infirmity, are no longer capable of taking their accustomed place in the welfare of the community. Dr. Wolff Freudenthal of New York City has conceived the idea of a home for just such doctors. A committee has been formed to raise funds, a charter has been granted by the New York Legislature, and the nation-wide movement is fairly under way. Dr. Robert T. Morris, of 616 Madison Avenue, is president of the corporation, and Dr. Albert G. Weed, of 152 West 57th Street, is treasurer. It is to be hoped that doctors who are still active and the public at large will respond to this worthy appeal. The plans as outlined make provision for the wives of physicians. No mention is made of women physicians, but it is assmued that they are included in this praiseworthy undertaking.

THE MURDER OF PHYSICIANS.

CASES are by no means rare in which members of the profession meet their death through the act of an irresponsible patient, the most conspicuous example of late years being the murder of the distinguished Pozzi. Owing to the eminence of the victim the case was the occasion of widespread comment, but since that date several other medical men have met a similar fate. Hardly a medical man of any prominence but has had his life threatened by a patient with a fancied grievance or by some male member of a family in which a death, or some untoward result short of death, has occurred. We recall one sudden death in a mysterious manner of a comparatively humble practitioner which was not fully explained and was thought to have been a possible suicide by poison. A medical friend filled out the death certificate and there was no inquest. It was known privately that the deceased had been

threatened with death by the husband of a woman who had claimed some malpractice. Practitioners have been known to pack up over night and move to distant parts under circumstances which leave room for the belief that they had been threatened with death. We do not of course in this connection include cases in which the practitioner has been in some way culpable by violating the laws or usages of society.

In *El Siglo Médico* for February 16, 1920, lxvii, 3451, is an account of the murder of a well known practitioner of Bilboa, Dr. Villasante, member of a distinguished family and known for his humanity in treating the poor without fee, who was shot dead by the husband of a woman who at the moment lay dead in her bed. The murderer had never shown any homicidal tendency. The revolver had not been in his possession until shortly before the act, and the suggestion was of deliberate homicide. Aside from the eminence of the victim and the fact that the dead woman was a free patient no comment is made.

Preretinal Hemorrhage.

Hemorrhages occurring in front of the retina are far from infrequent and are rather easy to differentiate with the ophthalmoscope. They are important to know about because of their relatively benign prognosis, and their peculiar etiology and treatment, which latter is more especially of a general nature. The prognosis, which at first might seem to be rather bad, since vision is almost totally or even completely lost, is in reality much less serious than that of intraretinal hemorrhage. The important structure of the retina is not directly involved in the process, and if the blood pressure and renal permeability be carefully watched absorption of the blood collection, with an almost complete return of the visual acuity, may be obtained within the space of four or five months. As to the etiological factors of preretinal hemorrhage generalized arteriosclerosis, or an arteriosclerosis confined to the retinal system is invoked, likewise arterial syphilis and affections of the heart and kidneys. Considerable importance is to be attributed to high blood-pressure. Preretinal hemorrhage, the consequence of leucemia or hemophilia, is more difficult to avoid or to be influenced by treatment. Local blood-letting over the temple is of little avail, but miotics, such as eserine or pilocarpine, are really valuable if the ocular tension is increased. The treatment, however, is above all else a general one. In order to reduce an excessive blood-pressure there is nothing equal to fasting during the first few days, after which a milk diet is taken, with the obvious intention of relieving the autointoxication of the patient. The volume of liquid ingested should likewise be reduced and in addition a drastic purge should be given once or twice during the first week of treatment. After this a more ample diet may be allowed, but it should be lactovegetarian as much as possible and salt must be proscribed. Diuresis is to be maintained with niter, uva ursi, or theobromine. The organic iodides are the only medicaments that may occasionally have their indications. Calcium chloride and the hepatic extracts are of use in hemophilia, while the genital opotherapeutic extracts, associated with tepid hydrotherapy, will be found useful in women approaching the menopause or those suffering from difficult menstruation. Absolute mental and physical rest must be enjoined, and a nutritious diet in otherwise normal subjects will help not a little in bringing about complete absorption of the blood.

Cacodylate of Soda in Paralysis Agitans.

Recently Sicard, Lhermitte, and Quesnel have reported happy results in muscular contractures from the use of arsenicals which announcement moved Maréchal to test the use of the cacodylates in paralysis agitans (*Gazette des Hôpitaux*, January 24, 1920, xciii, 9). The patient at the age of 44, as a result of certain disappointments, developed a tremor of the hands and rigidity of the arms and legs. Five years later she had become completely incapacitated and was interned in a hospital. At this time she suffered from tremor of the hands, feet, and lips, with pronounced muscular rigidity, the head being immobilized and the face fixed. The arms were as if fused to the body, from which they could hardly be separated. The lower extremities were much contractured, walking was impossible, as was also standing. The viscera were in good condition. The cacodylate was now begun in dosage usual for syphilis, increasing in 16 days from 1.5 to 6.5 gm., the patient consuming in all 32 grams. The remedy was given each time intravenously. It was quite well borne save that the second injection of the series caused considerable shock. When 4 gm. had been reached no benefit was apparent, but when the dose reached 5, a distinct change for the better appeared. Muscular rigidity became less marked and the subject began to regain the use of her functions in some degree and could get about some with a cane. Apparently the tremor was not correspondingly benefited. The author admits that he might have awaited the further outcome of the case, but having obtained an amelioration, even if transient, of the disability he believes himself justified in publishing it as soon as possible.

Did Sydenham Describe Lethargic Encephalitis?

It has been stated that an Englishman can be found to receive credit for priority in most discoveries, but it does not often happen that a man of some other country is the one to make the announcement. In the *Journal de médecine de Bordeaux* for February 25, 1920, xci, 4, Mauriac publishes a translation of portions of Sydenham's writings on the continued fevers of 1673-5. The fever referred to resembled fever in general in many ways, beginning with severe headache and backache, and often ran its course in two or three weeks. The most noticeable symptom was a species of coma and in some cases this state persisted for several weeks. Those who suffered from coma awakened from the eighteenth to the thirtieth day, but before that period roused themselves only to drink, after which they fell back asleep. Some, of course, never came out of the coma. Those who did not develop coma showed some delirium, but were never violent. In the somewhat extended description Sydenham frequently used the term soporific to indicate the mental state and oc-

casionally the word lethargic, but at the close proposes the term "comatose fever" for the new type of malady, for such it doubtless was. Like most early descriptions this leaves much to be desired. So acute an observer would hardly have neglected to mention the ocular symptoms had any been present. We do not obtain much idea of the incidence of the disease nor of the mortality.

News of the Week.

Drive for Mental Defectives. — The Home and Farm Institution for Mental Convalescents, Inc., with headquarters at 198 Broadway, New York City, has begun a drive for $250,000 with which to establish an institution for the treatment of mental defectives. Twenty-five non-sectarian organizations, under the leadership of Joseph B. Olidort, are taking part in the campaign. A site in Sullivan County has been donated by Mr. Olidort, who for years has been director and vice-president of the People's Hospital. The officers of the organization are as follows: Justice Aaron J. Levy, chairman of the board; Dr. J. Glass, Justice Sampson Friedlander, the Rev. Dr. Blum, Justice Jacob S. Strahl, Nathan Ferber, Samuel A. Levene and Dr. Herman P. Posner; Harry Schiff, treasurer; Harry Wolkoff, recording secretary, and Evelyn Bebell, executive secretary.

Alcoholism Decreasing.—Frederick D. Greene, General Secretary of the United Hospital Fund, New York City, has announced that a survey of several hospitals shows a drop of from 70 to 90 per cent. in alcoholic cases, compared with last year. The City Board of Ambulance Service reports a large decrease in all cases, including intoxication. In January and February, 1919, the Board reported 412 and 364 alcoholic calls, respectively; this year the calls for the same months were 307 and 133, respectively. Bellevue Hospital figures showed 228 calls for intoxication during January and February, 1919, and a total of 31 for January and February of this year. Mr. Greene reports that 7,000 new patients a year can be accommodated at Bellevue in consequence of the reduction in the number of alcoholic patients.

Summer Camps for War Victims.—The ex-service men of the Seward Park Rehabilitation Center, New York City, have started an informal drive to obtain funds with which to furnish their summer camps at Bear Mountain and Fire Island. The men, who were wounded or gassed overseas, are taking vocational training, under the provisions of the Federal Board for Vocational Education, in the Educational Alliance Building on East Broadway.

Milk for American Babies.—The Milk for Children in America Fund, New York City, is making an appeal for funds for supplying milk to needy and sick children of the city.

Food Drafts for Austrians Approved. — Chancellor Karl Renner has cabled the unqualified approval of the Austrian Government of the plan of forwarding food drafts to the destitute people of that country. In his cable to the American Relief Administration European Children's Relief Fund, 115 Broadway, New York City, of which Herbert Hoover is Chairman, Chancellor Renner says: "During the first weeks after the establishment of the American Relief Administration European Children's Fund more than 50,000 Austrian citizens received food through the agency of this organization. On the presentation of the drafts at the Vienna warehouse their lucky and happy holders received American food without trouble or delay."

Texas State Board of Medical Examiners Reorganized.—At its annual meeting recently held in Dallas, the Texas State Board of Medical Examiners was reorganized with the election of the following officers: *President,* Dr. D. S. Harris of Dallas; *Vice-President,* Dr. Robert Y. Lacey of Pittsburgh; *Secretary,* Dr. T. J. Crowe of Dallas.

Drug Ring Discovered.—The discovery of the headquarters of a great drug ring in New York City followed the arrest of two alleged traffickers recently and the confiscation of cocaine and heroine estimated at more than $100,000.

Health Centers Bill Approved.—The New York State Charities Aid Association has passed resolutions endorsing the Sage-Machold bill, now pending in the Legislature, which provides for a comprehensive extension of the public health work of the State through the establishment of a system of Statewide health centers, with an appropriation of State funds to supplement the expenditures made by the communities in carrying on the work. The bill aims to take modern medical, laboratory, hospital, and dispensary facilities to the doors of the people of moderate means and those who live in rural and industrial communities.

Post-Graduate Endowment Fund.—Mrs. Henry R. Rea of Pittsburgh, Pa., has contributed $100,000 to the New York Post-Graduate Medical School and Hospital two million dollar endowment fund. The gift was made in memory of the parents of Mrs. Rea, Mr. and Mrs. Henry W. Oliver of Pittsburgh.

Bronx Physicians Raise Fees.—Members of the Bronx Medical Alliance have decided to raise fees for outside calls from the old charge of $2 to $3: For office visits, from $1 to $2; for confinement cases, from $30 to $50, and in anesthesia cases from $7 to $10. Prices may vary, however, according to neighborhoods.

Municipal Civil Service Positions Open.—The Municipal Civil Service Commission of New York City has announced examinations for positions as radiologist at Bellevue Hospital at a salary of $3,500 a year, and as pathologist, New York City Children's Hospital and Schools, Randall's Island, at $2,100 a year.

Merritt H. Cash Prize.—The Merritt H. Cash prize of the New York State Medical Society has been awarded to Dr. Herman B. Sheffield of New York City for his essay on infantile paralysis.

Memorial to Woman Physician.—Friends of Dr. Sarah Bond Fraser of Boston, who died in June of last year, plan to erect a memorial in her honor. The treasurer of the committee is Mrs. A. W. Goodnow of 27 Burroughs Street, Jamaica Plain, Mass.

Dr. Seth M. Milliken of New York City, who was recently sued by a patient for $200,000 for alleged false imprisonment in the psychopathic ward of

Bellevue Hospital, was exonerated by the Supreme Court jury.

War Nurse Made Superintendent of Massachusetts Hospital.—Miss Vera A. Allen of Toronto, Canada, who was cited by Field Marshal Haig for her efficient work at the base hospital at Damnes-Camières, France, has been appointed superintendent of the Lynn Hospital to succeed Dr. Hilda A. Simon.

Dr. M. Douglas Flattery has been appointed a member of the Harvard Cancer Commission.

Dr. Horatio Robertson Storer, a retired physician of Newport, R. I., is said to be the oldest living graduate of Harvard, this distinction having come to him through the recent death of Charles French of Newtonville, Mass. Dr. Storer, who was born in 1830, was graduated in the class of 1850.

Dr. G. Camby Robinson, dean of the medical department of Washington University, St. Louis, Mo., has accepted the appointment of dean of the School of Medicine of Vanderbilt University, Nashville, Tenn. He will enter upon his new duties July 1, taking up the work of organizing and building up the medical department under the new four million dollar endowment recently made by the General Education Board of the Rockefeller Foundation.

Dr. C. A. Edwards of Dayton, Ohio, has been missing since March 15, when he left home to go to Cincinnati for the purpose of undergoing an operation.

Charitable Bequests.—By the will of the late Mrs. Lois B. Cassatt of Philadelphia the sum of $50,000 is bequeathed to the Bryn Mawr Hospital.

By the will of the late Mary Ann Elliott of Philadelphia bequests are made as follows: Home for Incurables, $10,000; Methodist Hospital, $5,000; Frankford Hospital, $500.

By the will of the late Herman Prager of Philadelphia bequests are made as follows: Jewish Hospital, $10,000; Mt. Sinai Hospital, $5,000; Jewish Sanatorium for Consumptives at Eagleville, $1,000.

By the will of the late Gustav A. Schwarz of Bala the sum of $5,000 is bequeathed to the Lankenau Hospital of Philadelphia.

By the will of the late Mary E. Rowland, formerly of Philadelphia, who died at Atlantic City, bequests of $1,000 each are made to the Home of Our Merciful Savior for Crippled Children's Seashore House at Chelsea, Atlantic City, and Rush Hospital for Consumptives.

By the will of the late Florence W. Holbrook of Philadelphia the sum of $500 is bequeathed to the Episcopal Hospital.

By the will of Frank A. Sayles, who died in New York on March 9, the Memorial Hospital in Pawtucket, R. I., will receive $100,000.

By the will of the late Dr. Hosea B. Burnham of Manchester, N. H., among other bequests a gift of $40,000 was left to Dartmouth College, $35,000 to the New Hampshire State Hospital, $14,000 to the Exeter College Hospital.

Obituary Notes.—Dr. William James Morton of New York City, died recently of cardiac disease, at Miami, Fla., at the age of seventy-six. Dr. Morton, who was the son of Dr. William T. G. Morton, the first surgeon to demonstrate to the medical profession the use of ether for purposes of narcosis in surgery, was graduated from the Medical School of Harvard University in 1872. He was a member of the Medical Societies of New York County and State, the American Medical Association, the American Electrotherapeutic Association, the American Roentgen Ray Society, and the New York Academy of Medicine.

Dr. George W. Thompson of New York City died April 3, at the age of sixty-five. He was graduated from the Eclectic Medical College of the City of New York in 1885.

Dr. Willard Young Croxall of Aberdeen, Wash., died at Portland, Ore., March 12, at the age of fifty-one. He was graduated from Jefferson Medical College, Philadelphia, in 1897, specializing in ophthalmology and otorhinolaryngology. He was a member of the American Medical Association and of the Pacific Coast Oto-Ophthalmological Society.

Dr. Helen E. Hill of Brooklyn, N. Y., died March 20, in her eighty-first year. She was graduated from the Eclectic Medical College of the City of New York in 1881. She retired from active practice in 1913.

Dr. Edward C. Register of Charlotte, N. C., for twenty-eight years editor of the Charlotte *Medical Journal*, died February 18, at the age of sixty. He was graduated from New York University Medical College in 1885, and had long occupied a prominent place in the medical affairs of his State.

Dr. Martin T. Balsley of Joplin, Mo., died recently after a long illness. He was graduated from the Medical College of Indiana, at Indianapolis, in 1881, where he practised for a few years.

Dr. Pierre S. Starr of Hartford, Conn., one of the oldest physicians in the city, and a veteran of the Civil War, died March 11 at the age of eighty. He was graduated from New York University Medical College in 1862.

Dr. Ernest M. Jordan of Boston, Mass., died March 14, at the age of forty-eight. He was graduated from the Boston University School of Medicine, in which institution he was for seven years professor of neurology. Dr. Jordan was a member of the American Medical Association, the Massachusetts Homeopathic Society, the Boston Surgical Society, and other organizations.

Dr. Phoebe Anna T. Williamson, a retired physician of New York City, died at the Hahnemann Hospital, March 21, at the age of seventy. She was one of the founders of the Women's Hospital in Poughkeepsie, and for twenty years was attached to the Eastern District Hospital of Brooklyn.

Dr. Jerome Gill Ackinson, retired, of Brooklyn, N. Y., died of influenza March 22.

Dr. Warren L. Ayer of Owego, N. Y., died March 26, at the age of seventy-seven. He was graduated from Long Island College Hospital in 1868.

Dr. Vincent J. Campisi of Brooklyn, N. Y., met his death at the hands of an assassin March 25. He was born in Italy in 1887, came to this country at the age of twelve, and was graduated from Long Island College Hospital in 1914.

Dr. Francis E. Bingham of New York City died March 25 at the age of thirty-one. He was graduated from New York University and Bellevue Hospital Medical College in 1913.

Dr. Helene S. Lassen of Brooklyn, N. Y., died March 25. She was graduated from the New York Medical College and Hospital for Women in 1871, and had practised in Brooklyn for forty years. She was one of the organizers of the Memorial Dispensary for Women and Children. She was a member of the Kings County Homeopathic Medical Society.

Dr. Edwin M. Goodwin of Toledo, Ohio, died suddenly March 17, at the age of seventy-eight. He was graduated from Albany (N. Y.) Medical College in 1863.

Dr. Stephen J. Johnson of Lowell, Mass., died March 22, at the age of fifty-five. He was graduated from New York University Medical College in 1877.

Dr. Jacob R. Shellenberger died of heart disease at Philadelphia on March 20 at the age of seventy-nine years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1867. He was President of the Physicians' Aid Association affiliated with the Philadelphia County Medical Society. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Obituary.

JOHN A. LEE, M.D., F.A.C.S.

BROOKLYN, NEW YORK.

Dr. John A. Lee, President of the Medical Society of the County of Kings, died at his home in Brooklyn on Sunday of this week of cancer of the lungs. He was born in New Britain, Conn., in 1872, and was graduated from the Yale Medical School in 1897. He served as interne in St. Mary's Hospital, Brooklyn, and on leaving there began practice in that borough. Since 1908 he had been attending surgeon to St. Mary's Hospital. During the war he served as surgeon-in-chief on the hospital ship *Comfort,* and at the close of hostilities received his discharge with the rank of Commander. He was one of the pioneer workers with the *x*-rays in this country and suffered extensive burns which resulted in cancer, for which he underwent several operations, and finally died from metastasis in the lungs.

In Memory of Dr. Elisha Kent Kane.

On March 30, 1920, under the direction of the Master of the Lodge, Dr. Terry M. Townsend of New York City, the Kane Lodge, No. 454, F. & A. M., celebrated the one hundredth anniversary of the birth of Elisha Kent Kane, the famous Arctic explorer, for whom the lodge is named. The celebration, which was held in the Grand Lodge Room of the Masonic Temple, New York City, was to have been made the occasion of the award of a Kane Lodge gold medal for distinguished achievement in exploration to Rear-Admiral Robert Edwin Peary, for his success in reaching the North Pole. Admiral Peary was a member of the lodge, to which he had given many souvenirs of his several Arctic expeditions. His death did not interfere with the award; the medal was presented to Mrs. Peary and was received by their son, Robert E. Peary, Jr. Bishop Charles Sumner Burch, Rear-Admiral James H. Glennon, Job E. Hedges and Robert H. Robinson, Deputy Grand Master of the Order, were among the speakers. Miss Julia Arthur recited the "Battle Hymn of the Republic," and various musical numbers were rendered. The salutation was by Dr. Terry M. Townsend.

Dr. James Parton Haney of New York City, Past Master of the Lodge, gave the following account of the life of Dr. Kane:

Few of the present day realize the warmth of patriotic pride which caused the founders of this Lodge to call it by the name of Kane. But in 1857, when the Lodge was established, this name was a household word, and the country rang with applause for the intrepid discoverer. Twice he had ventured into the Arctic night in search of the expedition of Sir John Franklin. For two years his little company had suffered the tortures of hunger and disease. He had probed the mysteries of the frozen North and had seen open before him an unknown sea. He had planted the standard of the United States nearer the pole than any flag had flown before. Yet with all this he was not a sailor—not a professional explorer—only a surgeon in the United States navy, who had not reached his thirty-third birthday when he assumed command of the expedition which was to make his name famous the world over.

Elisha Kent Kane was a modern Odysseus whose whole life is a tale of high adventure. When this tale is told it reads more like a song of Homer's or a page from Malory, than the recital of what a slim and sickly man had done in a dozen crowded years. The more one reads of Kane's life, the more the wonder grows that one so scantily endowed with physical strength could by sheer will power have been able to accomplish so much. It may truly be said that he was never a well man, yet with a serious lesion of the heart he lived through half a dozen attacks of contagious fevers and labors like the fabled tasks of Heracles.

Kane was born in Philadelphia on February 3, 1820. He died in Havana, Cuba, just after his 37th birthday. As a boy he had shown his adventurous spirit, but was so little studious that his father was doubtful of his future. The former planned to send him to Yale, but later decided on the University of Virginia. Here the lad found himself at home and made rapid progress. The languages and mathematics appealed to him, but an even keener interest was elicited by the work he elected to pursue in physical geography, mineralogy and chemistry.

It was at this juncture that his first serious illness overcame him. This was a rheumatic attack which speedily involved his heart. It obliged him to leave the university dangerously ill and, at the age of eighteen, brought his formal studies to an end. "The doctor told me," he said, "that I might live a month or half a year, or that I might be struck down in half an hour."

The presence, however, of this Damoclean blade seemed only to stimulate him. The imminence of death spurred him to action, that in the brief time he felt was his he might greatly achieve. As a compensation for his faulty heart, nature endowed him with a mentality of extraordinary sensitiveness and activity. "His nerves," says one of his friends, "tingled and rioted with irritation." He seemed driven forward by inner forces not always under his control, but in the end he learned to master and direct this energy to his one great aim.

In October, 1840, while not yet twenty-one, he entered the Pennsylvania Hospital—"Blockley," as an interne and medical student. Here he became in a few months senior resident physician. The heavy duties of his office, together with his study of medicine, were not, however, sufficient to absorb his flooding energies and shortly before his graduation we find him writing an elaborate thesis on the newly discovered secretion called "Kyestein." It is worthy of note as an indication of his intellectual acumen that this undergraduate

study, written before its author was twenty-two years of age, drew the general attention of the medical world, and later was widely quoted in the textbooks of the subject.

That he might have a respite after his strenuous hospital experience, his father applied at his graduation for a warrant for his examination as a surgeon in the navy. The young doctor at first demurred, then consented, passed the test handsomely, and shortly afterward sailed for the East, as the physician attached to a special embassy to China. During the slow voyage, with many stops, Kane had revealed to himself his passion for exploration. He traveled in India and made a hurried trip to Ceylon before reaching China. The treaty negotiations were closed in a few months and he at once set off for the Philippines. There he traveled over Luzon from Manila to the Pacific coast, bathed in the forbidden waters of the Asphalt lake and descended to the bottom of the great volcano "Tael"—a feat which only one European had essayed before, and he without success.

As the special embassy's work was done, Kane might now have returned to the United States, but he determined to remain to practise, until he had acquired funds for extended travel through the East. Accordingly he resigned his post as physician to the legation and set up an office on Whamposa Reach of the Canton river. The chaplain of the mission there, describes him as "smooth and florid of face, very youthful looking, of a delicate form, a bright eye and enthusiastic manner—all hope and ardor."

Six months later saw the enthusiast critically ill with "rice fever," the first of the many infectious diseases he was to know. He was nursed back to health but resolved to abandon his practice and return home by the overland route. The trip was begun, and extended itself in various directions. He visited Borneo and Sumatra, and then passed back to India. There he was taken into the suite of Prince Tagore, who afforded him every facility for scientific research. He reached the Mediterranean in April of 1845 and bade goodbye to the patron under whose safe conduct he had traversed Persia and Syria.

Letters from Prince Tagore to Pasha Mehemet Ali of Egypt secured for Kane a special "firman" for his protection, and with this he set about exploring the ruins of the Pyramids and Thebes. "Here," he says, "my life was a very wild one—I wore native dress, with a beard so long I had to tuck it in." And later he makes reference to a hot scrimmage with a party of Bedouins, in which he received a wound in the leg. To cure this he betook himself to a hospital at Alexandria and the plague seized and all but killed him.

As soon as he was well enough to travel he set out for Greece. Her mountains he slowly toured on foot, then journeyed northward through Switzerland and Germany. It is interesting to note that in the former of these countries he so carefully examined the glaciers that his diaries in the Arctic are filled with references to them. He passed through France to England and thus back to America in the winter of 1845.

He now resolved to settle down to practise in Philadelphia, and went so far as to secure an office, but adventure did not cease to call him and before many months he was with Commander Reed as assistant surgeon in the frigate *United States*, bound for the coast of Africa. Here his nemesis again overtook him, and he was invalided home prostrated with "coast fever." How virulent was this attack may be judged from the fact that only after the sixth week was he sufficiently recovered to permit of his being lowered over the frigate's side to a homeward-bound transport. The effects of this illness he carried ever afterwards.

He reached Philadephia in April of 1847, a very sick man, but with courage still undaunted. The Mexican war was in progress and he was determined to see service. His influence procured him an appointment as inspector of field hospitals, and by November he was well enough to sail for Vera Cruz, there to engage in fresh activities which landed him once more in the doctor's hands. This time the cause was a lance thrust in the abdomen, received from one of his own escort, when the latter threatened to butcher in cold blood prisoners whom Kane defended. His Egyptian hospital experience promptly repeated itself, and typhus fever followed. This convalescence, as might be expected, was slow, but by January of 1849 he was again at sea, but far from well. The great adventure, however, was drawing nearer.

When he returned in October he found a world moved to its depths by the appeals of Lady Franklin for the rescue of her husband and his companions. They had gone in search of the northwest passage and had not been heard of since 1845. The response of the United States to the appeal was widespread, and the public held the government committed to aid. Kane promptly volunteered as surgeon of the rescue party, which came to be known, from the generosity of its backer, as "the first," or United States "Grinnell Expedition." No response from Washington came to the volunteer for several months, then suddenly while he was on the shores of the Gulf of Mexico he received a curt telegram, instructing him to "proceed forthwith to New York for duty upon the Arctic expedition." In less than eight days he was in New York and a few hours later saw him aboard and at sea. His preparation for the great adventure had begun.

Kane now ranked as past assistant surgeon and senior medical officer of the expedition. Lieutenant De Haven commanded. The start was made in May, 1850, and the return to New York in September, 1851. For nine of the sixteen months the vessels were ice-locked and adrift in the frozen sea. But Sir John Franklin had not been found, though news had come of his winter quarters at Beechey Island in 1845-46. This revived hopes of his survival and it was determined that the field of search should be more thoroughly explored. Dr. Kane was eager to participate. By manifold efforts and largely through the further generosity of Mr. Grinnell of New York and of Mr. Peabody of London, he was given the opportunity to take out the same brig—the *Advance*—in which he had sailed with De Haven. The great adventure had come at last.

The little vessel turned once more to the North on May 30, 1853. She was bound for Smith's Sound, through which the commander hoped to reach an open Polar sea. The hope was never realized. The voyage to the Sound was safely made, but there in Rensselaer Bay the ice caught her and held her, and, to use Kane's words, "the same ice is round her still."

There followed two stern winters with lessening fuel and supplies, and increasing inroads of disease. Death took two of the little party and stared the others in the face. They capitulated at last. The stripped and desolate ship was abandoned and the long and hazardous journey to the South begun. Incredible courage made it, but it was a feeble and famished band which hailed the Danish "oil boat" weeks later under the shadow of Karkamoot. For four and eighty days the commander and his men had fought the ice-pack and the storm, had sailed thirteen hundred miles and had won their goal with but one small boat left of all their equipment. The great adventure was drawing to its close.

A relief expedition under Lieutenant Hartstene, U. S. N., with Dr. John K. Kane, a brother of Elisha, had been meanwhile searching for the lost *Advance*. It found the survivors and brought them back to New York in October, 1855. They had been gone for thirty months. Kane resolutely set about writing his story, but felt his power wane. Small wonder! The marvel is that his frail body should have survived so long. Fever, scurvy, and rheumatism had racked it. Intolerable fatigue had destroyed its recuperative power. The active brain still worked, but the overwrought heart was failing. Says he, as he labored over his final chapters, "Something is the matter; I get weaker every day." This was true. The shrouded Presence which had brooded for months in the fetid cabin of the *Advance* would no longer be denied.

A hurried trip to England was taken in October, 1856, with the hope that it would help, but the fogs of London made the laboring heart worse instead of better, and in a few weeks the patient left England for Cuba. His old enemy—rheumatism—now tortured him and his breathing was much affected. He reached Havana on Christmas day, and for a few weeks seemed better, but early in February he became paralyzed and

a week later the stout heart ceased to beat. Without a sigh, from the slight and wasted body, the valiant spirit passed. The great adventure was quite finished —the greater just begun.

Correspondence.

NO PHYSICIAN OR SURGEON AS YET IN THE HALL OF FAME.

To the Editor of the Medical Record:

Sir:—Soon there will be the fifth quinquennial election to the Hall of Fame. The first took place in 1900 immediately after the funds had been given anonymously for the building of a permanent monument to the men and women who had contributed most to the nation's well-being and culture. According to the constitution drawn up at the time, it was agreed that at the first election fifty national figures in art, science, and history should be chosen and that thereafter five were to be added every five years.

The method of procedure in placing the name of a man or woman on a tablet in the Hall of Fame is such as to allow no question or doubt as to the person's eligibility. The Senate of the New York University, which is made up of the dean and senior professor of each of the university schools, with the presidents or other representatives of each of the great theological schools in or near New York City, chooses the electors. There are a hundred of these. Every State in the Union is represented by at least one man. These hundred men are chosen by virtue of their eminence in some branch of national culture. They fall into seven main divisions: Authors, presidents of universities and colleges, scientists, professors of history, jurists, high public officials or men or women of affairs, and editors. When the names are sent in to the Senate of the University they are considered on the basis of constitutional qualifications. Not the least important of these qualifications is the one requiring that the nominee must have been deceased at least ten years.

It is with delight that we see, I believe for the first time, the name of a physician among the electors, the chosen one being Dr. Charles H. Mayo, of Rochester, Minn. Perhaps this is a good omen and indicates that one of our own profession may at last be among the immortals. It is true that Oliver Wendell Holmes was a physician, but his name has been chosen for the Hall of Fame as belonging to Group I, authors, of which there are now 14; Group II are educators and number 4; Group III, preachers and theologians, 4; Group IV, philanthropists and reformers, 3; Group V, scientists, 5; Group VI, engineers and architects, none; Group VII, physicians and surgeons, none; Group VIII, inventors, 4; Group IX, missionaries and explorers, 1; Group X, soldiers and sailors, 4; Group XI, lawyers and judges, 4; Group XII, rulers and statesmen, 11; Group XIII, businessmen, none; Group XIV, musicians, painters, sculptors, 2; Group XV, eminent men outside of the classes mentioned, none.

William T. G. Morton, the discoverer of ether anesthesia, was once proposed under Group VII, but failed on the election. I do not know whether or not the constitution of the Senate of the New York University permits a renomination. I hope there will be no barrier to renominating the "Inventor and revealer of anesthetic inhalation, before whom in all time surgery was agony," * and of whom Sir William Osler speaks as follows in his "Man's Redemption of Man": "On October 16, 1846, in the amphitheater of the Massachusetts General Hospital, Boston, a new Prometheus gave a gift as rich as that of fire, the greatest single gift ever made to suffering humanity. The prophesy was fulfilled—neither shall there be any more pain; a mystery of the ages had been solved by a daring experiment by man on man in the introduction of anesthesia."

The next two greatest figures in American medicine and surgery are perhaps Ephraim McDowel and J. Marion Sims. McDowel performed the first rational and deliberate ovariotomy, which he did in 1809, and of course without an anesthetic; his patient living for 32 years after the operation. As is well known, J. Marion Sims (1813-1883) gained for himself a national and international reputation by his invention of the speculum as an instrument for the treatment of pelvic diseases in women and by his perfecting the plastic operation in the vagina for the relief of vesical fistulæ.

The nomination must be sent in to the Senate of the New York University, University Heights, New York City, before May first. Besides erecting the tablet in the Hall of Fame, the Senate of the New York University is now considering collecting the works, where it is possible, of all the men and women who have thus been honored by the nation. They hope in this manner to create a valuable "Americana," open for study and inspection.

I am sending this letter to as many of our American medical journals as possible so that each and every American physician who has a just pride in his profession at heart may do his share to see that a recognition to medical and surgical science equal to that of other professions, is given at last. While there may be other great physicians and surgeons in the past generations who have distinguished themselves so as to be worthy to be classed with "America's Greatest," I venture to say none has surpassed the achievements of Morton, McDowel, and Sims. These were real pathfinders in science and added to human happiness and well-being and the glory of the American medical profession.

Let every American physician send one, two, or all three of these names to the above mentioned address of the Senate of the New York University, stating that this is his choice of America's great men for nomination for the Hall of Fame.

S. Adolphus Knopf, M. D.

*From a monument erected to his memory at Mt. Auburn, Boston.

THE UNJUST AND BURDENSOME REGISTRATION LAW.

To the Editor of the Medical Record:

Sir:—Unless the entire medical profession of New York State has no objection to being examined, registered, and card-indexed annually hereafter on a certain "September Morn" for the rest of their lives they had better protest at once against the bill for the Annual Registration of Physicians by the

Board of Regents of this State, which is now before the Legislature for action. This bill has always been opposed by the organized medical profession of this city. Despite this fact, it was indorsed by their representatives in the recent convention of the State Medical Society. Against this action not even a protest can be entertained, according to the definite ruling of the president of one of the local medical societies.

At the recent banquet of the State Society, at which he was a guest, President Finley of the Board of Regents told the physicians that they would have to accept "annual registration or suffer from quacks." These quacks are an unknown number, existing somewhere up the State. They are said to be practising on diplomas illegally obtained. It is said they can be put out of business only by the proposed legislation, because the local district attorneys will not act against them. As they are certainly less than 100 in number and will in the course of events cease to practise medicine at all, why should the 14,900 physicians who were given the right to practise during good behavior for the rest of their lives be compelled to bear the burden of proving every year that they are still entitled to this privilege?

Any physician failing to appear for registration on account of sickness, disability, or absence from the country on this "September Morn" will have to explain his delinquency to the authorities before he is again allowed to practise his profession without violating the Criminal Law.

JOHN P. DAVIN, M.D.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, March 25, 1920.

Health Insurance.—As I mentioned in my last letter, the medical profession submitted to arbitration, with respect to the capitation fee that those medical men serving under the Insurance Act should receive, and, although the figure 11s. a year for each insured person set by the arbitrators is not satisfactory, it must be taken with the best grace possible. In any event, the settlement is only temporary and can be revised at any time. In the meanwhile, the position of the medical profession should be strengthened by unification and by the establishment of a defense fund. Politically the profession is almost impotent, and will continue to be so until steps have been taken to render it able to defend itself against encroachments on its rights and until it is in position to raise a powerful voice in the settlement of policies in which its interests are directly involved.

It may be of interest and even instructive to readers of the MEDICAL RECORD to see a summary of a report which has just been published by Sir Alfred Watson, British Government actuary, on the financial proposals of the amended National Health Insurance Bill. The benefits and contributions proposed in the measure compare with those now payable as follows:

Benefits	At Present.	As Proposed.	Increase
Sickness per week			
Men	10s.	15s.	5s.
Women	7s. 6d.	12s.	4s. 6d.
Disablement per week.	5s.	7s. 6d.	2s. 6d.
Maternity	30s.	40s.	10s.

Weekly Contributions.	At Present.	As Proposed	Increase.
Employer	three pence	five pence	two pence
Insured men	four pence	four pence	one penny
Insured women	three pence	four pence	one penny

The annual charge on the Insurance Fund toward the cost of medical benefit in respect of both men and women is increased from six shillings and sixpence to nine shillings and sixpence, but on the other hand, the withdrawal of sanatorium benefit from the act is equivalent to the reduction of liabilities by ninepence per annum for each insured person. It is also proposed to increase the yearly allowances to insurance committees from threepence to fourpence per insured person, while the normal allowance to approved societies for administrative expenses is to be raised from three shillings and fivepence to four shillings and fivepence a year. These increases are provided for by the additional contributions. Under the bill a State contribution is provided of two-ninths of the cost of benefits, including the expenses of administration of approved societies and insurance committees, and seven-ninths of the expenditure therefore has to be provided from the contributions of insured persons and their employers. It is estimated that the full value of the benefits of an entrant of 16 years of age, apart from such provision as may be made by the Central Fund in cases of exceptional deficiency on valuation, is the equivalent in the case of a man of ten shillings and sixpence a week, as against a contribution of tenpence, and in the case of a woman of ten shillings and a penny, as against a contribution of ninepence.

According to the best calculation that can be made, the number of insured persons on July 5 next will be 15,850,000, comprising 10,850,000 men and 5,000,000 women. Of the men 300,000 and of the women 150,000 are deposit contributors. The estimated amount of contributions payable under the present acts in respect of this number of insured persons is £20,525,000 per annum and the addition of threepence per week in the joint contribution of employer and employee proposed by the bill increases this sum to £29,750,000. The apportionment of these sums between employers and insured persons is as follows:

	Employers.	Insured Persons.
At present	£9,225,000	£11,300,000
As proposed	15,350,000	14,400,000
Increase	£6,125,000	£3,100,000

On the basis of past experience, and subject to certain other conditions, it is estimated that the expenditure on benefits in the year beginning July 5, 1920, will amount under the present acts, to £20,357,000 and under the provisions of the bill to £28,653,000. The distribution of these amounts, which are exclusive of additional Exchequer grants in aid of medical benefit and analogous services, is given as under:

	At Present.	As Proposed.	Increase.
Men	£14,278,000	£20,080,000	£5,802,000
Women	5,813,000	8,227,000	2,414,000
Deposit contributors.	266,000	346,000	80,000
Totals	£20,357,000	£25,653,000	£5,296,000

Under existing conditions the annual charge on the National Exchequer is £5,770,000. Under the bill it will amount to £6,942,000. The increase under the bill will be £1,772,000. These figures are exclusive of the further sums in respect of medical

benefit which have been voted as grants in aid under the authority of Section 1 of the Act of 1913. The amount of these grants in 1919 was about £3,100,000, and these will be considerably increased by the raising of the capitation figure to eleven shillings. In connection with the first National Insurance Act, the man who was responsible for its working died on March 13, last. When the fierce controversy over the National Insurance Act began, Mr. Lloyd George called Sir Robert Morant, who has just passed away, to the Chairmanship of the Insurance Committee. He had then indeed a hard road to hoe and the task would have broken a smaller man. The Act was distrusted and therefore detested by most of the people interested in it. Medical men, in particular, were most antagonistic to it, the friendly societies viewed it with disfavor and vested interests showed fight. When Sir Robert Morant took the helm a great change came and the Act was administered. He possessed in rare measure that uncommon gift of being able to appreciate and enter into the other man's point of view and he was able, to some extent, to reconcile the medical profession. At the time that Morant died the other day, at the early age of 57, he was the guiding spirit of the Ministry of Health in the establishment of which he had probably more to do than any one man. The death of Sir Robert Morant has left a gap which it will be very difficult, almost impossible, to fill.

New Scheme to Combat Tuberculosis. — The treatment of tuberculosis is to be undertaken by the British Government in a great comprehensive scheme, and it was on account of this that the Ministry of Health removed the sanatorium from their Insurance Bill. It has been felt that one defect in the treatment under the Sanatorium Acts was that the stay of two or three months in such an institution was too brief by far to effect more than a temporary improvement in health. Also, it has been taken into consideration that hitherto only the workman himself received treatment, whereas frequently his wife and children were affected, and for them there was no provision. Thus the relief expenditure was often wasted. It is intended, therefore, to make tuberculosis provision under the new scheme for the whole industrial community. Insured persons in future will include wives or children who may be affected and the relief given may be administered by the county and borough councils. The Government is setting aside a capital sum of £1,000,000 for the creation of settlements for the treatment of tuberculous persons generally. At present the creation of nine such settlements is contemplated, each consisting of 200 houses, so that married persons can be accompanied by their families. It is intended that as far as is possible the residents of these settlements should be employed in useful occupations. Special treatment of tuberculous ex-soldiers is also receiving special attention, and a feature is to be made of it. Of course it has been a matter of common knowledge for some time that the sanatorium treatment of the consumptive has been a comparative failure. It gave temporary relief, but, as a rule, nothing more, and when the late inmate of a sanatorium took up his work or any work he soon broke down. Recently, village settlements and workshops, industrial and agricultural colonies have been initiated as adjuncts to or associated with sanatoriums. In Great Britain there is a colony of this kind at Dapworth, in which industries, agricultural work, gardening, and so on are carried on. The report of the English Interdepartmental Committee recommends the creation of ten village settlements, conducted in a similar way to the colony at Dapworth, which would provide accommodation for from 2,000 to 3,000 soldiers with their wives and families. The colony scheme is an attractive one and on the small scale on which it has been tested up to the present seems to have proved successful. There are several difficulties, however, in the way. Dr. Stanley Tinker, in the *Lancet*, Feb. 28, points out some of these. He foresees, for example, that many working men will not be easily persuaded to abandon their urban homes and settle themselves and their families in an unknown part of the country, however healthy it may be. He recommends an alternative scheme for demobilized tuberculous soldiers, namely, that workshops should be constructed within easy access of the workers' homes, one workshop for training and another for permanent employment, with the various amenities of the up-to-date factory close at hand. Work would be carried on under medical supervision. Dr. Tinker further suggests that the men should continue to be subsidized as follows: While the men are under training they would be in receipt of training allowances from the Ministry of Pensions, as in the case of other disablements, but when training is complete, they would pass automatically to the permanent section, where they would be in receipt of their assessed pension, according to their disability, but which would remain between 50 per cent. and 100 per cent. of the full pension. Their work would be paid at trade-union rates of wages per hour. The colony scheme is on its trial and, as said before, so far seems to have come up to expectations. The medically controlled workshop scheme, as suggested by Tinker, has much to commend it. It is undoubtedly true that men used to living in or near a city will miss many of the amusements and distractions which mark city life. On the other hand, it is a mistake to pamper consumptives, and after all country life should be better for their disease than that of a town, and it may also be said better for their families. It is to be hoped that some practical plan will be evolved by which the tuberculous individual will be made self-supporting and enabled to live under comfortable, healthy conditions.

A Physician Ambassador. — Our newly appointed ambassador to your country is, as is doubtless known, at least to the majority of the readers of the MEDICAL RECORD, a medical man. At the time of the outbreak of the war he was professor of anatomy at McGill University, Montreal, and about a year ago was made principal of that University. When the war began he at once joined up and served ably at the front in a military capacity. Afterward Sir Auckland Geddes, together with his brother, Sir Eric Geddes, were able lieutenants of Mr. Lloyd George. Sir Auckland Geddes is well fitted for the post of British ambassador to America, as he knows and understands its people well. At a dinner given to him at the Pilgrims' Club in

London the other night, in returning thanks for the toast of his health, he spoke the following memorable words:

"I hope and trust that no word will ever fall from my lips which will make mischief, however slight, between such peoples (British and American), for I have the most profound admiration and affection for both. Rather I pray that it may be my lot, if any distemper should arise between them to return to my original profession of physician and act as healer. That, at all events, is my ambition. It is perhaps not without interest that once before this country sent to Washington as its representative a man who held a medical degree. Like me he studied medicine, both in Edinburgh and London. Like me, though a qualified physician, he served in a combatant capacity in war. Like me he had a somewhat variegated career in the service of the State. I refer to Sir Charles Richard Vaughan, his Britannic Majesty's Envoy Extraordinary and Minister Plenipotentiary at Washington, 1825-35.

"Vaughan was contemporary and intimate friend of such eminent American jurists and statesmen as Story and Clay, and he had to deal with the then burning question of the United States boundary with Canada. I believe that when he left Washington it was felt on both sides that there had departed a great British representative, who had done much to strengthen the foundations of an international friendship which last lasted more than one hundred years. I should indeed be a proud and grateful man if when my turn to resign the office comes the same could with truth be said of me."

Death of a Crimean Veteran Medical Officer.—The death occurred on March 13, last, at Paignton, Devonshire, of Dr. Henry Thomas Sylvester, V. C., late 23rd Royal Welsh Fusileers, aged 89. Dr. Sylvester won the highest award for bravery given in the British army on Sept. 8, 1855, when as an assistant surgeon of the 23rd Royal Welsh Fusileers, at the siege of Sebastopol, he went out under a heavy fire to a spot near the Redan, where an officer was lying mortally wounded in a dangerous and exposed situation and dressed his wounds. Dr. Sylvester's bravery was specially mentioned in dispatches by General Sir James Simpson. He afterward took part in the suppression of the Indian Mutiny, including the relief of Lucknow. He retired from the service in 1861 and for many years practised in Westminster.

LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, March 10, 1920.

IN this letter I desire to direct attention to several topics which have been studied recently at the Lyons School of Medicine.

Phosphoric Acid.—Dr. P. Pouget has worked out some problems of the therapeutic use and action of phosphoric acid which are interesting. He finds that at the dose of from five to six grams—but not more—this acid is neither toxic nor steatosing. However, at the beginning of its exhibition the gastric and nervous susceptibility of the patient must be first ascertained and the drug must always be given well diluted. A 1:15 or 1:30 solution is given during meals. The officinal preparation in France contains 1 gram of the acid to 15 drops of the solution, and Pouget restricted his doses to from 20 to 30 drops after meals; the teeth should be carefully cleansed with an alkaline solution to remove all trace of the acid.

Phosphoric acid acts by both of its properties, the acid and the phosphorus. By its acid property it is a stimulant of the gastrointestinal secretions, an antiferment, and regulator of the digestive functions, and by virtue of these qualities it assures a better assimilation and thus relieves the work of the intestine and liver.

As a phosphorizing agent it is especially indicated in digestive and hepatic insufficiency, in depressive states, and psychasthenias. As a eupeptic, a general stimulant and one of the nervous system, and an indirect defender of the liver its use is indicated in tuberculosis. Pouget noted its happy effects in malaria among the troops of the Orient during the war. It is hardly necessary to say that in the latter case the acid has no specific action and is used merely as an adjuvant to the quinine treatment. But it does seem to act favorably in eliminating the toxins and controlling fermentation, thus relieving hepatic and digestive insufficiency so common in malaria. Its stimulating action is a contraindication to its use in all infections in their acute phase, but during convalescence it is highly useful. Finally, phosphoric acid, as is well known, is by far the most easily assimilable of all the preparations of the phosphorus series.

Jugulocarotid Aneurysm.—By the most recent statistics, Dr. M. Leschelier has shown that the surgical cure of jugulocarotid aneurysms should be undertaken with as little delay as possible, because when left alone these aneurysms bring about serious disturbances, such as dilatation of the veins, cardiac disturbances the consequence of an increased blood-pressure in the venous system, respiratory disturbances resulting from compression of the pneumogastric by the aneurysmal sac, and changes in the cerebral circulation.

These aneurysms have no tendency to spontaneous retrogression. Quite on the contrary, infectious complications, increasing ectasis with rupture and fatal hemorrhage are to be feared when surgical treatment is not resorted to. When ligature is done at a late date in the process—that is to say, after the end of three weeks—accidents of septic emboli and ascending thrombosis are prone to occur. Finally, in a few cases it has been found that early ligature may avoid the necessity of ligating the primary carotid, and when the opening is small and its edges are in good condition, suture of the artery may be attempted.

Enchondroma of the Lung.—Primary pulmonary enchondromata have been studied by Dr. E. Reboul, who has had an interesting case in which these neoplasms, on account of their indefinite development and local malignancy differed from benign productions due to rheumatism or rickets developing at the expense of pre-existing cartilage and known by the name of enchondroses. Although growths of this type which have been reported—exception being made of secondary tumors—have been generally small and multiple, in Reboul's case the tumor was quite large, weighing 780 grams. On clinical and radiological

examination it gave the impression of an hydatid cyst, but at operation when puncture was essayed a solid mass was encountered which at first was supposed to be cancer. The growth was enucleated with difficulty, it being included in a pocket formed by the diaphragm, pleura, and lower border of the lung. Microscopically, an osteocartilaginous tumor was found with bone marrow of the fatty type, but distinctly characteristic, interposed between bony and cartilaginous structures. By its histological character this growth reveals the unity of the osteocartilaginous tissues, as well as the histogenetic intimacy of both the cartilaginous and bony portions in the development of tumors of the bones and the cartilage.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 25, 1920, clxxxii, 13.

1. A Critical Discussion of Certain Phases in the Development of Modern Infant Feeding: Their Influence Upon Present Teachings. Lewis Webb Hill.
2. Anesthesia in Obstetrics. Paul Appleton.

2 Anesthesia in Obstetrics.—Paul Appleton believes that, properly used and with perfectly working apparatus, nitrous oxide analgesia and anesthesia, with oxygen, and supplemented by ether in selected cases, can be administered in 99 per cent. of all obstetric cases so as to give the patient a practically painless labor. This can be done at much less expense than is commonly supposed, and, from the purely technical point of view, it saves nervous strain and often true shock, and greatly facilitates the general management of the case.

New York Medical Journal.

March 27, 1920, cxi, 13.

1. Pregnancy Complicated by a Large Fibroid Tumor. J. C. Applegate.
2. Encephalitis Lethargica. With a Report of a Case of Korsakoff's Syndrome. Hyman Climenko.
3. Umbilical Hernia. Nelson A. Ludington.
4. Two Cases of Displacement of the Ilium. Edgar F. Cyriax.
5. Extensive Destruction of the Sella Turcica Without Clinical Symptoms. Charles Rosenheck and Lesser B. Groeschel.
6. What Is the Cause of Goitre? J. Christopher O'Day.
7. The Wladimiroff-Mikulicz Operation. Marcelino Herrera Vegas.

2. Encephalitis Lethargica.—Hyman Climenko, in an analysis of thirty-four cases treated at Mt. Sinai Hospital, and more than twenty cases in private practice, found that both sexes were equally involved. The highest age was sixty, the youngest fourteen. The writer has seen a patient, aged sixty-eight, and a child seven weeks old, both giving typical symptoms of encephalitis lethargica. By far the greater number of patients were adults. The cases occurred throughout the year, the disease assuming the proportions of an epidemic during the midwinter and early spring months. A careful history always shows that some time prior to the onset the patient was suffering from some acute catarrhal condition of the upper respiratory tract. During the early symptoms, long before the patient gets to the hospital or even thinks of calling a physician, there is usually a stage of euphoria. During this stage insomnia sets in; this may be the first symptom for which the patient consults his physician. At this time there is a rise of temperature and an acceleration of the pulse. The euphoria may soon pass into a real hypomania, with temporary illusions and hallucinations. These illusions are characteristic in that the patient is able to correct them; i.e., when his attention is called to realities he is able to correct the illusion or hallucinations or both. Probably these are not true illusions and hallucinations, but are wrong images received by a diseased brain; a condition that is found sometimes in psychic blindness. There may be a complete disorientation as to time and place, but this too is corrected when the patient's attention is called to the mistake. The memory for past events is good in all cases with the exception of those suffering from severe manias. In the majority of cases the hypomania does not advance beyond this stage; in others a true mania develops. Instead of hypomania an excitable depression may be present. At about this stage choreiform twitching may be observed in many patients. Pain, usually sharp, lancinating, and radiating along the distribution of a peripheral nerve, is one of the early symptoms. Vomiting, drowsiness, and severe headaches, with all the other symptoms of an acute meningitis, may at times usher in the disease. All these promonitory symptoms may be absent, and the disease may start in with a lethargica preceded perhaps for a few days by diplopia to which the patient pays little or no attention. The salient symptoms in the vast majority of cases are the drooping eyelids, the somnolence, the masked facies, and the rigid semiflexed extremities accompanied by a paralysis agitans tremor. These symptoms may be present in part, in their entirety, or in a varied degree. Many other symptoms or manifestations may be noted in individual cases. In one of the cases observed by the writer the patient presented a typical syndrome or Korsakoff's disease, together with diplopia and ptosis. The majority of the patients recover within a few weeks. The treatment is entirely symptomatic.

Journal of the American Medical Association.

March 27, 1920, lxxiv, 13.

1. Lethargic Encephalitis: History, Pathologic and Clinical Features, and Epidemiology in Brief. Simon Flexner.
2. Chylous Ascites Due to Carcinoma of the Stomach. H. V. Hendricks.
3. Polypoid Adenoma of the Stomach: Removal by Gastrotomy. Emil Novak.
4. Polydactylism and the Phenomenon of Regeneration. George F. Arps.
5. Focal Infection and Its Relation to Obstetrics. John E. Talbot.
6. Treatment of Denervated Muscle. Frank A. Hartman and W. E. Blatz.
7. Torsion of the Omentum: Report of a Case and a Brief Review of the Literature. Frank Benton Block and Herbert J. Darmstadter.
8. Cesarean Section Under Procain Anesthesia. J. Morris Slemons and J. Murray Johnson.
9. Observations on a Green-Producing Coccus from the Brain in Case of Encephalitis. S. John House.

1. Lethargic Encephalitis.—Simon Flexner, after reviewing the history, pathologic and clinical features, and epidemiology, believes that, while waiting for the ultimate and convincing results of animal experimentation, one need entertain no doubt of the infectious and communicable nature of lethargic encephalitis. The belief that it is a communicable disease imposes certain responsibilities on the medical profession to limit its spread. The outstanding obligation is perhaps the close study of suspected cases in order to determine their real nature, meanwhile holding them under such conditions of isolation as is usual with this class of diseases. Every effort should be made to determine the existence of, and to detect and control the ambulant or abortive cases, having in mind that they may be more significant than the frankly lethargic and paralytic ones from the public health point of view. Since the nasopharyngeal secretions have become suspected of harboring the inciting microbic agent, adequate measures of controlling the distribution of these secretions into the surroundings of patients should be carried out. The physician should invite the cooperation of the bacteriologist and pathologist in attacking the unsolved problems presented by this disease.

5. Focal Infection and Its Relation to Obstetrics.—John F. Talbot, while not believing that focal infection is the only etiologic factor in the several complications of pregnancy which are here discussed, considers that it exerts a tremendous influence on obstetrics. Many complications, hitherto obscure as to etiology, can be attributed to the presence of a focus of infection. From a prophylactic point of view the obstetrician should study his patient to ascertain the presence of any such focus, removing it before it has caused trouble. The writer discusses the subject under two heads: 1. Complications which may be the result of a temporary bacteriemia or septic embolus; 2. complications which may be the result of the presence of the toxines of chronic sepsis in the blood of a pregnant woman.

The Lancet.

February 28, 1920, i, 9.

1. Lettsomian Lectures on Tumors Complicating Pregnancy, Labor, and the Puerperium. Lecture II. Herbert R. Spencer.
2. Influenza as an Aetiological Factor in Nephritis, with an Account of Four Cases as Post-Influenzal Nephritis in the Same Family. W. W. D. Thomson and H. F. MacAuley.
3. The Factors Concerned in Asthma and Their Treatment. D. W. Carmalt Jones.
4. Notes on a Series of 103 Cases of Compound (Gunshot) Fractures of the Femur Treated at a General Hospital in France. Philip Turner.
5. Treatment of a Case of Narcolepsy. Charles S. Myers.
6. Medicine at Tristan da Cunha. H. St. C. Colson.
7. The Insanity of John Bunyan. Rev. E. G. O'Donoghue.

2. Influenza as an Etiological Factor in Nephritis.—Thomson and MacAuley record the histories of four cases of nephritis following influenza and survey the literature of the subject. Their conclusions from the study follow: 1. That nephritis is a more frequent complication of influenza than is commonly thought. 2. That the virus of influenza may affect the kidneys in various ways: (a) by producing a temporary albuminuria, as seen in many other acute infectious fevers; (b) by causing an acute nephritis during the course of the disease, especially if respiratory symptoms are present; (c) nephritis may arise during convalescence, as in scarlatina; the damage to the kidneys may not become manifest until the patient is believed to have recovered from the original disease; (d) a dormant or latent nephritis may be lighted up. 3. Nephritis may follow even mild cases of influenza. 4. Nephritis occurring during the course of influenza may be masked by the respiratory symptoms, and only careful routine examination of the urine may demonstrate its presence, while some of the cases arising after the sypmtoms of influenza have abated may show such slight symptoms—transient edema, slight oliguria, or capricious albuminuria—that they may easily be missed. 5. That the urine in this disease should be frequeutly tested not only during the disease, but also during convalescence. 6. That probably the frequency and severity of the complication varies in different parts of the world in different epidemics. 7. That in the next few years we may expect in examination for life insurance to find a higher percentage of albuminurics.

The Lancet.

March 6, 1920, cxviii, 10.

1. Lettsomian Lectures on Tumors Complicating Pregnancy, Labor, and the Puerperium. Lecture III. Herbert R. Spencer.
2. Vertigo. Especially in Respect of Its Surgical and Medical Treatment. Sydney Scott.
3. Fractures of Tibia and Fibula: Their Treatment by Plating Operations. C. Frederick Strange.
4. Topographic Percussion and Visceral Tonicity. Albert Abrams.
5. Genito-Urinary Tuberculosis Treated with Massive Doses of Tuberculin. Rolf Creasy.
6. An Experiment on the Mode of Transmission of Certain Human Intestinal Protozoa. J. C. Watt.

2. Vertigo.—Sydney Scott discusses the surgical and medical treatment of vertigo under the headings, labyrinthine disease, Menière's disease, and unilateral Eustachian inefficiency. He sounds a warning against falling into the error of treating a possible infective labyrinthitis by procrastination, on the one hand, and, on the other hand, of treating vertigo impetuously by opening the labyrinth before ascertaining whether the signs justify a diagnosis of destructive labyrinthitis. Referring to the theory handed down by medical tradition that Menière's disease is due to hemorrhage into the labyrinth, the writer states that almost the only circumstance in which hemorrhage into the labyrinth occurs, and even then very rarely indeed, is that of leucocythemia in certain cases. The cause, he holds, often so subtle to find, and consequently so often overlooked, though admitted as the cause when recognized, is, in his experience, simply unilateral Eustachian inefficiency. It is when the tubes fail to open through some inefficiency, such as is produced by congestion or swelling of the mucous membrane due to a cold or catarrh, or when blocked by tenacious mucus or by temporary engorgement of the bloodvessels which supply the pharyngeal end of the tube, that the regulating action fails. A too tight collar in some is known to produce the same result. This mechanism is necessary because, as he has shown from laboratory experiments, a sudden change of pressure from low to high or high to low in the normal labyrinth on one side, or an asymmetrical change of pressure through the two sides, sets up temporary vertigo with nystagmus and other forced movements which characterize vestibular disturbances. Having scientifically excluded other factors, the treatment is directed to the Eustachian tubes.

Gazette des Hôpitaux.

February 7, 1920, xciii, 14.

Antipyrine Anaphylaxis.—Widal and Pasteur Valery-Radot report a case of anaphylaxis from a non-protein substance. Sensibilization, after having persisted for a long time, was succeeded by desensibilization. The patient, who was subject to attacks of migraine, took at the age of 24 her first dose of antipyrine and afterward continued to use it whenever she suffered from migraine. This status was maintained for nine years, at which juncture she developed the first symptoms of diabetes. Then for the first time a capsule of antipyrine caused a rash to appear, and this eruption reappeared after each successive dose. The rash was always of the same character and appeared at the same region—erythema and vesicles about the lips. Despite this disagreeable feature she continued to take the remedy until the age of 42, when by advice it was discontinued. She had taken the drug nine years without disturbance and nine years more despite the disturbance. She now went seven years more without a grain of antipyrine, but when admitted to the clinic for diabetes received a dose of half a gram. The rash promptly appeared exactly as before. Study of the patient showed the collateral phenomena of anaphylaxis—fall of blood pressure, marked leucopenia, and disturbances of blood coagulation. A number of other remedies were used to ascertain if an anaphylaxis developed with negative result, even pyramidon, so closely related to antipyrine, causing no disturbance. The dose of antipyrine was also varied and it was found that 2 cgms. caused the reaction in 50 minutes, while with a dose of 1 cgm. the result was negative. Antianaphylactic measures were now tested and after some weeks it was found that even a massive dose was unequal to causing the rash.

Upsala Läkareförenings Förhandlingar.

January 10, 1920, xxv, 1-2.

On the Proteolytic Enzyme of Fibrin.—Möllerström states that when ox-blood fibrin is thoroughly washed for a week in running water with chloroform addition it shows an increased proteolytic activity and when preserved in water or glycerin dissolves more readily than specimens less thoroughly washed. In 0.1 per cent. NCl acid albuminate is chiefly formed in fibrinolysis, but a genuine cleavage also occurs with formation of nitrogenous products which are not soluble in tannic acids or phosphotungstic acid. It is probable that enzyme action in sodium chloride solution has little or no significance for fibrinolysis. On the other hand, in an almost neutral fluid fibrinolysis is conditioned by the proteolytic enzyme present. A solution is prepared by preserving washed fibrin in glycerin with formol as antiseptic until the fibrin is almost completely dissolved. The gylcerin solution is now subjected to dialysis whereby a finely flocculent precipitate forms, and this also shows proteolytic activity. This precipitate is now filtered and it appears that the filtrate contains active proteolytic fibrin enzyme. In order to study the action of fibrin enzyme, weakly alkaline solution of casein is used as substratum; and in order to control the process of digestion tannic acid is used after a time to obtain a precipitate. In the filtrate the amount of nitrogen is determined by the Kjeldahl method. Research has shown that the proteolytic enzyme of fibrin acts best in neutral or very weakly alkaline media. Strong acids and alkalies hinder all enzymic activity. Chlorhydric acid is more active in the same concentration than acetic acid. The fibrin enzyme seems rather to begin a cleavage than to see one through, and it may be really a mixture of two enzymes.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting Held in New York, March 23, 24, and 25, 1920.

SECTION ON MEDICINE.

First day—Tuesday, March 23.

JOINT meeting with the Section on Public Health and Sanitation.

Preventable Diseases of Adult Life.—Dr. EUGENE L. FISK, New York, presented this paper and showed statistical charts compiled from life insurance sources. Dr. Fisk said that one of the common diseases of adult life was old age, another was middle age. These were not limited to adult life. Old age due to syphilis might be acquired *in utero*. From that time on all stages of senility occurred, and in many individuals old age was reached during the period of youth. Physicians were too prone to label a patient as a case of this or that disease, or if a diagnosis was not possible, to dismiss the patient with a clean bill of health. To prevent old age or postpone it had seemed to many a quixotic proposition. Old age was always premature, and the physical changes noted in the advancing decades were not due to time but to an abstraction. Physical collapse, whether abrupt or spread over a period of 80 years, was the result of cumulative effects in the environment or in the individual. There were no pathological changes that were normal for any period of life. Factors producing old age were: hereditary (always influential); infections, acute or chronic by bacteria and parasites; poisons from within and without, including drugs; endocrine or other organ disturbances releasing poisons or interfering with their destruction; protein sensitization; hormone deficiency or excess; food deficiency, general and specific in lack of some special substance as vitamines or amino acids; food excess; physical trauma; physical overstrain; psychic trauma, such as fear, grief, and emotional distress which were more destructive than mental overwork; physical apathy—lack of muscular effort was justly charged with degenerative effects; psychic apathy this was the cause as well as the result of failing physical powers. Dr. Fisk made the following recommendations: More periodical physical examinations, more thorough teaching of diagnostic methods, diagnostic methods should be taught from the standpoint of finding out everything and not simply diseases; establishment in the industries of men of the type of medical supervisor for the supervision of industrial employees, and for inhabitants in general. We needed a department of health to coordinate all these activities, and we needed universal military training of young men between the ages of 18 and 21 in the form as it now stood in the bill before the Senate, so that the young men should be under strict medical supervision and be taught the fundamentals of personal hygiene.

Dr. A. W. FERRIS of Watkins, said that there was hardlv a medical matter of more importance than that in which Dr. Fisk and his coworkers were engaged. Our studies of disease should lead to one end and that was to increase longevity and have the individual lead his life happily. Our attention had been given too much to diagnosis and to combating disease. All some practitioners did was to write a prescription and have the patient call again. No directions were given as to hygiene, diet, habits, eating, sleeping, exercise, or diversions. The physician might say that he had not the time to go into all these details, but if he did not have time to give his patient justice he should refuse to see so many patients. Dr. Fisk had opened our eyes to the immense amount of scientific knowledge that was before us. We should always be on the lookout for infections, acidosis, toxemias from various sources, faulty methods of hygiene, too little ventilation, dietetic errors. He did not think we could benefit our patients more than by following these rules of Dr. Fisk.

Dr. L. F. BISHOP of New York City said that he thought that in criticising Dr. McKenzie and other heart specialists Dr. Fisk was laboring under a misunderstanding. What was misunderstood was the relation of murmurs more than the recognition of valvular defects. When a heart proved to be normal in outline with the orthodiagram and with the electrocardiagraph in every way except for the adventitious sound we were justified in saying that that sound was accidental. When we thought of the complicated nature of the inside of the heart, what a complicated chamber it was, the surprising thing was that there should not be adventitious sounds. That was what heart specialists meant—not to question the importance of valvular disease. Of course, we decried the harmfulness of making invalids of people with heart trouble by not taking these people into our confidence. Physicians did not appreciate the work that Dr. Fisk had done. Dr. Fisk had shown the importance of systematic periodical physical examinations and the whole question of health insurance was tied up in this matter, and unless the medical profession by perfecting their dispensaries and their hospitals and their work gave the public what the public was entitled to, the medical profession was going to have health insurance thrust upon them. The medical profession had got to do this work and not rely on outside corporations to do it for the public.

Dr. S. A. KNOPF of New York City, said that we were spending an immense amount of money for the cure and prevention of tuberculosis and still the most important point was neglected and that was early diagnosis. It was to this that we should look for the solution of the problem, early diagnosis was possible not only in the adult but in children. There were 66,000 men rejected for tuberculosis by the draft boards, and 25,000 men slipped through the draft boards and were found to have tuberculosis later. Only by the early discovery of tuberculosis should we be able to master this disease of all diseases.

Dr. R. H. HALSEY of New York City, said that in the campaign against preventable diseases of adult life the problem of preventing heart disease was greater than that of preventing tuberculosis. The rate of mortality (and morbidity) from tuberculosis in recent years had shown a decline, whereas in heart disease it had risen and more particularly in the type of heart disease known angina pectoris and in arteriosclerosis. The only way to combat this was to foster the idea of annual careful physical examinations of every individual, whether well or sick.

Dr. FISK, in closing, said that he did not wish to belittle the splendid work done by Dr. Bishop and others in the newer heart pathology. We should find out the quality of the circulation and not concentrate on the question of murmurs. If one read McKenzie's book, one would find a nonsensical criticism of life insurance examiners. The figures proved, however, that in men who showed nothing but a mitral murmur, the death rate was 50 points higher than normal. Of course, a man with a mitral or an aortic murmur could have his life prolonged; but McKenzie says, "dismiss that man, he can go about his business; there is nothing to it, inasmuch as he has no secondary change, he had better not be worried about his heart." The speaker's experience was that we had contributed to neurasthenias and phobias by not taking our patients into our confidence. We found that tuberculosis was on the decrease, but nine per cent. of the people examined showed some sign. Heart disease, as well as diseases of the blood vessels and kidneys were on the increase. Arteriosclerosis did not begin suddenly in old age. We should appeal for more autopsy work at each age period in order to have more microscopical and histological evidence of the changes in this disease.

Mechanism of the Compensatory Factors in Tuberculosis.—Dr. HARRY A. BRAY of Ray Brook read this paper. Dr. Bray said that a loss of lung volume necessitated a rearrangement of the thoracic organs. These rearrangements, more particularly in the advanced cases, were recognized by chest deformity, hypertrophy of the lung, and displacements of the mediastinum and of the diaphragm. There was an interrelation between these compensatory factors, and, depending on the impairment of one or more of these, the condition of the rearrangement resulted. This explained many apparent disparities in the physical findings, as revealed by roentgenograms. Upper displacements of the diaphragm, on one side or both, must be attributed to loss

of lung volume except in those cases due to pleurisy or to interference with the nerve supply. Where there was loss of lung volume on one side, there was migration of the mediastinum toward the affected side and elevation of the leaf of the diaphragm on the affected side. If the mediastinum was fixed, the elevation of the diaphragm would be greater, and vice versa, proving this interrelationship. The deflection of the mediastinum in some cases might be very considerable, and there might be an immense compensatory emphysema which would present physical signs hard to interpret, without the assistance of the *x*-ray. Where the mediastinum was fixed and the diaphragm also was fixed, what happened in these cases of extensive loss of lung volume was that the chest wall was crushed in with resulting deformity. Migrations of the mediastinum might occur to the right or left with equal frequency. Where the compensatory factors of the position of the mediastinum and diaphragm did not occur, the patient would develop a symmetry of the chest; but a patient with marked involvement might retain a symmetrical chest, so that the degree of chest deformity did not disclose the extent of loss of lung volume. In tuberculosis it was difficult or well nigh impossible to judge the extent, the nature, or the degree of the pulmonary process by asymmetry of the chest. In one old case with rigid chest walls the diaphragm and the mediastinum had not participated in the compensatory process and there was only one other factor left to compensate for loss of lung volume and that was hypertrophy or emphysema of the lung. Dr. Bray said that he had been teaching for a number of years that percussion and deviations in the respiratory murmur were not of very much importance, especially in early cases, for the detection of tuberculosis. It was possible for these compensatory rearrangements to become readjusted to their former normal positions after the progress of the disease had been arrested. In one case shown by the *x*-ray there was a difference in the level of the diaphragm on the two sides and widening of the intercostal spaces on one side; three years later with improvement in the condition, *x*-ray revealed the level of the two sides of the diaphragm to be normal, with return of the mediastinum, and a lessening of the width of the intercostal spaces.

Dr. EDWARD N. PACKARD of Saranac Lake said that compensatory emphysema in pulmonary fibrosis could lead to the erroneous diagnosis of tuberculosis; Dr. Flint had pointed that out following unresolved pneumonia. These nontuberculous conditions were more often basal, but were frequently mistaken for tuberculosis.

Prevention of Diphtheria.—Dr. W. H. PARK of New York City presented this subject. He said that no marked changes had been made in the medical treatment in the last few years. In the treatment by antitoxin we could come to use the single dose instead of the multiple doses. The use of antitoxin subcutaneously took two days for its full effect, while the use intramuscularly took still another day; with the intravenous dose the antitoxin passed out into the tissues immediately, whereas in the subcutaneous or intramuscular injection it remained in the tissues and diminished gradually for one to two weeks. So that treatment had come down to a single sufficiently large dose intravenously. Many physicians were not familiar with the method of giving an intravenous dose. In babies it was given in the jugular vein; in older children in a vein in the arm. Chills might occur after injection, but recently an antitoxin of high potency had been prepared and filtered so as to be perfectly clear, and in not more than two per cent. of cases had chills occurred. Chills did no harm, but were objectionable. The only cases in which they did not like to give an intravenous injection were those which had had treatment before. In those cases they feared anaphlactic shock. Where anaphylactic shock had occurred they had used adrenalin. Treatment had come to be more and more by intravenous injection in a single, sufficient dose. Dr. Park spoke about toxin-antitoxin injections and expressed the hope that they would eventually eliminate diphtheria. In 1893 cultures were first used for the diagnosis of diphtheria. It was then thought that, by better methods of reporting and by finding out the carriers, the prevalence would be diminished, but so far as statistics went that made no difference in the outcome of diphtheria. In 1895 antitoxin was used, and antitoxin reduced the death rate by two-thirds. Antitoxin, being made from the horse, was foreign to the human organism and did not remain in the body for more than four weeks, so that at the end of that time injections had to be repeated. We still had a remainder of about one-sixth of the deaths and two-thirds of the cases per 100,000 people, and there it seemed to remain, as carriers in great cities existed to the number of three per cent. and were all the time changing, and more than half of the cases developed from unknown carriers. We must remain at this point or find a method of active permanent immunization. In the use of toxin-antitoxin we had a method of procuring this. Formerly it was necessary to bleed to find the immunes and nonimmunes to whom this should be given, so that until the Schick test came the matter remained as an experimental study. Behring was the first one to use this practically, but his work had been cut short by his death, and the whole European work was cut short by the war so that it left this country to go on with it and watch results. The value of this work depends on the Schick test. The Schick test was the injection intracutaneously of a small amount of the toxin so that it remained in contact with the cells. If no local reaction occurred, the individual had sufficient antitoxin in his body and was immune to diphtheria—negative Schick test. This was particularly true in infants and young children. In older people we might find that some toxic substances in the broth injected caused a pseudoreaction; with practice most of these pseudoreactions could be determined, as by injecting the broth heated and unheated. Dr. Zingher had found from studies on children extending over years that in only three per cent. of the children did a negative Schick test change to a positive test. So that a negative Schick meant an immunity for years, and Dr. Park believed for life. Occasionally there were gross discrepancies in the Schick test, and we knew that these must be due to imperfect toxin or methods. A negative Schick test meant that the individual had antitoxin and was immune to diphtheria; a positive test did not necessarily mean that he was susceptible. There were cases that recovered from diphtheria and after recovery showed a positive reaction. The Schick test enabled us to find who were immune. Infants, we knew, obtained their immunity from their mothers, and from infancy on to two years this immunity passed out, so that the greatest number of nonimmunes occurred in infants between the second and third years, and from then on the percentage of nonimmunes grew less as ages advanced. They used the toxin-antitoxin mixture on the nonimmunes. This mixture grew less and less toxic month by month so that if it left the laboratory carefully tested, it was as safe as any product could be, as the product never became unsafe if it left the laboratory safe. This product had strong immunizing properties, and had been given to infants of one week old in full adult doses and with no deleterious effect. After one injection 70 per cent. would be immune at the end of one month; two injections would give about 90 per cent. of immunes, so that by reinjection we could bring most of the nonimmunes into the immune fold. How long did the immunity last? After investigations for four years and a half Dr. Park said he believed that the immunity conferred was permanent. Babies stood these immunizing doses better than adults and older children in whom more marked reactions occurred with rise of temperature, prostration, etc. So that he felt that the babies between six months and two years should be the ones to be immunized. He believed that we could get an immunization of the whole infant population, that the method was entirely harmless and that it gave permanent immunity that would eliminate diphtheria.

Dr. SAMUEL A. BLAUNER of New York City reported the occurrence of eight cases of diphtheria in an infants' asylum in New York, which was very difficult to explain. In the asylum in question it was the custom to apply the Schick test to all infants and to immunize the positive reacting ones with toxin-antitoxin. In a ward in which all the children were supposed to be immunized there developed three cases of sore throat, which by culture proved to be true diphtheria. On the

appearance of these cases antitoxin was given, but five other cases developed. The question was whether we were dealing with diphtheria carriers who at the time happened to contract streptococcus sore throat. These cases were given the usual dose of antitoxin and their throats again cultured, and the cultures were negative, showing that they must have been cases of true diphtheria. These cases had shown a negative Schick reaction. Now the objection to the fact that these cases were diphtheria was the fact that possibly they were cases of streptococcus sore throat, but against that were the character of the local symptoms, the fact that the children did not have the sepsis of streptococcus sore throat, and finally, if these children were carriers, then why were those throats negative after the local symptoms had disappeared? We had a case of a child who refused to be immunized, yet this child possessed virulent diphtheria germs in his throat, and in spite of the fact that we had an epidemic of diphtheria in the wards, he did not contract clinical diphtheria.

Dr. S. B. Howe New York reported his experience with the Schick test in an institution in New York. They began using the Schick test in May, 1906, and immunizing all positive cases and had no diphtheria up to the present time, except for a short period when they immunized only, not using the Schick test. He felt certain now of the value of the Schick test and was very watchful to see that it was carried out in the proper way, as instructed by Dr. Park.

Dr. H. N. Appel of New York City said that he was on duty at the asylum where the cases mentioned by Dr. Blauner occurred, and that he would like to add something that perhaps Dr. Blauner had forgotten. In one of the group of children in the ward where the child came down with diphtheria the children were promptly immunized and not a case of diphtheria developed. That tended to bear out the assumption that it was diphtheria, because if it had been a case of streptococcus sore throat, immunizing the children would not have had any effect in limiting its spread.

Dr. Kling of New York City said that he would vouch for the reliability of the Schick test, if properly carried out. In a series of 2,000 cases with negative Schick test who were exposed to diphtheria not a single case developed. None of these children received an immunizing dose of antitoxin; but to be sure that one could depend on the results, one must be sure that the material was right and that the methods were right. In an institution where the work had been carried on for two years, the negative reactions became positive.

Dr. Park, in closing, said that he had investigated the occurrence reported by Dr. Blauner, which was most difficult to understand. To his mind it meant that the negative Schick-tested children and the toxin-antitoxin injected children developed diphtheria but that the children who had naturally a negative Schick by their own antitoxin did not develop diphtheria. When he first investigated the cases one child was coming down with a sore throat, as mentioned by Dr. Appel, and he suggested that if they were willing to take the risk and not treat this child with antitoxin it would show the same history as the other children who were given 1,000 units. This child with tonsillitis did recover in the same way, though it received no antitoxin, as the others that did receive it. There was one case with a negative Schick, but it had passed away in that time. He knew that antitoxin in the body will disappear, and that is the reason he wanted to use active immunization. Now as to the diagnosis: one could not tell a tonsillar diphtheria from any other form of sore throat. There must be some kind of tonsillitis with virulent bacilli on the patch, but whether the diphtheria bacilli added anything to the local signs on those tonsils, we did not know. We did not know whether if we had a streptococcus sore throat in a diphtheria carrier it would or would not have some effect on the mucous membrane of that tonsil; it might be free on the outside. That was a question we could debate for ever; but he did feel that there was no reason possible for diphtheria poison to cause constitutional symptoms if there was antitoxin in the body, and he believed the toxin made by the patient and that made by the horse was the same. If the Schick test properly done did not prove that, then our reasoning was wrong.

The Tonsils and Scarlet Fever.—Dr. E. H. Place of Boston read this paper (by invitation). Dr. Place said that he could not help reflecting on the fact that this was one of the diseases in which modern science had added practically nothing in the way of diagnosis or treatment. In the realm of treatment possibly with the utilization of antibodies which had been produced in other human beings no marked improvement had been made. In searching the problem for some point of attack, he could not resist the temptation to speak of this subject of the relation of the tonsils. It was interesting to note that the tonsils were the first point of localization, and that in all cases associated with death they were affected, and this was the case in other infections such as endocarditis. But nothing definite was known as to the relation of the tonsil to the portal of entry in scarlet fever, on account of the difficulty of human experiment. Animal experiments had suggested this as a possible portal. The difficulty of recognizing the disease as scarlet fever where disease had followed inoculation of the throat with scarlet fever made such experiments of doubtful value. Berger and others had observed scarlet fever coming on after wounds, surgical operations, and in the puerperium; in these cases the mildness of the throat symptoms had been noted. In 30 cases in his wards there were only three that had very marked throat symptoms, and in all of the cases in this group the throat symptoms became appreciable after the first appearance of the rash—quite a distinct contrast to the ordinary course of scarlet fever. It was difficult to make the diagnosis in these cases of scarlet following an operation wound; cases of this kind were apt to have a rash due to other causes. However, in his series most of the cases admitted to his ward had been in contact with patients with scarlet fever, and in none of them had a new attack of scarlet fever resulted. On the other hand, one might have throat symptoms so mild in scarlet fever as to throw doubt on the diagnosis. The speaker's practice was to accept as scarlet fever only those cases that had throat manifestations, and to reject all in which the throat was normal. Another point in relation of the tonsil to the etiology was that the faucial ring and the tonsil were the first point of attack in this disease, and this fact was accepted as the first sign of scarlet fever. The lymphoid tissue was the one tissue that showed pathological changes in all patients that died, and the hyperplasia of the lymph nodes to which attention had been drawn by Shamberg was seen in other exanthemata. Another fact that seemed to point to the tonsil to prove its etiological relation to scarlet fever was shown in epidemics of milk-borne scarlet fever. In epidemics of that disease the proportion of cases in adults had been noted to be always high. Of course, it was impossible to say how much the stomach or intestines had to do with these milk-borne cases. As to relation of the tonsil in scarlet fever to the secondary and septic infections, septic sore throat occurred chiefly in patients who had large tonsils—in fact 65 per cent. of the cases showed large tonsils. In a series of cases of septicemia all had enlarged tonsils. In a series of cases of acute nephritis none had had tonsillectomy. Besides this evidence we had the relation of tonsillectomy to the complications and the clinical course. It had been noted repeatedly that in cases in which tonsillectomy had been performed, the throat symptoms were extremely mild. In a large number of these cases the speaker had records of only three in which there was marked or severe throat involvement. As an interesting or side light on this point he had had the good fortune to see six cases in which the tonsil had been removed on one side; and in these the contrast between the side on which the tonsil had been removed with the other side was very marked. Indeed it was in connection with this that he was intending to advise the removal of the tonsil as a prevention of scarlet fever. In acute cases tonsillectomy could be performed with good results.

Nationalization of the Agencies for the Health Welfare of the People.—Dr. Albert T. Lytle of Buffalo read this paper. He thought that some form of government subsidy would have to be devised to secure the requisite number of practitioners of medicine of the proper standards. There were only 35,000,000 people in the United States classed as healthy, and only 19,000,000 people in full vigor. There were a great num-

ber of fake health measures offered to the public, and illogical and unscientific health cures which succeeded even in the face of greater requirements of those practising medicine. Cooperative insurance under government control had not solved the problem for the advancement of health conditions. Any measure that had compulsory features was liable to fail. Individual health welfare service was needed; also a State Department of Health to manage and control health institutions, hospitals, and dispensaries, and compulsory periodical medical examinations of all individuals, the individual to have his choice of examiner, each individual to be taxed.

Dr. KIDDER said that he happened to be on the committee on health insurance, and he came to realize the little knowledge that physicians in general had about the scope of the measure and its effects. Practice and medical requirements were changing. The physician was not needed for emergency work alone, or to attend patients to whom he was called. The physician's work was changing to elective work. Dr. Kidder showed conditions of practice in one county in the State having a population of 72,000 in which there were 69 physicians, and summarized the conditions of practice in that county, which were not creditable. He did not wish to criticise the raising of the standards of medical education, but thought that the changes made were too revolutionary, they should be evolutionary instead. In this tread toward State medicine we should see that it was not forced on the medical profession from the outside. Dr. Kidder emphasized the fact that papers like that of Dr. Lytle should be taken more seriously by the profession.

Second Day—Wednesday, March 24.

SYMPOSIUM ON VITAMINES.

Joint meeting with the Section on Pediatrics.

Fat-Soluble Vitamine A.—Prof. LAFAYETTE B. MENDEL of New Haven read this paper by invitation. In 1881 Voit wrote that it would unquestionably be best to feed only pure chemical compounds, for example, pure protein, fats, sugars, and ash constituents, or mixtures of the same; but as men and animals rarely tolerate such tasteless mixtures, it was necessary to feed food stuffs provided by nature. To Professor Hopkins of Cambridge University, England much credit was due for his researches in foods and vitamines. The report of the Lister Institute in England should be read by those interested. It was assumed that more than one accessory factory in the diet might become responsible for deficiency diseases. Scurvy was one of these, and its cure depends on antiscorbutin; beriberi was another and it might be cured by small quantities of yeast which contained the antineuritin. Yeast was strongly antineuritic but was not antiscorbutic. Flavor was not the factor that was involved in these cures. Professor Mendel described his experiments of feeding animals (rats) on a diet deprived of the fat-soluble vitamine by prolonged extraction of the foods with alcohol and ether, and then feeding various substances to supply this fat-coluble vitamine. It might be said that this vitamine was present in fats derived from animal tissues and in roots and tubers, but was missing in purified commercial vegetable oils. The oily residue in spinach was comparatively rich in fat-soluble vitamine. In feeding animals on a diet free from fat soluble vitamine the symptoms noted were a loss of weight or a failure in normal growth; sometimes the loss in weight was sudden, similar to the decline in malnutrition in children. Another very common and striking feature was a condition of the eyes known as xerophthalmia, the precise nature of which was still under observation. These changes were found in rats on a diet devoid of fat soluble vitamine. Bacterial invasion was not a cause of this condition. Animals in unfavorable physical condition, not deprived of fat-soluble vitamine, did not develop this condition. Another abnormality encountered at autopsy was the presence of calculi in the bladder and ureters. These calculi were composed of calcium phosphate and attained a large size. More recently the rôle of the fat-soluble vitamine as an antirhachitic had been brought into consideration. These was abundant evidence that water-soluble B was needed throughout life. In the case of fat-soluble vitamine the indications were that it was needed particularly in the early stages of life. Full grown rats might be kept in health on amounts that did not suffice at an early age when growth is rapid. Inasmuch as butter fat had been employed as a source of this food factor, comparisons could be made. About one-tenth of a gram of butter fat per day in connection with an otherwise adequate diet served to keep the animals (rats) in health. With a tenth of a gram of dried spinach the results were equally favorable. Even more striking had been the results obtained with dried tomato, which served as the source of fat-soluble vitamine for fourteen months. This vitamine might bear some relation to pigments; thus white potato was comparatively poorer in it than carrots or spinach. The question of the stability of fat-soluble vitamine had been the subject for debate. Butter fat through which live steam had been passed did not lose its validity. Others had said that it was destroyed by heat, but the speaker had found it still potent after heating. The vitamine in liquid butter oil was very stable. In the hydrogenation of oils the vitamine was destroyed. The antiscorbutic factor was more susceptible to disturbance by heat than others. It had been demonstrated that heat applied in the sterilization of food might destroy or diminish the antiscorbutic vitamine. Unfortunately this fact had been subjected to broad generalization with respect to all foods. It was known that orange juice and tomato juice were very stable. The wide distribution of water-soluble vitamine seemed to render the possibility of a deficiency of this vitamine less likely to occur than that of fat-soluble vitamine. The success of the Danish people in nourishing themselves in the latter years of the war was due to the abundant intake of plant foods supplying the missing factor. It needed to be emphasized that these vitamines had not been isolated. In view of this fact men interested in diets should beware of false statements in regard to the claims of nostrums alleged to contain vitamines.

The Antiscorbutic Vitamine.—Dr. ALFRED F. HESS of New York read this paper. In the days of long voyages, he said, scurvy constituted one of the greatest plagues in navies. It must not be thought that because trips were shorter and we had refrigeration that scurvy was a thing of the past. It had merely changed its form, and in the world war scurvy was by no means absent. In the latter part of 1917 the British had many cases of scurvy in their colonial troops in Mesopotamia. Russia and Roumania were afflicted with scurvy after their defeat by the Germans. Scurvy had changed and now presented itself in the latent form. It might occur in patients suffering from fever or in patients suffering from gastro-intestinal disease whose diet had been limited. However, scurvy was more particularly a disease of infants, of artificially fed infants. This disorder was important not merely for itself intrinsically but it led to other diseases, for instance, it was found in this war that those who had a lack of the antiscorbutic factor were more subject to pneumonia and succumbed to it, and that in wounded soldiers the wounds healed less rapdily. Diseases which ordinarily showed a slight petechial rash, as meningitis, might show a hemorrhagic rash in a patient suffering from scurvy even in latent form.

We know little about vitamines in general, but we knew more about the antiscorbutic vitamine than others. We knew that it was soluble in water and in alcohol. It was the most sensitive of the vitamines to heat and drying. There was no evidence that the antiscorbutic vitamine could be stored us. In an experiment on guinea pigs in which one group was given a minimal amount of orange juice and another group twice that amount, and then both groups fed on a diet deprived of the antiscorbutic fact, both groups developed scurvy in the same length of time. In other words, those that got the two-fold dose were not able to avail themselves of the excess. As to the function of the vitamines: the antiscorbutic vitamine seemed to be needed for the endothelial cells of the blood vessels, and if there was lack of this vitamine, the blood vessels gave way and hemorrhages occurred which were

characteristic of scurvy. This was subject to experimental test, for instance, if one bound the wrist in a case of scurvy, the congestion would lead to a large number of petechial spots on the forearm. In other words, the blood vessels were unable to resist the increased pressure; after administration of orange juice this test would result negatively. Other cells were not so sensitive to lack of this principle. We knew that infants suffering from scurvy gave a negative Schick reaction. As regarded the presence of this vitamine in the various food substances it was contained mainly in vegetables and fruits, oranges, lemons, cabbages, and onions were particularly rich in it, whereas apples and beets were poor. Then the amount varied in the same vegetable, new carrots contained more than old. We could not frame a table with any degree of accuracy. The British commission had said that drying destroyed the antiscorbutic principle in food stuffs; they had said that all dried food stuffs were deprived of antiscorbutic value. Although this was true in general, there were exceptions. In the laboratory tomatoes, cabbages, and oranges had been successfully dried. On the other hand, we must consider, that dehydrated vegetables as prepared commercially had no antiscorbutic value. Dried milk, if properly prepared, had antiscorbutic properties; of course, the milk to be of value must originally have possessed these properties. Milk must be quickly dried and sealed soon after, hermetically. Dried milk could retain antiscorbutic properties for three months. He did not mean to say that it was not advisable to give antiscorbutic food with dried milk, but he brought this forward to show that milk could be dried and still retain its antiscorbutic properties. The same was true of canning, though canning, as might be expected, usually destroyed the antiscorbutic properties, yet there were exceptions to this rule. As Dr. Mendel said, acids particularly preserve and protect the antiscorbutic vitamine, they protect it against heat and drying and canning, and therefore we found that canned tomatoes were very rich in antiscorbutic properties, partly because they were acid and partly because they were put in a sealed container. The question of the access of air to food stuffs was of prime importance. Foods lost their antiscorbutic properties on exposure to air. The speaker did not believe that there was any more valuable antiscorbutic for the prevention and cure of scurvy than canned tomatoes. It was cheap, was well borne, and was available. The tomato was given, just strained, as it was taken from the can without any previous heating and given in doses of one ounce to the youngest babies. As regarded milk, pasteurization impaired or diminished the antiscorbutic property but did not entirely do away with it. Babies that were nursed did not develop scurvy, it was only the artificially fed ones that did. There was no reason to believe that human milk was any richer in vitamine than cow's milk. Six ounces a day of mother's milk was found insufficient to cure scurvy. It was known that it took about 16 ounces of cow's milk to cure scurvy, so that the antiscorbutic content of human and cow's milk was about the same.

Water-Soluble Vitamine B.—Prof. THOMAS B. OSBORNE of New Haven presented this paper (by invitation). He said that the effects of diets free from this vitamine had convinced us that this vitamine was essential for all animals, but no records existed to prove it was essential for man. In the past the deficiency features of food poor in vitamines and their effect on man and animals had chiefly interested investigators. Dr. Osborne wished to say a word about the stimulation of metabolism by vitamines. In such experiments the calorimeter must be resorted to. Food intake was a proximate measure of the animal's metabolism. Under natural conditions normal animals, including man, adapted their consumption of food to their need in calories. It was plain that each ingredient needed would be eaten in sufficient quantity. Under those circumstances food intake indicated vitamine intake. Long continued maintenance in a general state of debility followed the ingestion of food low in this vitamine. If the vitamine intake was increased appetite at once returned, and unless during the period of debility the animal had contracted some infectious disease, or suffered from organic change, it was rapidly restored to health and vigor. This could be attributed only to a stimulation of the metabolism. It was the administration of the vitamine that caused recovery, not the amount of food taken. There were individuals who lived for years with a correspondingly low food intake. It was probable that the poor appetites of these individuals was due to the small amount of vitamine they took in. If this surmise was correct, they should be improved. Those men and women who ate habitually too little food might require more vitamine than the average dietary supplied. A large part of the food of the American was deprived of vitamines, thus sugar, flour, and rice in their preparation were deprived of these substances. No great harm, as a rule, resulted because we ate other food substances and obtained the proper amount. In feeding people whose metabolism was low and whose intake of food was small, we should not supply too many calories without vitamines. For example, this was done in convalescence where the physician furnished fruit and restricted the amount of rich food. Too little scientific investigation heretofore had been given to the phenomena of the planes of metabolism of different individuals, as in the active individual compared with the lethargic one. What was meant by the power of recuperation? By obesity? These conditions mostly concerned metabolism, and with them the physician frequently dealt by prescribing sedatives. Possibly these conditions depended on the stimulation of vitamines. It might help in prescribing diets in special cases to know what had been recently learned as to the sources of water-soluble vitamine. Dried brewer's yeast was rich in this substance. Yeast was not now available. The physician would naturally prefer to employ some food product. Dr. Mendel and the author had shown that oranges, lemons, and grape fruit were rich in water-soluble vitamine, apples and pears furnished less, and bananas still less. Among vegetables some had a large content such as tomatoes, cabbage, and onions. Among animal foods milk, eggs, liver, kidney, and heart contained the most water-soluble vitamine, while meat and fish contained less. Yeast consisted of nucleated cells and was richer in purin bases than almost any other food product. Yeast should not be used where purins were contraindicated. Yeast had been prepared free from purin derivatives, and that used with good effect.

Dr. E. V. MCCOLLUM of Baltimore said that there was very little that he could add in regard to each of these three dietary essentials which all now agreed were indispensable in the diet of man. He was in accord with everything that Dr. Hess has said about the antiscorbutic substance and could add only one thing which he thought he inadvertently omitted and perhaps was worth mentioning, namely, in the Lister Institute in London they had found that during the germination of seeds there was a marked increase in their content of vitamines. Dried grains were almost valueless in the treatment of scurvy, but if the same grains were sprouted they immediately developed antiscorbutic properties. Muscle meats, which had been mentioned in the discussion, had been shown to have almost no protective action against scurvy. Furthermore, the experience of all was that the muscle meats were poor sources of all three of the recognized dietary essentials which were concerned in the etiology of the specific deficiency diseases, scurvy, beriberi or polyneuritis, and xerophthalmia, if this latter had ever occurred as a deficiency disease in man. There was no doubt in his mind that Dr. Mendel's statements about the stability of the fat-soluble vitamine was true notwithstanding the statements of other observers that it was destroyed by heat. Now he wanted to call attention to a difficulty which would show why there existed honest differences of opinion about a matter which would seem to be easy of demonstration; namely, did a sample of butter fat lose its antiscorbutic value when heated for varying lengths of time? He would call attention to the difficulties one faced in solving a probolem of that sort. If one took rats of 50 grams body weight and placed them on a diet which was free from this substance but satisfactory in all other respects, and then waited for them to develop xerophthalmia and then proceeded to cure them after they had developed this pathological condition of the eye by cer-

tain doses of butter fat or other food substances, one would find that there were no standards by which the pathological condition could be measured—the condition of the animal would vary markedly, and the effect of different substances in the cure of this condition was subject to marked variations dependent on the interpretations of the investigator. The difficulty in this field was that workers were not all trying to do the same thing, there was no standard of procedure. A point of considerable importance was that we must not lose sight of the fact that, however interesting these substances concerned with the etiology of deficiency diseases might be, they were not the whole story in nutrition and dietetics. There were other factors equally important. Dr. Mendel and Dr. Osborne had made comparisons of the biological values of proteins from different sources, and we know that the proteins from certain vegetable products were more distinctly lower in biological value than the proteins of other foods, notably milk and eggs. We should appreciate that combinations of food were indispensable to the making of a proper diet. To determine accurately the value of a given diet in an experimental animal, in a rat, for example, it was necessary to study the complete life history of the animal. A rat might grow to maturity normal to all appearances but might then undergo a rapid decline, or might be unable to reproduce young or to nourish its young. If the experiment were not continued longer, such a rat would be regarded as a normal rat, and no fault in its diet would have been discovered. It was only by prolonged observation that defects in diet might be discovered, even observation of several generations might be necessary to secure a complete biological analysis of a food stuff, and it was only in that way that we could find the proper way of supplementing our natural foods by combining them to get the best results. A very important point in nutritional experimentation was brought out by this type of experiment, namely, by modifying a diet in different ways we could determine at will the length of that period which followed the attainment of full growth. In this way we could detect minor differences in the value of a diet. There was no reason to believe that we ran anywhere near the danger line in the diet of the average American citizen who was free to make his choice as to diet. It was still another question whether the inmates of an asylum or a prison or orphanage did not run too short on at least one of these unknown vitamines. He had had an extremely interesting experience in improving the diet in an orphanage in Baltimore. There was a group of negro children in an asylum where the surroundings were excellent, yet not a single child in the group was normal. It was apparent that the nutrition of these children was far below what it ought to have been. The food intake and diets of the children were investigated, and it was found that they were fed entirely on a diet of bread, corn meal, and other cereals with vegetable soups made largely from rice, peas and beans, and meat. It was essentially a seed, meat, and tuber diet from the products that were on every grocer's shelf. Upon adding fresh vegetables and dairy products, milk and eggs, to the diet there was a very marked and striking improvement in the condition of the children. There were very few people who realized that a diet of meat and bread and potatoes was not a satisfactory diet, it could only be made so by the inclusion of leafy vegetables and dairy products. One could not overemphasize the importance of putting these products into the diet to correct deficiencies in the diet. Of course, it was a very difficult problem in many instances to decide whether deficiency existed, and there was abundant reason why different investigators arrived at different results, their methods not being exactly alike.

Dr. Casimir Funk of New York said that he subscribed to everything mentioned in the discussion and to the explanations of Drs. Mendel and Osborne. With regard to a few things that required special attention: first, the number of known chemical vitamines was exceedingly small. We know very little about the fat-soluble vitamine; we did not know whether it contained nitrogen or not. We knew very little about the antiscorbutic vitamine, but that perhaps it might be derived from germination. According to one experimenter, as the antiscorbutic vitamine increased the antiberiberi vitamine decreased; that might be a proof of transformation. At present we did not know much about the chemistry of vitamines. He thought the antiberiberi vitamine belonged to the purin group. He was glad to know that Dr. McCollum accepted the three vitamines, and it would be advisable for us to keep the situation open, as many other vitamines might be found yet.

Dr. L. Emmett Holt of New York said that it was a very happy thought of the chairman to bring together in this meeting the laboratory workers in the country who have contributed so much to the subject. He thought it was well known to every one who had studied the question at all that the best work which had been done in the world on the subject of vitamines and laboratory feeding had been done in the laboratories of this country. He had visited the laboratories of Drs. Mendel, Osborne, and McCollum. Of course, it was possible for them to do with their patients what we could not do with our children. Of course, their patients had no relatives, and of course they had no difficulty in obtaining autopsies to see what the results of their feedings had been. They could control their conditions, and they had contributed a great deal to the understanding of the problem of nutrition, and had shown how progress along these lines would be accomplished. Nevertheless we must be careful in carrying over into human practice the conclusions derived from animal experiments. One thing that impressed him was the widespread occurrence of these substances in our common foods. It was the patient who had come to restrict his diet to a few things who suffered; it was the child who had been fed on an exclusive diet who got into trouble from the lack of special vitamine. The person who ate our common food in abundance in its natural state got an abundant supply of these natural vitamines. The tendency at the present time was not to let well enough alone; our foods were continuously purified for use without being improved. Milk was pasteurized and foods were dried, and we had got into the habit of eating these foods so that the danger of deficiency diseases was increased. He thought the lesson was that we should eat a variety of foods and not limit ourselves or our children to a narrow diet. One of the things that had impressed him was that the child should be taught to eat the proper food. We saw the whims of the child catered to by parents who gradually took one or more things away from the child's diet. Dr. Holt said that pediatrists realized the importance of a general diet for a child and would not allow a child to restrict his diet to a few things unless he was carefully watched. We heard about milk being the perfect food. It was not, even for the calf. The calf was born with eight teeth and ate grass immediately after birth, and nature did not intend him to live exclusively on milk; and we saw great harm done to children who were living on an exclusive milk diet and were refused other foods. Now in all these deficiency diseases the one that concerned us most was the antiscorbutic vitamine, the absence of which produced infantile scurvy. The speaker had been interested in finding out how long it took to produce scurvy. Scurvy could be produced in a guinea pig in 18 to 20 days, and death would occur in five weeks. A monkey that was fed on a diet that contained no antiscorbutic principle would develop scurvy in three months. How long did it take a child fed on pasteurized milk to develop scurvy? How soon was it essential to give antiscorbutic vitamine to a child fed on pasteurized milk? The speaker had two infants who were fed on pasteurized milk with only cereal additions; in one of these infants scurvy developed at eight months. We knew that the pasteurization of milk did not destroy the antiscorbutic vitamine, it only impaired it; and pasteurized milk had less of the antiscorbutic vitamine than raw milk. Of course, the condition of the infant fed on pasteurized milk was not parallel to the condition of the animal wholly deprived of antiscorbutic vitamine. Apparently an infant who was getting pasteurized milk as its chief source was not likely to develop symptoms until somewhere between the eight and ninth month. Consequently he thought it safe to practice to make that infant at six months have some antiscorbutic vitamine,

and this should be given as a regular part of the diet at six months. Now with reference to some of the antiscorbutics: Dr. Hess had spoken of tomato juice, that was certainly the cheapest for hospital, dispensary, and institution practice. Patients in the dispensaries had found tomato juice as expensive as orange juice. If a ten grain powder of benzoate of soda was added to a pint can of tomatoes, it would keep until used up. Tomato juice could be given freely to infants six months old and in the same dose as orange juice with beneficial results in the prevention and cure of scurvy. He had been interested in the effects of dried orange juice. The process was that used in the drying of milk, viz., spraying into a hot chamber. In one case he cured scurvy promptly with orange juice that had been dried a year before. Apparently the drying of orange juice did not impair its antiscorbutic properties, and apparently the keeping of orange juice for long periods of time did not injure it either. As far as the other vitamines were concerned, it seemed that children were sure to get enough of them unless they belonged to families where children had their own ways in matters of diet; except for that he did think we were apt to see trouble from the lack of fat-soluble or water-soluble vitamine. Of course, we realized that milk was the diet for children, and if milk were given freely, the fat-soluble and the water-soluble vitamines would be taken care of.

Dr. GRAHAM LUSK of New York said that in England one of the publications that was mentioned by Dr. Mendel stated that wherever general debility occurred in a mass of troops a dietetic deficiency should at once be suspected. That was a very important enunciation. It was only five years ago that there was published from the speaker's laboratory an analysis of the calories in the food at the Childs' restaurants. They had found that the calories in tomatoes cost about as much as to calories in champagne, that the tomato was practically flavored water colored red; and since that time through the researches of Dr. Hess they had found that it contained a valuable fat-soluble vitamine. We were advised to take milk. It was quite right. Why did people take meat? What was meat? It was still perhaps to be defined. Dr. Osborne has suggested that part of the specific dynamic action due to the ingestion of meat, namely, the increase in metabolism, was due to the presence of amino-acids, but it might be in these depleted animals that there was a lifting of the metabolism to a higher plane. It seemed that the science of nutrition should be more known and realized. One quarter of the income of the country was spent for food. Fifteen per cent. of the population were farmers and they were represented by a department at Washington, the Department of Agriculture, while the other 85 per cent. of the population were not represented by a department of public welfare. Why should we not have something such as was recommended by the Allied Food Commission? He was glad to say that they were going to establish in Amsterdam a research laboratory which would also have a department for propaganda through newspaper control. We did not want newspapers written by outsiders who would exploit these things; we wanted the right kind of propaganda such as had been presented here to-day.

Dr. E. C. VAN LEERSUM of Amsterdam, Holland, said that he was here in this country visiting several laboratories in the field of nutrition and was in search of information for the organization of the Institute in Amsterdam, which, as Dr. Lusk said, would have a department of research, a department of information and statistics, and a department of propaganda.

Dr. MAURICE J. LEWI of New York said that the vitamines reminded him if the old opsonic theory. Until we knew more about the chemistry of these undiscovered substances we would be at sea. The speaker had found through clinical experience the value of the methods which had been suggested in rendering a cure of a child who was scorbutic or rachitic. It would be a crime against the profession for anybody to attempt to exploit anything in the way of a medication to take the place of the natural foods containing vitamines.

Dr. MENDEL said that for the present we should obtain our vitamines at the grocery store and not at the drug store.

Dr. HESS said in regard to germinating seeds developing antiscorbutic properties that they did not have any practical value in treatment, as shown by the British Commission. They could not be given raw, and when cooked they lost the larger part of the antiscorbutic properties. At present it would seem that onions would be one of the best things for armies, and even better would be the dried orange juice mentioned by Dr. Holt, which was in small bulk and would keep. As regarded the antiscorbutic value of meat muscle, from a quantitative point of view it no doubt had value as shown by the experience of arctic explorers who subsisted wholly on meat. As to the time it took to develop scurvy in infants on pasteurized milk, Dr. Holt put the time at eight months, but it would seem better to start antiscorbutics earlier, at say the third or fourth month or even earlier.

Dr MCCOLLUM said that the remark about meat applied solely to muscle meat. The glandular organs, such as the liver, kidney, heart, and pancreas, were eaten freely by people in the arctics; that was a different thing from muscle meat. One could cure scurvy very promptly with very small doses of liver.

SYMPOSIUM ON ENDOCRINE DISEASES.

The Relationship of the External Appearance of the Body to Disease.—Dr. GEORGE DRAPER of New York read this paper. He said that in 1916 he was impressed with the strong resemblance of the individuals who were affected with acute poliomyelitis. In families where one child was affected, the appearance of the child was different from that of the other children. What the relation to susceptibility was had not been determined. The same observation was made in the army in respect to epidemic meningitis. In the study of susceptibility to infectious diseases we still lacked the key to the situation. One man in a tent would succumb and the others escape. Among patients sick with the same identical strain of microorganism, one would die in a few hours and the others recover. Was there any relation to susceptibility? Breen had classified the human race according to the length of the intestine, and Goldthwaite divided human being into the carnivorous type and the herbivorous type. There was no standard type to which anthropologists could apply the term of normal. The relationship between certain pathological states of endocrine glands and the appearance of a man might furnish a clue which might be used in analyzing the differences in personal characteristics. As a sort of plan to work on, individuals might be grouped in four panels—anatomy, physiology, psychology, immunity. The relation of the endocrine balance to these four panels determined the characteristics of the individual. This was hypothetical, and, of course, all four of these panels interlocked and worked together. The probability of this matter of the external appearance of the body to the endocrine glands gave a new impetus to this study of susceptibility.

Disturbance of Internal Secretion of Sex Glands.—Dr. WILLIAM C. QUINBY of Boston read this paper (by invitation). Dr. Quinby discussed the clinical and experimental evidence of the function of the gonads, that is, the sex glands in either sex, and showed instances of disturbed function of those glands as regarded their endocrine function. The testicles and ovaries were organs in which were formed spermatozoa and ova, which might be considered as analogous to the external secretion of other glands of the endocrine system. The gonads, the testicles, and ovaries had a definite internal secretory function, the products of which so far had not been isolated as definite chemical products. There had been isolated a hypothetical substance, to which was given the name of spermin, but that was entirely impure and had no value. In the male the endocrine portion of the testis was situated in the interstitial tissue, and that tissue went by the name of the cells of Leydig. These cells lay between the tubules and showed different degrees of development. In the female the endocrine function was subserved also by interstitial cells and probably further also by the corpora lutea, but certainly before menstruation occurred the corpora lutea action was not present. Now the evidence, experimented and otherwise, proved very defi-

nitely that the internal secretion of the gonads caused the appearance of those signs of body growth which we call secondary sexual characteristics. That term originated with John Hunter. Those secondary changes were the changes that occurred at puberty. There were experiments, especially those of Steinach, which must be mentioned, as they showed the great importance of this internal secretion of the testicles and ovaries. He had attributed so much importance to this interstitial tissue that he had given it the name of the puberty gland—in other words, making puberty entirely dependent upon its action. By experiments on animals he had shown that these secondary sexual characteristics could be produced. Thus male rats which had been castrated before puberty, but in which an ovary had been transplanted, took on secondary female characteristics, and the same was true conversely of rats of the opposite sex. We did not know what the stimulus was that called into activity this property of the gonads. It might depend on the interactivity of other endocrine glands, for instance, of the hypophysis. There might exist gonadal stimulating properties in the endocrine glands. We should find clinical cases in man showing the results of hyper- or hypo-functions of these organs. That is we should find cases of precocious or delayed puberty in both sexes. Then we could study the effects of double ovariotomy. Dr. Quinby reported a case of precocious puberty in a negro child associated with a tumor of the ovary. The child was seven years old, had bleeding from the vagina at the age of four, bleeding recurred with pain in the lower abdomen, the breasts enlarged, there was an abundant growth of hair over the pubes and in the axilla, and there was a tumor in the lower abdomen which was freely movable, but not tender. Family history negative, Wassermann negative, sella turcica normal by *x*-ray. Tumor of right ovary found at operation and removed; left ovary normal; convalescence normal. Unfortunately further history was lacking. A second case was one of hypogenitalism, that is a case of delayed puberty associated with possible hypophyseal dysfunction in a girl sixteen years old. She had never menstruated, was backward in development, but had development of secondary sexual characteristics. She had two symptoms not usually associated with dysfunction on the part of the gonads, those were polydipsia and fainting spells, and suggested disturbance of the hypophysis, but a careful examination failed to discover anything wrong with the cranial nerves or the eye grounds; *x*-ray of the sella turcica showed it to be of a square shape, but not enlarged.

Mild Types of Thyroid Toxic Adenomata.—Dr. MALCOLM S. WOODBURY of Clifton Springs presented this paper. There were two varieties of goiter which were or might be toxic; these were the exophthalmic type and toxic adenomata. The opinion was that adenomata was embryological in origin, derived from fetal rests. Work was being done on this and will be published soon. For the clinician it was important to recognize that adenomata might appear as distinct nodules or there might appear a diffuse process as shown by the microscope, and that meant that the absence of nodules did not rule out this condition. As indicated by recent addresses by Plummer, workers in this field were getting together, old classifications were being altered, the problem was becoming simpler. The recognition of thyroid adenomata as an entity marked an advance. They might attain a large size, but usually not without toxicity. The mild ones might produce only pressure symptoms. The fact that small adenomata might be toxic was true just as it was true of small exophthalmic goiters. Plummer stated that 33 per cent. of all hyperfunctioning thyroids were adenomata. It was obviously of the greatest importance to differentiate toxic states associated with a goiter from psychoses. The term thyrotoxicosis was better than the term hyperthyroidism when applied to adenomata. In a recent short series at Clifton Springs there was a family history in 80 per cent. of the cases; infections of the tonsils or teeth in 90 per cent; and all the patients came from districts in which goiter was rather common. Probably the etiology was somewhat as follows: It appeared that fetal rests might be transmitted more commonly in certain families, or might be due to the water content in localities which required an over-attempt of the thyroid in metabolism adjustment, or to disturbance of the sympatheic nervous system, or to pregnancy. The cells proliferated and took on the form of adenomata. Whether the activity was due to the cells in the adenoma per se or to the surrounding cells was not yet established. Nervous symptoms in the adenomata cases were not different from those in the exophthalmic cases. In adenomata cases 50 per cent. of the patients complained of depression which differed from the depression of psychoses by the absence of self-accusatory delusions. Definite nodules could be felt in half the cases, although palpatation must be done carefully to detect them.

Examinations of the metabolism rate had received a great deal of attention since the portable apparatus of Benedict had come into use, but too much reliance should not be placed in it and it was necessary to allow for differences in weight, age, and sex. An increase of not more than 15 per cent. was to be considered normal. Adenomatous cases might show only a slight increase in basal metabolism or no increase at all; and the question arose whether these were cases in which a toxic element was playing a part. Dr. Woodoury thought they were. The Goetsch test was positive. The patients were operated on by Dr. C. W. Webb, with good results, where the gland was available for operation. The Goetsch test has distinct value in the diagnosis. One point to be emphasized was that solutions of adrenalin chloride varied a great deal according to the age of the solution. This ought to be taken into consideration. Folin had described a test for determining the purity of adrenalin. Dr. Woodbury did not regard the Goetsch test as positive unless there was a rise of over ten points in blood pressure, together with subjective symptoms including tremor. In concluding, he said one was hardly justified in ruling out all thought of a thyrotoxic state because the basal metabolism according to our present methods ran within normal limits. It seemed that cases occurred in which there was no definite rise.

Dr WALTER TIMME of New York said that he would begin his discussion by going back to the time of the Aryan migration into India. Even at that early period there were definite instructions given to the males regarding the females they should choose, with the idea to insure longevity and to produce a race able to survive. Those documents had come down to us today. It was surprising that the subject should have been so long in abeyance and that we were accused of presenting something at this day that was called iconoclastic. Dr. Draper had pointed the way to an advance in the study of immunology. To cite an instance where external characteristics influenced immunity, we knew that in pellagra the infection or the disease attacked in a large majority of cases women, and that the women attacked are either pregnant or in the menopause, and the few cases of pellagra which had sifted through to the north because of the nervous element involved had been diagnosed as menopause psychoses. Now, on the bases of the concomitance of those symptoms those patients could be helped and in some cases cured. It was important to recognize the juxtaposition of those two conditions. Then also in the psychopathic institutions we saw cases that were quite normal in appearance up to the week of their menstruation and then they became maniacal and in that particular week the corpora lutea were in abeyance. We knew that the corpora lutea depressed the activity of the thyroid. Remove that inhibition and one got an excess thyroid activity. If that was recognized at that time and treated at that time, the conduct could be markedly improved, but not in the case of a psychosis. Regarding some of the statements of Dr. Woodbury, the speaker was indebted to him for his paper on the interpretation of the thyroid lobes; it offered some plan for the measure of the standardization of the size of the thyroid. When Dr. Woodbury stated that he would rather use the term thyrotoxicosis there was liable to be confusion. A thyroid might become overactive to overcome the effects of a toxemia, an abscess of a tooth might be the activating factor of an excess activity of the thyroid. It was necessary to differentiate that type of overactivity from the ordinary toxic thyroid. Dr. Quinby's paper brought us to some of the interesting facts that we saw about us without really recognizing the reasons

therefor. He mentioned experiments in transplanting interstitial cells of the male into the female with resulting deterioration of the female generative organs. As a matter of fact, when we had twins born, one being a boy and the other a girl, usually the ovarian secretion of the girl was determined or produced before that of the boy and as a result the boy in twins, the other being a girl, was more retarded both in systemic and mental development. The interrelation of the gonads with the other endocrine organs was of the utmost importance, as shown by the case in a woman of a tumor involving the cortex which produced secondary sex characteristics and cessation of the menstrual function, in which the ovary was not known to have been disturbed. The reason for that was thas both the interstitial cortex cells and the ovarian cells came from the same interstitial tissue, and had effects in common, one of which was on the medulla of the adrenal gland one of the functions of which was to produce hypertension; yet it could be modified by the suprarenal cortex secretion to underact and hence by this means to lower the blood pressure. We could also diminish blood pressure under those conditions by the administration of lutein; we did this in the menopause when we had heightened blood pressure. Now the reason for that was probably that the effect of the corpora lutea was inhibitive of thyroid activity.

Dr. Emil Goetsch of Brooklyn said that we were indebted to Dr. Draper for bringing out a new point of view in the consideration of some of the factors which were related to the ductless glands. As had been shown, we were what our ductless glands were. There was no doubt about that fact. The transition between the normal types and the types that could be considered pathological was a gradual one and was so great that one had difficulty in saying when the normal became abnormal. That was true of functional states also. We could not say when a ductless gland became an abnormal ductless gland. With regard to the thyroid, he thought we had a means of telling when the thyroid was normally active and pathologically active. To determine this we must have a definite test. Unfortunately we had not available tests for all the glands but we had for some of them. After five years of experience with the adrenalin test we now had a means of telling how active a patient's thyroid was. He did think that all cases of hyperthyroidism were abnormally sensitive to the action of adrenalin when administered hypodermically. The negative also held that if a patient did not react he had not hyperthyroidism. Dr. Peabody, working on a large series of soldiers, had confirmed that statement.

Dr. Stockard said that his interest was from the point of view of the embryologist, but he was shocked by the character of the subjects under discussion. Niney-five per cent. of our story was finished when we were born, and up to that time as far as we knew none of the internal secretions had played any part. There was no question but that the structure of a man or any animal was due to the rate at which he developed, and this might be shown experimentally by slowing the rate at any time. It was very easy to decrease the rate in an embryo, and by modifying the rate at different times with relation to gastrilation one could produce all sorts of abnormalities or monsters. We ought not to go so far as to say that the male twin was modified by the female. In the case where there was a mixed twinning in cattle the female was sterile; there we knew that the circulation between the two placentas had an anastomosis which made the blood run through the two, and then the testicle developed before the ovary. When one saw that all the plants and the invertebrates had grown without glands of internal secretion, then one held back when he wanted to regard everything as being due to the disturbance of glands of internal secretion. His way of expressing it was this: We were born irrespective of glands of internal secretion. We might be modified by the maternal glands but our own glands of internal secretion had not done much to us before we were born. Now that little distance we had gone without glands of internal secretion has just as much bearing on how we were going to look later on, because the real shape of our nervous system was determined before that and was independent of our glands of internal secretion. But after we were born then he would admit with everybody that all the future record of growth was dependent on the interaction of glands of internal secretion. This symposium was stimulating and suggestive of possibilities in the future, but at the same time, he thought we would do better and land safer if we realized that there was a long beginning and that was the time to learn because that was the time that rendered itself to study of internal analysis. We were trying to tap the secrets of nature, and he thought we could get something from the structural side. Up to the age of ten it was the thyroid gland that determined what the future structure of the individual would be.

Dr. Samuel W. Bandler of New York said that Professor Stockard was wrong on many points. He had picked out the thyroid gland alone but it was all the glands that acted together and acted before we were born or we would not look like our fathers or mothers. The thyroid acted while in utero, as proved by a case of tetany at birth. When one retarded or accelerated the rate of growth one was doing it through the endocrines. We were what our glands made us, we did what our glands made us do, and think what our glands made us think. Every emotion had an endocrine basis. Man was a composition of anterior pituitary, adrenal cortex, thyroid, and gonad. There was a balance between the glands of the body and between the different glands.

Anterior pituitary	Glandular thyroid
Interstitial thyroid	Adrenal medulla
Adrenal cortex	Glandular ovary
Interstitial gonad	Corpus luteum
Posterior pituitary	Placenta

Every gland was a sex gland, every gland had to do with the sex gland, and also with the development of the muscles and the brain. In the case of cretins one might be due to one gland or to a combination; we could not cure them all with thyroid, we must find what the matter was, one must give what the patient had not and antagonize what the patient had too much of. In regard to Dr. Quinby's cases he ventured to say that the pituitary controlled the flow of cerebrospinal fluid. In his other case the tumor was not the cause of the precocious puberty but was the result. All gland diseases were pluriglandular, it depended on where the cause began to act; it might start in the pituitary but secondarily would affect the gonad. The endocrines presided over the body form and over visceral function and over the psyche. If they did all three to everybody, it would be easy to make the diagnosis, but they did not, and just as one individual when he had syphilis of the testicle or of the bones did not get it in the nervous system, so the average individual with psychosis had a few of the marked distinguishing features. In conclusion he made this prophecy that five years from to-day there would not be one patient admitted to an insane asylum where to-day there are twenty, and endocrines would work the change, and one of the important endocrines that would do it was the placental endocrine with which he had been experimenting for two and a half years, and if he had the time and the voice he would prove that what he said was true.

Dr. George Draper of New York said that he would like to state that neither the humor of Dr. Stockard nor the oratory of Dr. Bandler would prove this point. The problem was not a question of endocrinology, it was the relation of the individual to disease. Now the two subjects had been confused. Studies of the endocrine glands must go on. The clinician was faced with the problem to-day as always of determining the reaction of the individual to disease conditions. We could not analyze cases endocrinologically to determine their susceptibility, and it was for this reason that he found it necessary to devise some written scheme to work out the relationship of the individual to infectious diseases. Bacteriology took up only part way.

Dr. Woodbury said that he agreed with the statements that it was desirable to clean up all sources of infection in thyroid cases whether they were to be treated medically or surgically. Incidentally the metabolism test and the Goetsch test were useful in order to determine the degree with which they were dealing.

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THE GYNECOLOGICAL PATIENT OF THE GENERAL PRACTITIONER.*

BY LEROY BROUN, M.D.,

NEW YORK.

ATTENDING SURGEON TO THE WOMAN'S HOSPITAL.

I HAVE thought it might be of mutual interest to present before you this evening some of the symptoms complained of by patients consulting us either as general physicians or as specialists. Practically all of these symptoms and their possible indications are familiar to all of us; it appears to me, however, it will not be amiss for the purpose of a general discussion, to review some of the more prominent ones under a few general headings, and for that reason I bring to your attention *bladder* symptoms, *uterine, abdominal,* and *rectal.*

Bladder Symptoms.—It is not uncommon for us either as practitioners in the general field or as one of those devoting themselves to special lines to have patients seeking relief from frequent and painful urination. This may mean a simple digestive disturbance; it may also mean an infection of a greater or less degree; it may further mean a pathological condition in or about the bladder itself, and lastly it may have as its cause some form of kidney disturbance.

It is readily seen that in order to get at some basis on which to form an opinion it is primarily necessary that we must know the character of the bacterial flora of the urethra for the purpose of excluding gonococci; and, secondly, that we should have a sterile specimen of urine from which not only a culture can be made but also a complete chemical and microscopical examination.

The habit of taking a smear from the urethra frequently yields conclusive results in a negative or positive way. The absence of gonococci enables us to dismiss from our minds the possibility of a certain character of infection.

A sterile specimen is most important and the manner of obtaining it, while thoroughly simple, yet carries with it a few essential points to be remembered. Much can be learned from the examination of such a specimen. My custom is to have on hand a few new bottles with new corks. The bottle is boiled just before using and also the cork, care being taken to stick in the large end of this last some metal instrument that will keep it submerged. After boiling, the bottle is emptied of its watery contents and the cork is pushed into its neck, only the large end being touched with the fingers. In this simple manner we have a thoroughly sterile receptacle for the urine. The urethra having been sterilized with some weak antiseptic solution, a sterile catheter is introduced and the first few ounces of urine that flow through the catheter are not collected. This is for the purpose of getting rid of a part of the clear urine and also that of washing out of the interior of the catheter any remote possible contamination. The remainder of the urine is collected in the sterile receptacle, the last flow being included. The saving of the last residue is important, since by this means we are sure to get all of the sediment which gravitates toward the trigone and from which we can get valuable information.

A sterile specimen having been obtained in the cooled sterile receptacle, it should be sent to a good laboratory, where both a culture and also a chemical and microscopical examination should be made. The information to be gotten from this specimen frequently clears up the condition. Primarily we may find a sterile urine with an abundance of oxalate of lime crystals and a high acidity, indicative of an ordinary digestive disturbance, to be corrected by diet and the use of diluents and belladonna as an antispasmodic. The microscopical report may show abundance of pus, and the culture of colon bacillus alone or colon and staphylococcus. Information of this character would lead us to differentiate between the location of the focus.

A cystoscopic examination of the bladder will readily prove or disprove the presence of a calculus. If present the condition is one for surgery. With its absence the condition may be one of simple cystitis of colon origin, which can be treated by diluents together with urinary antiseptics and a proper diet. In the presence of colon bacilli in the urine the question of colon pyelitis or a colon infection of the kidneys also presents itself. These conditions are usually attended by fever and are recognized by tenderness on pressure in the back over the site of the kidney about the angle of the twelfth rib.

The possibility of tuberculosis also presents itself. Tubercular cystitis with its attending ulcers are uniformly an indication of tuberculosis higher up, usually in one kidney. Urological examination becomes necessary to determine this focus through the catheterization of the ureters and the subsequent examination of the urine from each kidney, together with *x*-ray and thorium examination of the pelvic calices of the kidneys. From the pathological and microscopical standpoint it is not infrequent that tuberculosis though present in the urine

*Read before the West End Medical Society, January 24, 1920.

as drawn from the kidney and detected, is not found in the urine as taken from the bladder. If unfortunately the patient has a tubercular kidney, the condition is one that is surgical, and it has been found that the removal of the diseased kidney quickly results in the cure of the tubercular cystitis.

Our patients in addition to complaining of painful micturition may also add to our troubles by stating that there is blood in the urine. This is readily recognized by the eye in the sterile specimen drawn off, when the blood is in sufficient quantity, or by the microscope of the examiner at a later time. To determine the origin of the blood a cystoscopic examination is again necessary. It may reveal a papilloma of the bladder or malignant disease. If there is no local indication in the bladder itself as an explanation of the source of the blood, the urologist must again be called in for the purpose of determining the condition of both kidneys. As a result of this examination many of the diseases of the kidneys can be recognized, such as renal calculus, colon infection of an acute type, or some new growth or degeneration of the kidney as a hypernephroma or one of polycystic character.

Malaria is also spoken of as giving rise to hematuria. It is rare that we have such conditions, however, in our climate.

As an instance of colon infection giving rise to hematuria, I cite the following instance of a patient who came under my care a year ago: She was a woman of slightly over 50 years and had been having bloody urine for several months with much weakness and debility. Her physician had given her the impression that she had Bright's disease. Complete examination with the collaboration of Dr. Bugbee, the urologist of our hospital, showed that the condition was one of colon infection. With care and diet, urinary antiseptics, and an abundance of fluids the patient was entirely relieved of all symptoms and restored to her usual good health.

Atypical Hemorrhage of Uterine Origin.—The internist seeks always to exclude the possibility of tuberculosis in his examinations. This is the usual primary step. This condition having been excluded he has a clear field for the determination of the pathological condition of which the patient complains. In bleeding of a character other than that of a distinctly normal type our first thought is the possibility of commencing carcinoma.

All conditions must have a beginning and in this state it is unquestionably local in character; later the general system becomes involved and we have a systemic infection. So it is with commencing cancer: in its commencement and earliest stages the condition is distinctly local, free from metastasis, and can be cured by surgical means. The importance of this early recognition must impress itself upon all of us, since we are too familiar with the long and final road traveled by cancerous patients.

Cancer, while a disease of middle life, is, however, known to occur in the early thirties or before; the majority are in and around the period in which we expect the menopause. Uterine bleeding that makes any departure from a normal condition and for which the patient may consult us should be at once thoroughly and carefully investigated by the consultant.

In the modern-day teaching patients are themselves becoming educated as to the possible significance of menstrual disturbances. It therefore becomes imperative that we, as physicians, treat such conditions with due respect and at once eliminate the possibility of commencing cancer.

Fortunately the condition in the majority of instances is easily recognized as suspicious when the involvement is in the cervix. A small wedge section for the purpose of pathological examination from the suspicious area can be taken in the office under procain.

If the cervix is normal in appearance without any erosion, the interior of the uterus should be explored with a small curette. While this can be done in the office, it is, however, preferable both to the patient and also to the doctor to have it done under an anesthetic. From the curettings the pathologist can determine the condition of the lining membrane of the uterus.

The symptom of bleeding in early cancer is due to the rupture and breaking down of capillaries, which are extremely abundant in the involved area. This occurs very early in a large percentage of cases. Unfortunately, however, there is a certain class of endothelial cervical carcinoma, which we call the endogenous type, in which metastasis is early even before any sign of hemorrhage is present. The recurrence in such cases is generally very rapid after operation.

A bloody discharge commencing after the establishment of the menopause is to all of us indicative of the grave possibility of commencing carcinoma of the body of the uterus or of the cervix.

Beginning carcinoma, however, gives at times the first indication of its presence in a profuse flow at the regular menstrual period, amounting at times to a hemorrhage. This may cease and a similar occurrence may take place at the next menstrual time without any bleeding between. This is not unusual, and if not recognized in this early stage, the flow will settle down to a continued show between periods.

The possibility of carcinoma having been eliminated, one may be at ease in determining the source of the bleeding. Not infrequently a cervical polyp or polypoid condition of the endometrium is found; we are familiar also with the bleeding associated with fibroids that encroach upon the uterine canal.

There is a class of bleeding which sometimes, though not always, follows the absence of the normal menstruation for a short time, and which comes from the thickened decidua resulting from a pregnancy outside of the uterus. The classical signs of extrauterine pregnancy are familiar to all of us, as are also those of retained secundines as a result of miscarriage. We must be on our guard, however, against mistaking the profuse flow and discharge of a portion of the thickened decidua (which is sometimes associated with extrauterine pregnancy) for an ordinary miscarriage.

Dr. Farrar, in studying 309 cases of ectopic gestation at the Woman's Hospital, in a very exhaustive article has drawn some valuable conclusions. These are:

1. Pain in ectopic gestation is a symptom that may occur without the preceding bleeding. This

pain is present in every case of tubal pregnancy unless the condition is very early and unruptured.

2. The pain is usually of a cramp-like or bearing-down character, not necessarily of a tearing lancinating kind.

3. Usually one-sided pelvic pain, when associated with peritoneal irritation and collapse, warrants the diagnosis of ectopic gestation though in the absence of the preceding symptoms of severe pain and hemorrhage.

4. The onset of symptoms or an acute attack occurs equally as often at the time of an expected period or just after a normal period, as it does when a period is overdue.

Abdominal Tumors of Pelvic Origin.—A patient coming to us for an abdominal tumor which has existed for a longer or shorter time, must be given some definite information on the condition. The longer we operate the more convinced we are that there are certain conditions of a myomatous tumor of the uterus which make the differentiation between a tumor of uterine origin and one of ovarian origin very uncertain. Such conditions are a globular edematous (soft) myoma of the uterus on the one hand and a tense ovarian cyst on the other. In such instances I think it better to use the term tumor; this will cover both conditions and will be thoroughly satisfactory to the patient.

Myomatous tumors as a rule, however, are not difficult to diagnose; the irregularity and the hardness to the feel make the diagnosis usually clear. The fact that a patient has a myomatous tumor does not stop here. It is highly probable that other conditions exist associated with this tumor. This is not surprising when we recognize that a new growth is going on in the pelvis. There is a marked increased supply of blood, often at times giving venous radicles of the size of a pencil. If there is any abnormal condition present with the adnexa, or present in the endometrium, the increased blood supply is simply adding oil to a smouldering flame and new processes quickly spring up to be associated with the myomatous tumor, which from its size dominates and overshadows the development of the coincident new conditions.

The coincident pathological developments during the growth of uterine myomata are strikingly shown in a study of cases in the Woman's Hospital for a period of ten years. During this time 1,500 patients with myomatous tumors were operated on at the hospital. Associated with these tumors in the above number of cases were 66 instances of malignancy. These included chiefly carcinoma of the body and of the cervix, also a few cases of sarcoma, also a few of carcinoma of the ovaries and also papillomatous ovarian cysts. In these the greater number was carcinoma of the body of the uterus, where there were 20 cases, also 17 cases of papillomatous ovarian cysts. In neither instance would malignancy be recognized as associated with the myoma. In the instances of carcinoma of the body, the hemorrhage indicative of the carcinoma would be attributed to the myomatous tumor. Papilloma of the ovary, while more frequently superimposed on large ovarian cysts, may be and is present in cysts of only a few cubic centimeters capacity. Of the associated ovarian pathological conditions, there were 58 cases, which did not include those mentioned above of papillomatous character.

The fallopian tubes appear to take on a greater number of changes than the other organs, since we find 265 cases of this character, all of which would require an operation *per se*. These changes included such conditions as tuberculosis, pyosalpinx, hydrosalpinx, and salpingitis. Of this number the salpingitis cases, 153 in number, were much more common and evidently directly due to the increased and disturbed circulation of the pelvic organs.

The changes within the myomatous tumor itself were large, being 105 cases. These changes are such as we must expect in any tumor in which the circulation is largely increased and also disturbed in its normal character. There were 83 instances in which the tumor had undergone necrotic changes, also 22 had undergone calcareous degeneration.

It is rather remarkable that we find the appendix also sympathizing considerably in these cases of disturbed circulation. There were found 167 cases of diseased appendix, either of the subacute or chronic character, all of which required separate operations.

Subsequent study of a year's work of 262 consecutive cases of myoma bring out practically the same results, in which it shows that there are over 5 per cent. of these tumors undergoing necrotic changes.

Fibroids under certain conditions do not give any symptoms. In such cases the physician may at times discover the presence of the fibroid sufficiently large even to extend outside of the pelvis and yet the patient is not aware of it. Such fibroids do not require treatment or operative interference.

The development of coincident pathological conditions in either the adnexa or the fibroid itself, or the development of adhesions, all give rise to pain of a greater or less extent. It is for such a symptom as pain that a patient will present herself to the physician and the discovery of the fibroid is made.

Again a fibroid developing within the muscle of the uterus or on the peritoneal side, does not give rise to hemorrhage. It is not infrequent to elicit the history of only a three or four days' menstrual flow with fibroids of large size. When the fibroid develops towards the lining of the membrane of the uterine cavity, certain changes are brought about in the endometrium and we have as a result hemorrhage of greater or less severity. It is for these two symptoms, *pain* and *hemorrhage*, that a patient may consult her physician. As spoken of before, the hemorrhage may have as its possible cause the commencement of a malignant disease of the endometrium or the development of the fibroma towards the uterine cavity. Taking this rational view of the pathological condition present and of its associated complicating conditions, it is readily seen that any of these associated pathological conditions occurring with the fibroid contraindicate any other form of treatment of the tumor than that of surgery.

The changes in the myoma itself such as necrosis, calcareous degeneration, also those including the tubercular changes of the endometrium, ex-

ist in 7 per cent. of myomata. Tubal conditions exist in 7 per cent., as also malignant diseases of the body of the uterus. All of these would contraindicate the use of radium or *x*-ray and can be properly treated only by surgical measures.

Fibroids that can be well mapped out and are shown to be free from adhesions and from any complications outside pathological conditions, and which result in hemorrhage for which the patient is seeking relief, can very well and wisely be treated by radium and the *x*-ray, carcinoma of the body of the uterus having been excluded by a previous curettage. It is in such a class of cases that I think radium and the *x*-ray are of value, in that we can save the patient from operative measures.

Fibroids that have been accidentally discovered by the physician, which have given rise to no pain or hemorrhage, and of the presence of which the patient was not aware until the physician discovered it, I do not think require treatment of any character. It is only necessary in such conditions to reassure the patient and have her enthusiastic support in an examination at regular intervals.

The statement that fibroids undergo sarcomatous changes to the extent of 2 per cent. has been handed down in various text-books. I doubt the accuracy of such a statement. In our series of over 1,700 cases, less than four-tenths of 1 per cent. were found sarcomatous. In 8,988 cases collected by Lewis and Olshausen, only 1.3 per cent. were sarcomatous and von Gurltz reports that out of 883 cases only two of sarcoma were found.

Ovarian Cysts.—This class of pathological conditions should always go under a surgical operation, for the reason that experience has taught us that a certain percentage undergo malignant changes, ordinarily of a papillomatous character. While it is more likely that this degenerative change may have taken place in the cyst wall of the larger cysts, it is, however, not uncommon to find the condition in very small cystomata, even those of but a few cubic centimeters capacity.

There is a class of cysts, however, that appear to take care of themselves. I refer to those of corpus luteum origin. These form and frequently after an interval of a month or two disappear even though they may have been of the size of 500 c.c. capacity. They are thin-walled unilocular cysts of a serous type.

There is hardly any one of us who has not had the experience of discovering such a cyst and within a short time, a few weeks or a month, find the cyst no longer exists. The escape of the serous contents into the peritoneal cavity has given rise to no trouble. We have all had the experience of discovering such cysts and of having them examined by a second man for the mental comfort of the patient and getting a statement that no cyst was found. This is mortifying, but the knowledge of the history of such conditions relieves the examiner and spares the consultation.

Rectal Examinations.—Bleeding hemorrhoids complained of by the patient should never go without a thorough examination, which should include a proctoscopic examination through a proctoscope with a light carrier. The only chance that the patient can have for the cure of rectal cancer is an early recognition. Medical history is full of just such oversights made by the busy practitioner. The appliances necessary are simple, an ordinary proctoscope and a light carrier. The patient after having had the bowels previously emptied is placed in a knee-chest position, with all stays or any confining bands around the abdomen removed. The rectum itself will balloon up as soon as air is permitted to enter on the placing of the proctoscope. The wide and satisfactory view that can be obtained by the examiner with the aid of the light carrier is most gratifying. Malignant diseases higher up beyond the reach of the view given by the proctoscope must be determined by the *x*-ray examination and shadow-producing enemas and meals.

This rambling review of some of the cases that present themselves to us, I hope, may elicit sufficient interest to produce a discussion. The examinations used by the specialist and his method of procedure to fix the site of the trouble in the greater majority of instances requires only a few ordinary appliances and no special skill in handling. The bladder and rectal examinations can easily be made by placing the patient in the knee-chest position for both examinations. For the bladder examination all that is needed is a Kelly's direct-vision urethroscope. For the rectal examination a simple proctoscope. The same light carrier can be utilized in both. For the cystoscopic examination it may be necessary to dilate slightly the urethral entrance; for that purpose a cone-shaped dilator and a 10 per cent. procain solution are needed. Concerning the knee-chest position a few details are necessary for the best results. The knees should be vertical and not slanting under the body. The patient should rest on her chest and bosom. The corset should be removed and all constricting bands about the abdomen should be loosened.

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THE BALANCE BETWEEN THE ENDOCRINES AND IN EACH INDIVIDUAL ENDOCRINE.

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The cerebrum is affected by stimuli through the senses (sight, hearing, smell, taste, touch, pain and temperature, etc. The automatic nervous system has its intimate and close relation with the cerebrum. Stimuli through any of these senses cause reaction, instinctive action, unconscious and conscious action. Volition, thought, etc., are functions of the psyche and the mind. As a result of certain stimuli, particularly and definitely such as are associated with the instincts and playing their part in arousing emotions, there is response on the part of the autonomic nervous system, on the part of the visceral organs and structures with which they are connected, and a response on the part of the associated endocrines. The autonomic nervous system, in its relation to the endocrines, is responsible for and responds to the instincts and emotions. The autonomic nervous system may be divided broadly into the vagus and the sympathetic which produce opposite or opposing actions in the structures, organs,

and endocrine glands which both innervate and supply. A relation between the two divisions of the autonomic system exists and is supposed to preserve that equilibrium and normal balance essential to normal action and normal response in the functions of the organs which they supply. An excessive control above the normal balance on the part of one or the other, or variations in their normal balance differing from the normal, are productive of abnormal action. In many conditions the blame may be laid on overactivity or underactivity of one or other of these branches of the autonomic nervous system and hence in the same disease there are minor variations from the typical or supposedly pathognomonic signs.

A study of the innervations and resulting normal functions regulated by the autonomic nervous system and the diagnosis of altered or abnormal function of any of the structures so innervated constitutes a very difficult problem and from the standpoint of therapy leads us nowhere, since the real cause is thereby neither divulged nor attacked. Our real field lies in studying the endocrines themselves.

The endocrines likewise respond to impulses sent to them through the autonomic nervous system, and the endocrines respond according to the strength of the impulse, but more particularly according to their own development, capacity, vigor, and the balance existing between the component parts of each endocrine gland. The endocrines may be underactive, normal, or overactive. They may increase or diminish in power and in secretory activity in varying degrees through the different periods of life, in the performance of physiological functions, and during disease and infections.

The important point first to be held in mind is the normal, stable balance or interrelation between the various endocrines of the body. Of equally great importance is the preservation of balance between the various hormones produced by any one gland. In the pituitary the two most prominent secreting areas are the anterior lobe and the posterior lobe. In the adrenals we have the cortex and medulla totally different in structure and character, as well as in the influence and the action of their respective secretions. In the ovary, we have the interstitial or interglandular structure and the follicular part of this gland. When ovulation takes place in association with menstruation, and probably long before this, we have the false corpus luteum. When pregnancy takes place we have the true corpus luteum. It is the corpus luteum which is responsible for hyperthyroidism. In the thyroid we certainly have two different secretions, one from the interstitial portion and a different one from the glandular, and this accounts for the various types of hyperthyroidism and of Basedow's disease aside from the fact that the severe forms of hyperthyroidism are pluriglandular upsets. In the pituitary there is a certain normal balance of relation between the anterior and posterior lobes. In the adrenals there exists what may be determined to be or be called a normal balance between the cortex and the medulla and the same is to be said of the interstitial and glandular portions of the ovary. It must be stated here that the ovary functionates long before menstruation is established, probably from the earliest years, just as do the other endocrines, and that a so-called menstrual wave in the vast number of cases is not looked for, noticed, or observed. It is, as a rule, not evidenced by any type of reaction. But in many cases, if looked for, there will be noted regular monthly evidences of this internal process and in these cases it is productive of the same type of premenstrual nerve and psychic phenomena as is recognized in older girls before each monthly outpouring of blood from the uterus. Only when the corpus luteum enters into the field do hyperthyroidism and Basedows disease appear as a rule.

Any endocrine composed of two recognized and distinct parts may overact in both or underact in both. Overactivity may involve one part and the other may functionate normally. One part may overact and the other underact. The important point is that to whatever degree one part overacts to the same degree may it *overtop and inhibit* the action of the other, and this difference may not be made visible by corresponding anatomical differances in size in the respective parts of the glands. Overactivity of the anterior pituitary often diminishes the secretory activity and action of the posterior, though in the early stages the posterior may have been likewise correspondingly active; and this is well exemplified in acromegaly with its early glycosuria.

Overactivity of the interstitial ovary may be associated with varying degrees of inhibition of function of the glandular part. The reverse also holds true. But persistent corpora lutea inhibit ovulation, inhibit the normal action of ovarian secretion and rouse the thyroid. Overactivity of the adrenal medulla is generally associated with underactivity of the cortex. And here as in all glandular organs we have what might be called two secretions antagonistic to each other.

What a vast meaning does this bear to the question of therapy. Taking these factors into consideration, we see how the balance in any one gland may be disturbed and how we may have numerous combinations of over and underactivity in the interrelation between the various endocrines as well as in their respective component parts.

If we study the action of the endocrines and their respective hormones and recognize the specific action of the hormone on the body in general and on definite and specific areas and functions of the body, there is no need for introducing into the diagnostic or therapeutic sphere any complicated or complicating interest in the autonomic nervous system. We may be able from the standpoint of therapy by giving gland extract, to supply what is lacking, or to inhibit excessive function of any gland or part of a gland, eventually arriving at rational or exact therapy. However much the endocrines have to do with external form or characteristics, with physical, visceral, and metabolic functions, they have as important and specific relations to the nervous system, to the mind, to the instincts, to the emotions, and to the psyche. And since every gland and its component parts is concerned with each of these spheres, it is well to remember that over or underactivity of any endocrine gland may be limited to or manifested particularly in one, two, three, or more of these

spheres of activity. This explains the neuroses and the psychoses. Hence the value of ovarian extract, (whole gland) and of ovarian residue in the treatment of peristent corpora lutea and of hyperthyroidism and Basedow's disease.

Among its other functions the nervous system is concerned with activities of a motor and trophic character. To illustrate. If the cells of the anterior horn are affected by toxins, as in acute anterior poliomyelitis, the nutrition of the muscles which they control and govern is affected. We do not know whether the normal nutritional control or domination exercised by these cells is effected solely by impulses of an unknown character sent out to these muscles from the anterior horn cells, or whether the protoplasm of these cells really produces substances analogous to enzymes which reach the muscle fibres along the motor path and so exert a direct nutritional or chemical influence on the muscle fibre. Probably both forms of energy are operative.

There seems to be a parallelism or resemblance between this action of the anterior horn cells and the all important action of the endocrine organs. These endocrines exercise their influence in two ways: One directly through the autonomic system, of the nature of an impulse stimulus to specific areas of the organism (for instance, pylorus, intestines, uterus, muscles, etc.) again, and this is the all important point, the endocrine substance themselves pass out through the blood and lymph channels directly to these cells, muscle bundles, structures, and nerve ends with whose functions of growth and continuity of function they are specifically concerned.

When an emotion is aroused, the immediate impulse from the central nervous system, be it from the higher cortical centres or those of less pretentious control (those of the medulla oblongata, for example), exerts its initial influence on the endocrine along the autonomic system, and also on the cerebrospinal axis. The latter is required for voluntary and for reflex motor activity acting on the motor system. On the other hand, the visceral structures receive their specific impulses through the autonomic nervous system (vasomotor, sphincteric, in embarrassments, frights, etc.). The latter system likewise carries impulses to the specifically associated endocrine. The outpourings from the latter (endocrines), as they are adaptively stimulated by the various emotions, immediately reinforce and continue the specific type of activity instantaneously called forth by the original impulse. On the degrees of outpouring and on the variety of glands so stimulated depends the behavior of the individual concerned.

If an emotion, resulting in the outpouring of the adrenal secretions, includes adrenalin only, without an associated adequate response by the cortex of the adrenal, and of other glands, the emotion is one of fear or terror. If with the outpouring of adrenalin there is an adequate outpouring from the adrenal cortex, the emotion tends more to that of anger. If with this adrenalin outpouring there is joined an adequate response by the posterior pituitary, as is the case when the maternal instinct or the sex instinct is roused, it enhances the action of the adrenal medulla or the cortex or both. If the anterior pituitary responds to an emotion, there is the added element of strength, as is likewise the case with the adrenal cortex, but what is more important, the presence of anterior pituitary outpouring adds the elements of judgment and self-possession.

When an emotion is aroused there is a certain action of the autonomic nervous system plus a certain action of the motor apparatus and an associated action in one or other of the endocrine structures. These determine by their response the behavior of the individual concerned and in their various combinations are characteristically described as emotions with definite names; and the psychic behavior as well as the physical behavior are recognized so readily that by the facial expression alone we label the various manifestations as anger, fear, terror, joy, sorrow, etc. The way an individual behaves and gives outward expression to his emotions varies according to his instincts and their makeup and to the endocrine structures, their relative strength, and their associated response, to any stimulus.

A person may ordinarily not be courageous but under a stimulus which rouses an instinct and its associated endocrine activity, into a great emotion, he or she may show the greatest courage and heroism. One may be brave and yet use judgment. Hence it is not always a discredit if we say "He who fights and runs away, may live to fight another day." A courageous individual may be reckless or foolhardy. It is easy to understand how the maternal instinct and its associated gland reponses may be so aroused that the outpouring of posterior pituitary secretion would result in a glorious or brave act when perhaps no other stimulus, acting on any other instinct or producing any other emotion could prompt this adequate endocrine reserve of energy, force, or physical power.

I consider the anterior hypophysis to be all-important gland of mental maturity. We know how important it is in association with the thyroid particularly, in aiding and causing proper mental development. But this gland gains in importance in a trophic cerebral sense after the early twenties. The knowledge a person may acquire, the information he may have gained, when put into the melting-pot called experience and amalgamated as it should be into a harmonious, stable combination, may or may not be associated with wisdom, judgment, and philosophy. Some people even at the age of forty or fifty years have the same youthful immaturity of mind as in their younger years. They have gained nothing in mental stability and have profited little if any by experience. Compared with what they might have been and what might be expected of them at this age, they are, so far as wisdom is concerned, hypoplastic or morons of varying degrees. This comparison is not based on any test as to the ordinary functions of the mind, but is concerned with the question of mental maturity. We might well expect the same varying degrees in the ripening of judgment as we find during the earlier years in the ripening of body-development, mental development, sex-development, etc. There may be no improvement as to maturity of mind, there may be delayed development, there may be a precocious or an unusual development.

The thyroid gland is the gland of energy. It speeds up and activates all the functions and organs, even the tongue. Hyperthyoid people talk more, more continuously or quickly. What is said depends upon the instincts, emotions, and the cerebrum which is being urged to talk. With a poorly-stocked cerebrum, the output is of no importance. With a good cerebrum, well-impressed with knowledge, information, a wealth of good ideas, the lingual output is worth while. The mixture and associations of ideas are personal and give us a good index of an individual's tastes, likes, emotions, and endocrine make-up. If such a mind is abnormally stimulated by both thyroid and adrenals and the person is of adrenal mentality, the ideas expressed are along the line prompted by the instincts and the emotions with which the adrenals are concerned; such as, sports, feats of strength, pugnacity, fear, anger, anxiety, suspicion, and possibly certain forms of sex questions.

If the cerebrum, stimulated by thyroid, is actively stimulated by the posterior pituitary, thought and talk may be along lines of the instincts and emotions with which this portion of the pituitary gland is associated, such as feminine matters, romance, children, or along sex lines.

I believe the anterior pituitary to be associated not only or always with strength of body but decidedly with strength of mind. Its normal activities, so far as its trophic connection with the brain is concerned, lead to mental maturity, to judgment, to philosophy, to self-control. Under associated thyroid stimulation, an individual with such an anterior lobe would show wisdom, and in this class fall the wise, the elder statesmen. Since the anterior hypophysis is a gland whose activities are associated, if we might so say, with intellectual instincts and emotions and with the control of the other instincts and emotions, either or both of these activities lend themselves to the development of brain character of the better sort. The anterior pituitary when dominant and in control, may limit the activity or inhibits the activity of the sex glands, the posterior pituitary, the adrenal cortex, and the testis.

Viewing the hypophysis gland from the standpoint of its relation, in a trophic sense, to the genital tract and to sex function, we must take into consideration both the anterior and the posterior lobes. Proper secretory activity on the part of the hypophysis is essential to normal development of the uterus, tubes, and ovaries. The anterior lobe is concerned with growth in general, stimulates the development of the body, bone, muscle, and mind, and therefore includes within the sphere of its activity, the sex organs. During pregnancy the anterior lobe undergoes specific stimulation in its structure and activity, and the resulting changes in the gland are so marked and distinctive that after labor, certain of these structural alterations remain. It can be readily understood that the anterior pituitary, as well as other glands, may therefore bear an important relation, in the way of stimulation, to growth as regards the embryo.

In the early stages of acromegaly, there appears to be an overstimulation in the genital tract followed later by evidences of diminished stimulation, and thereafter regressive changes and atrophy occur in the genital tract. But this early stimulation is part of the general growth associated with acromegaly and is not more specifically related to the sex organs at this time than it is to other areas of the body. In addition, the posterior lobe likewise is overactive at first.

The subsequent regression in the genital tract is due partly to the diminution of posterior lobe activity, since this part of the gland is much more specifically related to trophic support of the genitalia than is the anterior port of the gland. The posterior lobe, from which is obtained pituitrin, has the well-known action during labor since it increases the force of the uterine muscle contractions. It is the gland whose secretion is responsible for the Braxton Hicks' painless contractions of pregnancy, for the normal rhythmic contractions of the non-pregnant uterus which aid in keeping the uterine musculature normal in character and tone; for the excessive contractions during menstruation which, in so many cases, constitute the physical annoyance called dysmenorrhea. When labor is instituted the posterior pituitary evidences its specific contractile functions in heightened form by producing the physiological labor pains during what is really an endocrine crisis, that is, labor. To develop a uterus normally a girl must possess sufficient of the trophic element of the various glands which stimulate body growth in general, and among the most important of these is the anterior pituitary. She must however possess enough of the trophic element which in addition specifically and regularly produces painless uterine automassage or contractions and this is furnished by the posterior lobe of the pituitary. A lack of sufficient secretion from one or the other or a relative insufficiency of both or of either, give us, the varied degrees of infantile uterus, uterine hypoplasia, or delayed development of the uterus.

After normal size and development of the internal genitalia have been attained, insufficient action on the part of the posterior lobe is responsible for atrophy of the uterus. While failure of development may be due to a minus of the anterior lobe in the early years, minus of the posterior is in adult life the much more important factor in causing atrophy. My therapeutic endeavors indicate that the administration of anterior pituitary extract in fibromyomatous tumors of the uterus has an action totally opposed to the stimulating trophic effect which the posterior lobe exerts upon the uterus and on menstrual function. To repeat, while the anterior lobe is important in the early years for the development of the genitalia, it is the posterior lobe which is important, especially later, for preserving the normality of what has been developed, and it is in the posterior pituitary that we possess the important trophic factor which through overactivity is responsible for fibromyomata. It is probable that the anterior lobe increases the connective-tissue elements of the uterus and the posterior lobe is related to the muscular fibres. Fibrosis uteri is a result of frequent and repeated pregnancy and it is known that after each pregnancy there is a tendency to an increase of the connective-tissue bundles. In acromegaly the muscular tissue of the body evidences changes of this type. It is therefore conceivable that myomata are

due to the posterior pituitary overactivity. Fibrosis uteri and pure fibroids may be due partly to anterior lobe activity. Fibromyomata are due to a combined overaction of the two lobes exerted specifically on the uterus, with the rôle of the posterior lobe as the important factor. Hence in pure fibromata (anterior lobe), there should be less tendency to glycosuria than in myomata, since the latter are due to posterior lobe overactivity. I have a history of three sisters with fibromyomata, on two of whom I myself have operated. The three sisters have the same father. One is born of the first wife, the other two of the second. The point of heredity in this, showing the transmissibility of gland instability or of gland dominance, is that the father, a man of small stature, shows from the description which has been given, all the evidences of a physical nature of anterior pituitary lobe minus. He is small and so are the children, has had little hair on the face in the way of beard, has little hands and little feet. A son has "nodules" of the scalp.

The ovary has at least two if not four structures capable of producing a secretion: (1) The follicle apparatus. (2) The stroma or interglandular apparatus including those typical interstitial cells said to parallel the interstitial cells of Leydig in the testis. (3) After ovulation is established we have the ripening and rupturing Graafian follicles and the corpus luteum of menstruation. (4) When pregnancy takes place the corpus luteum which gives out the ovum, continues to develop for several months, through the reaction and stimulation produced by the decidua and especially by the growing ovum. The secretion produced by the growing ovum is a secretory cell off-throw from its outer covering called the trophoblast. From this trophoblast develop the future chorion and placenta.

Now the follicular apparatus of the ovary is influenced by and related to menstruation. The menstrual and premenstrual activity of the ovary calls into play, and is associated with, activity of the posterior pituitary, the adrenals and the thyroid. The relation of follicular function is particularly dependent on normal posterior pituitary stimulation. It is the follicle apparatus which stimulates the adrenal medulla while the interstitial portion of the ovary stimulates the adrenal cortex and the anterior pituitary. The corpus luteum stimulates the glandular thyroid and is supposed to inhibit the posterior pituitary, but it often rouses the post pituitary.

The interstitial ovary is a secretory tissue which acts, probably in association with the immature follicles, long before menstruation is established and this activity is evidenced by the fact that the physical conformation of a girl and the secondary sex characteristics are in evidence before menstruation is established. If we bear in mind the picture of ovary (follicular), adrenal medulla, posterior pituitary, and thyroid (glandular) as the more predominant relation in the girl, and testis, adrenal cortex, and anterior pituitary and thyroid interstitial, as the more predominant in the boy, we can then readily understand the difference in the shape of the pelvis in the two sexes, a difference in the skeletal structures and in the muscles, the difference in the distribution of hair and fat, and the marked differences in taste emotions and inclination. In the male we have in the gonads a different relation or type of secretion, especially when we consider what are known as the interstitial cells of Leydig. To the gonads of the boy, before puberty as well as after, must be attributed a secretory action, since it is already then indicated by the differences called secondary sex characteristics. These differences become very evident and more marked as boy or girl advances towards puberty and on through adolescence. And so in the boy or girl deviations to the female type in the boy or deviations to the male type in the girl have a significance which from the standpoint of therapy should not be underestimated.

Therefore there are only two possible explanations for these marked differences in sex characteristics and in the instincts, emotions, tastes, and play of the two sexes. Either the ovary contributes a secretion directly responsible for these secondary sex characteristics (as mammary glands, etc.) or these characteristics result through modifications produced by the glandular ovary in pituitary, adrenals, thyroid, and other glands, or else both factors, as is probable, enter into consideration with the latter factor of most importance.

The gonads of the boy and man either produce a secretion directly responsible for the secondary sex characteristics, the subsequent distribution and growth of beard, etc., or else these effects are produced likewise by gonadal Leydig stimulation of associated glands. It is probable that both factors hold true, with the latter factor of most importance. The ovaries are giving off their secretion from birth on. Ordinarily the corpus luteum of menstruation should appear at puberty, but it, often enough, develops in earlier years and is so responsible for much that has been overlooked.

Early ripening of the ovaries and the girls early entrance into the menstrual function hasten those changes in the epiphyses which inhibit growth in bone length. This results in shorter stature. This is produced by a stimulation of the posterior lobe of the pituitary and a consequently lesser degree of stimulation or a relative inhibition of the anterior lobe of the pituitary. Tall, thin stature may likewise result from the same form of overstimulation of the adrenal medulla as compared with the cortex. On the development of menstruation, the posterior pituitary and the adrenals enter into still greater play with the glandular part of the thyroid in the processes associated with menstruation. If the posterior pituitary enters early into greater activity than normal, it may to this degree relatively or actually "overtop" the action of the anterior lobe.

Late ripening of female and the male gonads may be associated with tall stature. It is well known that in eunuchs tall stature results after castration. Since the cells of Leydig, etc., no longer stimulate the adrenal cortex and all stimulation of the pituitary is diminished, adrenal medulla growth in stature takes place. The removal of this pituitary stimulation is of the type which causes a loss of balance, in this sense that the posterior pituitary diminishes in activity relatively less than does the anterior lobe. As a result of anatomical studies in eunuchs there is noted an excessive growth and action of

the pituitary and this becomes evident in association with overactivity of the adrenal medulla in changes in the voice, absence of hairiness, tall stature, but not the broad, thick, powerful chest. Primary excessive action of the anterior pituitary instead of stimulating the ovaries inhibits their activity, as I have proven often enough by therapy. So marked is the effect of well-developed acromegaly on the ovaries, since posterior lobe activity is often correspondingly diminished that many have been tempted to consider ovarian insufficiency as the cause of acromegaly rather than the result of the same, and both types of etiology are certainly possible. Just as deficient normal ovarian function may result in increased body-length because of a relative overactivity on the part of the anterior lobe through lack of proper stimulation of the posterior, so the reverse may be true. It must be remembered that this element of growth in body length is considered during the period of adolescence mainly.

With these and many other facts in mind, it is more than suggestive that the two secretions of the ovary and of the testis act not only by virtue of these secretions exerted specifically on certain areas and processes of the body, but that they do so more decisively by varying degrees of stimulation and inhibition of the associated endocrines, and that differences in the balance between the interstitial and glandular part of ovary or of testis are of huge importance.

Man is more hairy because his gonads act directly on hair growth or more probably because the cells of Leydig stimulate the hair-producing function of the adrenal cortex and the anterior pituitary. Woman is less hairy because the interstitial ovarian secretion cannot so stimulate growth of hair on the face, chin, chest, back, and legs. The interstitial gland of the ovary cannot stimulate this function in the adrenals as much as do the specific cells of Leydig. In addition however, the glandular ovary stimulates the adrenal medulla and inhibits activity of the adrenal cortex. The glandular ovary stimulates the posterior pituitary and relatively inhibits the anterior pituitary. The interstitial ovary stimulates the anterior pituitary and adrenal cortex and relatively inhibits posterior lobe activity so that differences in balance, if marked, in the ovary have an influence on body growth. The interstitial ovary stimulates one part of the thyroid, the glandular ovary the other, but the corpus luteum of pregnancy stimulates the glandular thyroid and the adrenal medulla, but normally inhibits the posterior pituitary.

Men vary for these reasons in the hairy growth on the body and face and in the type of its distribution. Women vary in the type of distribution of hair and in many, more especially about the menopause period, when there is a rearrangement of the gland relations, there are varying degrees of hair growth on face and chin. Because of atypical interglandular relation, many women from their earlier years have hair on the arms, thighs, and body of the male type. Therefore, while there may be less hair and beard than usual in many men, there may be more hair than normal on body and face in many women. It is more suggestive to say that in the female, ovarian secretion, by failure to inhibit the specific hair function of the adrenals and the hypophysis, has resulted in hairy growth resembling that noted in men. There is in men more adrenal cortex function and relatively speaking, greater function in the anterior pituitary than in the adrenal medulla and posterior pituitary respectively, though the function of the latter two may be either normal, increased, or deficient. In men, failure to stimulate hairiness points to actual or relative diminution of adrenal cortex function and to actual or relative diminution of the anterior pituitary. With this condition the adrenal medulla or the posterior pituitary activity may be of varying grades.

Now the posterior pituitary, important as is its action in men, is less essential to the sex functions and sex urge in them because of the added effects of the adrenal cortex and the cells of Leydig. The posterior pituitary certainly has a specific action on the uterus during labor. It is partly responsible for the tender emotions in women. Women have smaller hands and feet. They have a typical distribution of the normal fat of the body, they have no beards. Therefore it is rational to conclude that the posterior pituitary, in close association with the ovary, the glandular thyroid, and the adrenal medulla, is responsible not only for the secondary sex characteristics typical of the female, but for her tender emotions and her emotional tendencies. If in a man the posterior pituitary is not overtopped by the anterior, and the adrenal medulla by the cortex, his tender emotions are present.

Since the anterior pituitary, in association with the adrenal cortex is concerned with growth, development of the hands and feet, of bone, of broad, thick chest, and the element of strength, it is suggestive that the male gonads stimulate those glands and make their activities more evident in men than in women. This does not alter the fact that a primary inherited anterior pituitary overactivity or one acquired through intercurrent causes (study, etc.), while associated with growth in stature or growth of mind may not be associated with an adequately good adrenal cortex or gonadal structure.

However much the anterior pituitary, through stimulating general growth, may have to do with development of the uterus, an associated adequate activity of the posterior lobe, is of the greatest nutritional importance to the genitalia. The posterior lobe takes a most specific and active part in menstruation and labor, and is the most important causative factor in dysmenorrhea. It is therefore more than suggestions (and therapy in many cases to be reported verifies this contention), that an overactivity of both anterior and posterior lobes up to a certain age is responsible for a large size of the uterus, for elongated uteri, for elongatio colli. After the developmental stage has been passed, the posterior lobe is the important nutritional factor and its overactivity is the most important element in the production of fibromyomata, whereas fibrosis uteri probably bears a relation to anterior lobe activity also.

In my obstetric experience between ten and twenty per cent. of pregnant women evidence to the tactile sense fibromatous or myomatous nodules in the uterus in the latter months of pregnancy. These are distinctly recognized by the external hand

after the placenta has been expelled and uterine contraction has taken place. Subsequent bimanual examination confierms this diagnosis. It is remarkable how nursing, as it brings the uterus back to its normal involution, usually aids in the total disappearance of these nodules which may be isolated or discrete, single or generally multiple. Since when the mother nurses, they disappear entirely after a few weeks, as a rule, such as disappear are recognized to be myomata rather than fibromata; such as do not disappear are fibromata. The above discussion serves to illustrate the reason for my referring to the anterior hypophysis as more of a male than a female portion of the gland; it does more work in the development of the body, in the production of strength and maturity of mind, and, in association with the adrenal cortex, and cells of Leydig, and the interstitial thyroid is responsible for masculine instincts and emotions.

The reason for calling the posterior lobe more a female gland than a male gland is because of its specific action during menstruation, pregnancy, and labor, and because its other activities, in association with the adrenal medulla, the glandular thyroid and the ovary and the corpus luteum are evidenced in the feminine instincts, emotions, and psyche.

Hence, in whatever respect or degree a woman resembles the male in body form, size, distribution of hair, instincts, emotions, and tastes, to that degree is my attention attracted to the adrenal cortex or the anterior pituitary or both and to the interstitial ovary.

To whatever degree or extent the male resembles the female in shape of pelvis, hands, distribution of hair, lack of beard, tastes, instincts, and emotions, to that degree do I incline to the notion of actual or relative preponderance of the posterior pituitary and the adrenal medulla as compared to the normal balance expected in his sex.

Among the functions of the adrenal medulla (adrenalin) is the preservation of the tonus of the organs innervated by the sympathetic, and of course to that extent these organs and their function are dependent on the adrenal medulla. It maintains the sugar content of the blood. It is concerned with the regulation of blood-pressure and the distribution of the blood. It increases the excitability of the striated muscles; it relaxes the stomach and intestines, and contracts the pyloric and ilcocecal sphincters and the internal sphincter of the anus.

Under conditions tending to induce fear, if the adrenal output is adequate to produce and enhance these normal processes with a certain degree of intensity, and if the cortex, especially if associated with the action of other endocrines, acts in harmony, the individual shows fright of varying degrees, is able to run away and to show judgment. If the added action of the adrenal cortex is of sufficient intensity, the emotion aroused is anger. This is of varying degrees of intensity and is associated with the instinct of pugnacity. If, on the contrary, there is no adequate response by the adrenal medulla, little or none by the adrenal cortex, or the posterlor or anterior pituitary, the emotion of fear becomes that of terror with inability to flee, and total disorganization of physical, mental, and psychic processes. The adrenal cortex is necessary to stabilize the above-mentioned physical and psychic processes produced by action of the adrenal medulla.

Since the thyroid, if normal or overactive, accentuates other functions and emotions, a hyperthyroid person will show to an exaggerated degree any of the emotions dependent on good or faulty endocrine response. The cowardly manifest the physical tendencies to retreat and to flee. In the intense degrees of fright, called terror, there may be even relaxation of the sphincters, a condition which is the reverse of that produced by normal adrenal sufficiency.

The courageous go forward or hold their ground. In the emotion of anger attending the instinct of pugnacity not only does the adrenal medulla functionate actively, but there must be a corresponding activity and stimulation of the cortical portion. In other words, an individual is fearsome in varying degrees primarily according to the degree of adrenal response to stimuli. An individual is courageous and bold because of good adrenal response, both medullary and cortical.

The type of courage depends on the element of judgment and self-control. A person may be courageous but not foolhardy, or he may be reckless or thoughtless. What would ordinarily be fear or terror may be manifested as anger or courage if an associated emotion brings into play another endocrine associated with that other emotion. For instance, the posterior pituitary, which is associated with the maternal instinct, will respond when that instinct and its associated emotion are aroused, and it then reinforces the action of the adrenals, for instance, in a state related to fear. In the manifestations of fear, anxiety, suspicion, etc., related as they are to the adrenal medulla, the associated behavior of the cortex and the other endocrines is important in determining the variations, the degrees of severity, and the direction and duration of these states.

Phobias and anxieties associated, for instance, with abnormal or excessive coitus point to weakness or diminution in activity on the part of the adrenal cortex. Then the character of this abnormal state is influenced and determined by the character and interrelation of the anterior pituitary, posterior pituitary, thyroid, etc. The greater is the associated activity of the anterior pituitary, the greater are the judgment and element of control in these states of anxiety. The action of the anterior pituitary in states of anger and under conditions requiring courage assists in directing the course of action. Of course, we must include the previous influence of the anterior pituitary on the cerebrum, etc., as well as its response in an emergency.

The endocrines are therefore closely related to sleep, the production of sleep, to sleeplessness, to the dreamy waking state, and to dreams. The endocrines stimulate, arouse, and recall in the lower and partly in the upper consciousness emotional memory pictures. Whatever action the original event, occurrence, or picture roused in them in the way of response to an emotion, their activity and action during sleep brings back the same or a symbolic picture in the brain.

Now the brain, while it may be likened to a cinema film with the power of recall in picture form of the exposures to stimuli and events, must be thought of as consisting of millions of little paths,

each of which, while distinct, has communications with other paths. The path from without inward represents a point in the brain where an impression was made through any of the senses, a continuation through the brain and through nerves of two kinds: one the nervous system which prompts muscular action, the other, more important for the understanding of our problem, nerves associated with glands and the internal organs of the body, which internal organs and which glands act in a specific manner according to the stimulus. This latter mechanism is the mechanism of the instincts and the emotions, the autonomic nervous system; the former mechanism produces those muscular responses which are likewise typical for the various emotions. This latter action creates a smile, a frown, the tearful face, the attempt to strike a blow, the warding off of a blow, flight, etc.

This outward physical manifestation as well as the impulse to do must be kept distinctly separate from the processes of internal reaction in the heart, blood-vessels, blood-stream, etc., and from the action of the internal secretory glands which, as stated before, act typically in association with the emotions produced by stimuli.

Now the whole problem depends upon several facts which must be held in mind. (1) Repetition of the same stimuli may sensitize the path and sensitizes the reaction. (2) This sensitiveness of any path or paths may be diminished by switching the course of the stimulus into other paths. (3) To whatever degree any path or paths are made oversensitive by use they overshadow other paths and attract into the sensitized paths a stimulus, which, without this element of enhanced attraction or invitation, might have gone into some other path. Therefore any instinct, if it is stronger than another, is so because the mechanism of attraction is more powerful in one field of paths than in other fields of paths. Let us remember that at the end of each path is an endocrine, or endocrines. And since everyone is born with instincts and emotions of varying types and degrees of intensity, stimuli follow what is for that individual the course of least resistance or greatest attraction. Now it is possible to develop and widen and sensitize paths by use. It is possible to anesthetize paths by disuse. It is possible by diversions or switches to alter the course or path which any stimulus may follow, and the ability to accomplish these results depends firstly on the inborn physical qualities and on the effects of treatment or training, and subsequently on what we call self-control. In other words, during childhood and the early years, the parents should be the switchmen and the flagmen; during the same period and, of course, much more so as the child grows older and in adult life, the individual concerned is his own switchman and flagman.

The whole problem of dreams depends to a great extent upon the theory of a reverse of this action; that is, any endocrine activity which is or has been the end result of a stimulus associated with an experience or an emotion may by a reverse of the primary course be responsible for the recall of the registered stimulus or its like, though this resemblance may not always be apparent. Hence the term, symbolism.

The tremendous error of the Freudian idea is the stress that it laid on the sex instinct. It is a strong instinct, but other instincts and emotions are of as great if not greater importance in their association with neuroses and psychoses. The latter are produced much more often by changes in the thyroid, in the suprarenals, in the parathyroids, or especially in the pituitary. The contra-suggestive individual is of all the people in the world most likely to be unhappy. The individual whose instinct of subjection is all too marked may find his lot in life extremely difficult. The too suggestible individual is readily led into temptation. A person with the gregarious instinct strong in him and who spends his or her life on an isolated farm, is apt to be unhappy, and it is the gregarious instinct which takes him or her from the farm to the large city. It is this gregarious instinct which keeps millions of people in miserable surroundings and under the influence of unwholesome conditions when otherwise they would be much happier on a farm. The instinct of curiosity, much as it leads to scientific investigations, leads to most erroneous views of sex questions unless correct interpretations and explanations are given, and if the Freudians have done one thing more than many others which have done harm it is that they have laid such stress on one instinct and have created misunderstandings and morbid interest in that phase of life which should not play an all important part in the thoughts of the individual. I know many men whose nervousness and irritability are due entirely to the worry about their stock exchange speculations; I could, therefore, if I wished, prove the worry and annoyance and wear and tear on their endocrines to be, as it really is, the responsible factor for the neurosis. I know women who are depressed and unhappy because they have no children. I know women who are nervous and irritable because they have a domineering, contrasuggestive, or unusually self-assertive husband. I know many women who are nervous because of the problems associated with the training and care of their children. But if any or all of these have dreams at one time or another of a sexual nature, are we to forget all the innumerable endocrine plays on instincts and emotions, and center our thought on the sexual sphere, even though, as is the case, the sexual sphere is likewise in many instances responsible for neuroses and psychoses? And, best of all, when we explain to a patient that she or her child is at one or various times under the stimulation of the sex hormones of the numerous endocrines of the body, and that some of her dreams may in many ways be the end result of such activity, do we not remove from such patients the fear and feeling that they are mere animals, unmoral or immoral? And if we are correct in our explanation can we not prescribe gland extracts which inhibit or modify this overactivity? We can.

When a person is exhausted by normal work or exercise and sinks into a refreshing sleep, his endocrines, so far as they are associated with volitional stimulation, likewise go to sleep, particularly the pituitary and thyroid. If an individual as a result of reading, mental activity, or aroused emotions fails to fall asleep, some endocrine activity is stimulating those areas and functions of what are called the upper consciousness, and since it is active, it

continues to exert control over the subconscious. A thyroid activity stimulating cerebral action, the activity of any other endocrine which does the same or makes one conscious of certain emotions, likewise stimulates the upper consciousness, and it often takes people hours to fall asleep. Coffee keeps people awake since it stimulates the thyroid; alcohol may do the same. If you do fall asleep, without cerebral and endocrine activity previously aroused by worries, anger, fears, joys, unsatisfied longings, etc., and the upper consciousness is no longer stimulated, the subconscious sphere may likewise be inactive; you sleep well, you have no dreams, and you awaken refreshed because, at the same time that the upper and lower spheres of consciousness have not been irritated into activity, the sleeping endrocrines have been exerting only a normal, wholesome effect on the other functions of the body and cell repair has taken place. But while the upper consciousness is, so to speak, at rest, even if not completely, and you are, as we call it, asleep, if the endocrines exert their play on what we call the subconscious state, you have all varieties of involuntary recall, and since volitional control is wholly or partly absent, the activity of the subconscious may be likened to the saying that "While the cat's away, the mice will play."

Let us make a comparison. During the day the servants in the household may obey your orders and do what you ask them. When once their work is over their behavior below-stairs is like the action of the subconscious state. You may not know what they are doing, but you may hear something if their play or behavior is sufficiently active or exuberant to carry sound to your ears.

Another comparison. An officer drilling a company receives prompt response to his orders. If he and his company retire at night and go to sleep all is peaceful. If a hundred men be given leave for an evening, are left to their own resources, there may be a hundred different forms of behavior if each does what he likes. Several groups may join in different diversions or all may do the same thing in concert, but they certainly will not drill as they did during the day. If the officer is away he knows nothing of what is going on. If he is with them, and during these hours he attempts no disciplinary control over their enjoyments and behavior, their behavior may be likened to the action of the subconscious state while the upper consciousness is out of action so far as control is concerned. These comparisons are supposed to represent the various types of dreams resulting from endocrine stimulation of the subconscious sphere by endocrines still awake. While any endocrine is exerting its action on the subconscious, of course it may also be acting on the upper consciousness, thus calling its attention to what is going on below, and this is called a dream. And as the various endocrines are associated and brought into action by different instincts and emotions, some purely mental, some those of anger and fear, some sexual, etc., the reverse action or recall will be along the lines of the mental, fearful, sexual, etc., according to the endocrine element or elements which are acting at the time of the dreaming.

When you give bromide to a patient you are diminishing the sensitiveness of the paths, the endocrines, and the cerebral centers. When veronal makes a patient sleep it does so because it, so to speak, puts the endocrines (very frequently the thyroid and pituitary), which are stimulating the upper consciousness, into a state of diminished activity. Therefore, veronal in very small doses is an excellent drug for hyperthyroidism.

When a patient after several hours of sleep awakes and cannot fall asleep again, some endocrine is responsible for the rousing of the upper consciousness, and if we find, by questioning, the nature of the dream which aroused the patient, or the thought or emotion which is now present during this waking state, we can readily discover which of the endocrines are hyperactive at this time. Pain arouses by messages to the cerebrum. Some day when we have analyzed the exact physiological action of the various hypnotics and soporifics we shall prescribe more intelligently for sleeplessness unless, as is probable, endocrine therapy will accomplish this result better.

In pregnancy many patients suffer from nausea and vomiting. Those who do not suffer in this way are, as a rule, rather drowsy or sleepy. In the former there is a rousing of the adrenals, the posterior pituitary, and the thyroid. In the latter there is a relative diminution of activity of the endocrine glands, especially the hypophysis, and we have the mildest form of hibernation produced by placental secretion. If you administer only a few drops of chloroform to a patient in labor after the injection of pituitrin, the uterine contractions become less severe and recur at greater intervals. Therefore, chloroform inhibits the posterior pituitary or its action. Castor oil and quinine have a tendency to bring on labor pains if administered about the expected time of labor. Therefore, they either act directly on the uterus or stimulate the posterior pituitary, or sensitize the uterus to the contractile influence of pituitary secretion. Morphine puts most patients to sleep, but it stimulates some and keeps them awake. Therefore in the former it acts on the upper consciousness and on the endocrine activity, and in the latter it stimulates both. Drug sleep is the result of the artificial hibernation produced, whereas normal sleep is normal hibernation or normal endocrine rest. The endocrines, so to speak, go to sleep. Alcohol keeps some patients awake and in very small doses it puts others to sleep. Alcohol, given in varying degrees up to intoxication, removes the control exerted by the upper consciousness and the anterior pituitary, and brings out evidences of the instincts and emotions in different individuals according to the endocrines most stimulated, and we may have an individual fearful, tearful, joyful, pugnacious, quarrelsome, amorous, etc.

I have used ovarian extract, whole gland, always and rarely corpus luteum extract. Corpus luteum extract counteracts the influence exerted by whole ovary, for in the latter the interstitial part (ovarian residue) is of greatest importance. It is the glandular part and the corpus luteum which stimulates the adrenal medulla and the glandular thyroid which are the two gland structures most affected in hyperthyroidism and the nervous and anxiety states of women. The interstitial thyroid and the adrenal cortex are of the greatest importance and

these two special extracts will soon be in my hands. Hence I have used the whole suprarenal gland to get the effect of the cortex and have used testicular extract as an added help where adrenal cortex action was desired. I am now paying attention to the parathyroids whose importance is certainly very great. The question of the pineal is difficult, but some of my cases with suggestion of the Mongolian eyes and face with or without obesity are being watched along these lines. The same balance or question of balance as exists in the endocrines above mentioned exists within the thyroid, the pancreas, the kidneys, in the muscles and bones, in the brain, and in all the structures of the body. As I observe, in cases now being studied, kidney diseases are the result of endocrine abnormality. Goodhart and others have made important observations in muscular dystrophies. If we apply to muscles the question of balance between the muscle bundles on the one hand and the connective and elastic tissue fibres on the other hand we see that the same relation holds good as is observed in fibrosis, fibromata and myomata of the uterus. The same relationship holds in kidney diseases, overgrowth of the interstitial tissue, or of the glandular portion or of both. As to tumors, benign and malignant, they are all due to endocrine action. We shall find that carcinomata are due to different endocrines according to their situation: breast, pylorus, coecum, sigmoid, uterus, etc. The neuroses and phychoses are endocrine as to cause. In a subsequent paper the curative action of placental extract, for example, on pituitary psychoses and on other states due to the pituitary and other glands, will be reported. In conclusion let me make this prophecy. In five years there will be few mental defectives (new), few feebleminded (new), few insane (new), few tumors (new), few cancers (new), few diabetes (new), few renal diseases (new), and so on. Since they are due to endocrine aberrations they will be corrected in their earliest stages by endocrines. When the next war comes, if it does at all, soldiers before going over the top will not be given alcohol: they will be given endocrine cocktails and the adrenal cortex will be an important ingredient. And if the world, in the near future administer to its diplomats, to its highest officials, to its legislators, and to its people the proper endocrines, especially anterior pituitary, and inhibits the adrenal cortex a little bit, there may be no more wars.

Woman is a combination of glandular ovary, corpus luteum, adrenal medulla, glandular thyroid posterior pituitary, and mammary acting much more energetically and specifically than in man. That is why they have hyperthyroidism and the numerous emotional conditions which we have so long and so erroneously labelled "neurasthenia," "hysteria," when they really are "neuroses," "psychoses." And if we finally conclude, as is probable, that one part of a gland acts through the vagus, and the other part through the sympathetic then the question of balance is of greatest importance.

Many of the statements above made cannot as yet be substantiated by laboratory investigation. They have, however, stood the more convincing test of therapeutic application.

I have had, in editing this paper, the encouragement of Dr. S. P. Goodhart. Since so many of the endocrine conditions seen in gynaecology lead into the realm of neurology and psychiatry, his approval lends an additional touch of authority to much that has been said.

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A SIMPLIFIED AND SAFER HYSTERECTOMY.

By HOWARD CRUTCHER, M.D.,

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Cancer is one of the scourges of mankind. If all the facts were known, or could be known, it might well be questioned whether uterine cancer is not the commonest manifestation of that disease. I am satisfied that many women pass away from the remote results of this malady whose real condition is hardly more than suspected, far less demonstrated by accepted scientific tests.

Fortunately, the uterus is so situated that its total removal in uncomplicated cases may be effected safely, easily and rapidly; and, more fortunate still, the ultimate results of such operations afford the highest cause for gratification to the lover of scientific progress.

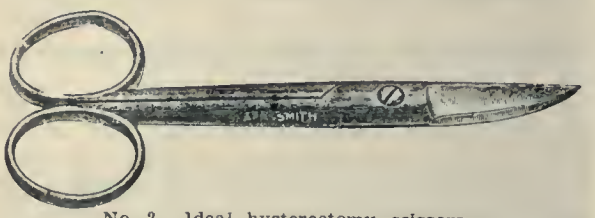
Pathologists, without notable exception, are agreed that nearly all cases of uterine malignancy originate in the neck of that organ. The prompt and complete removal of the whole uterus through its natural outlet possesses such immeasurable advantages over the more complicated and dangerous

No. 1.—Volsellum for drawing the uterine cervix into the field.

costopubic route that it should always be chosen in the absence of positive contraindications. It is my present purpose to describe with some minuteness the uncomplicated operation as I have performed it for many years, a single operative death marring an otherwise exceptional record of success. It is manifestly impossible within the limits of an acceptable paper to deal even superficially with the numberless complications that frequently confront the hysterectomist. Few cases, indeed, are wholly free from some complication, either trivial or serious, but I shall purposely abstain from discussing them at this time. With the ideal operation clearly in mind, the various complications may be the more readily explained and their proper treatment the more adequately set forth.

The tincture of iodine is applied freely to the parts. The natural outlet being spacious, broad Sims retractors (flattened in the blades) are inserted above and below, exposing to view a tiny spot of cancerous tissue situated near the mouth of the womb, extending slightly into one of the cervical lips. The neck of the uterus is seized through healthy tissues with strong volsellum forceps, and drawn forward until flush with the lips of the vulva. Under no circumstances must the diseased area be punctured or incised with any instrument. The neck of the womb is drawn upward, and with a pair of short, heavy, sharp-pointed curved scissors the mucous membrane is divided by a circular

incision down to the firm wall of the uterus, beginning about half an inch from the os uteri. Around the lower half of the circle the incision may safely be carried much further from the uterine mouth than the near presence of the bladder would

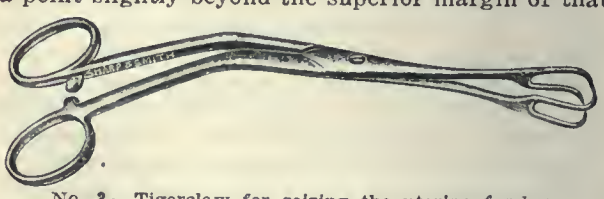


No. 2.—Ideal hysterectomy scissors.

permit above. With his finger the operator presses into the loose connective tissue of the uterine envelope, using the scissors upon whatever fibrous bands may resist his progress upward, always cutting toward, and not away from, the muscular coat of the organ. At this point curved T-retractors are placed upon the severed vaginal mucous membrane, that tissue being properly drawn aside to afford a better view of the uterine connective tissue.

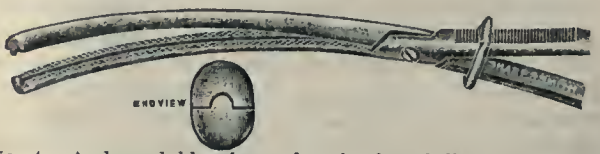
The supreme danger in hysterectomy is from bleeding. The blood supply of the womb passes wholly through the broad ligaments, one situated at each side of the organ. The immediate object now is to expose the sources of the blood supply, isolate them, clamp them securely, and complete the work by cutting away the uterus. For convenience, the left pedicle is dealt with first. The bladder and the much-dreaded ureters are readily freed from all uterine connections by the advancing finger. Just above the utero-vesical juncture the thin peritoneal coat of the *fundus uteri* is punctured, the surgeon sweeping his finger freely within the peritoneal cavity, making careful mental note of all important landmarks. (About this time a cystic, although not a healthy, ovary is quite liable to make its presence known.) The uterorectal peritoneum is next punctured, very close to the uterus, with a pair of large, Kocher forceps, this opening being rapidly enlarged with the finger. No important blood vessel has thus far been met with, and all oozing has been promptly controlled by dry sponging.

A tigerclaw is now inserted through the superior (upper) peritoneal opening, the fundus is seized transversely and drawn into full view, projecting well between the superior labia. The left broad ligament is now in plain sight and may be quickly secured as follows: Guided by the left forefinger, inserted from above, the lower blade of a dependable clamp is introduced below and behind the ligament, and pressed upward until its tip appears at a point slightly beyond the superior margin of that



No. 3.—Tigerclaw for seizing the uterine fundus.

structure above. The surgeon now satisfies himself that the tissues of the pedicle, and these tissues only, are within the grasp of his instrument, one of the labia or a fold of vaginal mucous membrane often requiring retraction from the blades of the clamp. The superior blade of the clamp is always in plain view. The blades of the instrument are cautiously and patiently driven home by compressing the handles, which are now locked securely. The pedicle is next divided between the clamp and



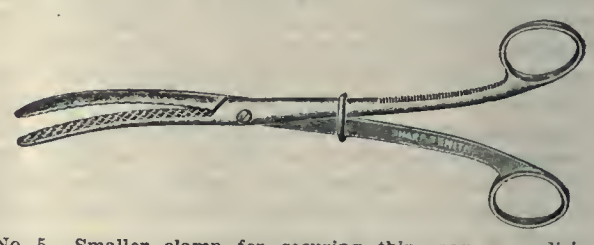
No. 4.—A dependable clamp for the broad ligament. Note its long, wide blades, and its simple, unfailing lock.

the uterus with a scalpel, the operator bearing well in mind when using the knife the heavy shrinkage that pedicles undergo after division. The right pedicle is next treated in like manner, when the surgeon makes a minute inspection of his whole field of work to make certain that he has overlooked no active bleeding point. Adventitious vessels do appear occasionally, in defiance of all precedent, but are quickly and effectually suppressed by the application of heavy Kocher forceps. The use of these forceps saves much valuable time and tedious work involved in the application of ligatures. Healthy ovaries are not disturbed. A cystic ovary may be drained, treated with pure alcohol, and returned to its place. A coil of intestine rarely appears, although a diseased vermiform appendix has been clamped and removed under such conditions. The omentum is a more frequent visitor to the field, and the discharge of a small slough of omental tissue some days later need cause neither surprise nor alarm.

The surgeon now looks upon a dry, clean field, and carefully adjusts each clamp to its proper pelvic quarters.

A large square of plain gauze is now spread over the operative field, its center being pressed deeply into the vaginal canal to a point somewhat beyond the original circular vaginal incision. Into this pouch are pressed strip after strip of gauze soaked in a solution of adrenalin, until a snug Mikulicz drain has been properly placed in position. The projecting handles of the clamps are now wrapped in a loop of gauze, a heavy absorbent dressing applied, all being retained in place by the application of a snug bandage of gauze or muslin.

The blades of the clamps lie, of course, outside the vaginal packing, and the serous drainage finds a ready outlet along the course of the instruments. The external dressings should be changed as often as necessary. It is advisable to catheterize the pa-



No. 5.—Smaller clamp for securing thin, narrow pedicles.

tient every six hours. The pulse ranges between 70 and 80, but may rise higher unless the bowels are kept clear by saline enemas after the third day.

Contrary to a widespread misconception, the clamp operation is not more painful than other

methods. The gauze packing, on the other hand, is always more or less distressing, no matter what means may have been taken to secure the pedicles. Not infrequently the administration of some anodyne is indicated until the pressure from the packing is relieved.

After forty-eight hours the clamps are unlocked but are left in place for a few hours, when they may be withdrawn readily by gently opening the handles. Any Kocher forceps that may have been left upon small vessels may be removed at the same time. Some of the strips may be taken away with the clamps, but the gauze pouch may be left until the fifth day or later, its removal being greatly facilitated by irrigation with some mild medicated solution. Repacking is applied as circumstances may require. Convalescence is usually complete within two weeks.

By way of comment it may be said that the highest point of danger will be found in the upper half of the broad ligament, when all risk of injury to the trunk of the uterine artery, the bladder and the ureters has passed away. In a former paper (Some Observations on the Blood Supply of the Uterus, etc., MEDICAL RECORD, July 20, 1918) I have treated the surgical anatomy of the uterine artery somewhat more intimately, but in no case does this vessel normally penetrate the true uterine substance. In all cases of doubt the operator will find his path of safety to lie in close contact with the muscular wall of the womb.

The use of multiple clamps upon the pedicles is to be distinctly condemned. A single dependable instrument, full of spring in both blade and handle, of sufficient length completely to overlap the widest pedicle, the tip closing slightly before the base, secured by an unfailing lock, is the ideal instrument for this important work. My only disaster in this operation may be traced to the use of small, worthless clamps, which tore the treacherous tissues, which a single, well-conceived instrument would have held perfectly. This death, however, occurred in a case blazing with complications, and hence does not fall properly within the scope of this paper.

In all operations for malignant disease the surgeon, of course, will apply his clamps as far as practicable from the body of the uterus, but as all the tissues involved are in plain sight this action imposes no additional danger to recovery. I know of few things in surgery more dangerous than the clamping of important tissues in the dark and trusting to luck, when the eye alone is the safe guide. In a respectable list of hysterectomies, some of them notable for serious operative difficulties, I have no important accident to record, either during or following the operation, save the single death from bleeding already mentioned. Annoying cicatricial contractions of the vagina have not followed in any case, so far as I have heard. Surgical shock is certainly most merciful to us in this field of work, even in cases remarkable for operative difficulties.

So far as the ultimate results are concerned, I regret to say that much testimony of a wholly favorable character is purely negative. I have found it practically impossible to induce most patients to favor me with even so small a courtesy as an annual report. One patient closed her case as follows: "If any trouble comes up you may be sure that you will hear from me at once." This case is typical of scores of patients who have no scientific interest whatever in uterine cancer so long as they are themselves free from its ravages. Some altogether surprising cures must be credited on positive evidence to the radical operation. In any case of doubt my inclination would be to remove the uterus whenever justified by the principles of rational surgery. Those familiar with the horrors of uterine cancer in its later revolting stages will be disposed to assume all honorable responsibility in attempting to avoid one of the most pitiable sights within the whole range of professional experience.

My acknowledgments are due to Messrs. Sharp & Smith, Chicago, for their untiring zeal, patience, and skill in the preparation of the instruments shown in the accompanying illustrations.

SYMBOLISM.

BY H. LAVESON, M.D.,
NEW YORK.

THROUGH the study of dream symbolism we possess a series of general statements and of particular observations which are quite certain. There are symbols which practically always have the same meaning: Emperor and empress always mean the parents; room, a woman, and so on. The sexes are represented by a great variety of symbols, many of which would be at first quite incomprehensible had not the clues to the meaning been often obtained through other channels. There are symbols of universal circulation found in all dreams, of one range of speech and culture; there are others of the narrowest individual significance which an individual has built up out of his own material. In the first class those can be differentiated whose claim can be at once recognized by the replacement of sexual things in common speech from others whose sexual references appear to reach back to the earliest times and to the obscurest depths of our image-building. The power of building symbols in both these special forms of symbols has not died out. Recently discovered things, like the airship, are at once brought into universal use as sex symbols.

It would be quite an error to suppose that a profounder knowledge of dream symbolism would make us independent of questioning the dreamer regarding his impressions about the dream, and would give us back the whole technique of ancient dream interpreters. Apart from individual symbols and the variations in the use of what is general, one never knows whether an element in the dream is to be understood symbolically or in its proper meaning; the whole content of the dream is certainly not to be interpreted symbolically. The knowledge of dream symbols will only help us in understanding portions of the dream content, and does not render the use of the technical rules previously given at all superfluous. Dream symbolism leads us far beyond the dream; it does not belong only to dreams, but is likewise dominant in legend and myth, in wit and in folklore.

Let us take, for example, the national flag. That

the flag is a symbol needs no argument. It stands for, represents, symbolizes, the nation. That is almost all that can be said for it in general, but further than that it stands in each individual's thinking for what the nation means to him. The idea of the nation, itself a symbol, means one thing to one person, another thing to another person. To one, it means protection; to another, community of interests; to still another, a certain geographical area; to one, it stands for a military unit; to another, it means right, honor, loyalty, etc. Every individual gives his own particular touch to the concept nation, and so for him the flag has that special meaning. And yet, with all this infinite diversity, the flag is able to unite all that is held in common, all these various ideas and feelings meet on a common basis which is nucleated in the national emblem, and at large gatherings of people one can see how they are swayed by it, how in one common sea of feeling they all react in practically the same feelings, the same emotions, the same sounds as they sing a national anthem. There is no need to dilate upon the obvious, and more than mention the immense amount of energy which may thus be liberated; the particular point of emphasis, however, is that in some way this enormous energy is wound up in the symbol. The symbol is the transmitter and transmitter of energy at this level, just as the reflex arc, the ion, or the lever are at lower levels.

First, as to the wide latitude of usefulness of the symbol. Consider the symbol money, for example. Money represents accumulated energy. Work of whatever character, unintelligent, physical labor, or highly intellectual, is reduced to the common standard of money value, and so the energy which an individual has to give in the form of work he, so to speak, turns into the energy symbol money, and this symbol can be exchanged for any one of innumerable kinds of energy carriers—for bread and meat, for machinery, for manufacturing purposes, for books of learning, for maintaining a home; in short, for an infinity of things which have as their function the maintenance and preservation of the individual and the increase and extension of his power and influence.

Money, as a symbol of energy which could be exchanged in trade, has existed from the earliest times. The energy has been concretely represented by all sorts of things—from the crude forms of the primitive man, the shells, beads, and wampum, to the highly elaborated gold and silver coins and bills of the present day. The underlying principle, the common meaning, the unconscious origin, has always been the same. It would be hard to imagine a more adjustable, usable, practically available energy transmitter and one at once so sensitive to all the circumstances in the midst of which it exists. Witness the fluctuations of foreign exchange in response to rumors affecting the possible solvency of a nation (energy).

In order that the meaning of symbolism may be understood, in the broad sense in which it is used, it is essential to keep in mind the nature of the relation between the process of thinking and the forms which are used in expressing that process. The process is one of continuous unremitting change—the forms of expression are the results of efforts to catch the process in the very act of becoming; they are snapshots which try to fix the process in forms that can be read.

The fundamental principle of symbolism is that anything may symbolize anything else, and in a given instance the only way to find out the meaning of a symbol is to make inquiry of the subject expressing it. The psychologist cannot tell offhand what a given symbol may mean in a particular instance. It may mean one thing at one time and another thing at another time; it may mean one thing to one person and another thing to another person; it may or it may not have the usual significance.

The next important principle is self-evident. The symbol must be chosen from the mental content. When one, so to speak, is looking about for an appropriate symbol he is limited in his choice to the content of his own mind. Not only may a given symbol mean one thing one time and another thing another time, but the same symbol may be used by different persons in quite different ways. If several persons will look at a radiator, for example, they will probably treat that radiator differently in their thoughts, depending on their previous experiences. One may be reminded of the rise of temperature in a fever; another may think of the steam and the steam may call up an ocean voyage on a steamship, with all the complex associations of that voyage; another may think of the warmth of friendship, another of efficiency as expressing the work of the radiator, while still another may be reminded by the corrugations of the corrugated paper about a book recently received from the publishers, its contents, etc. (association of ideas). The possibilities are endless. And finally the manifestness of the symbolism is in direct proportion to the poverty of the apperceptive mass and the consequent concreteness of expression. Darwin records the instance of a child, who, seeing a duck on the water, called it "quack." From this on he called all flying things "quack"—birds, insects, especially house-flies, and also fluids—water and wine. Finally, when a sow was shown him, he called this also "quack"; "quack thus came to mean such different things as flies, wine, and coins. The word "quack" was used originally to express the duck on the water, so it comes to be applied to all flying things and to all liquids. When the word is extended to include coins, it is not because of a conceptual generalization, but as the result of an associative transference due to the figure of the eagle on the coin, which is already known as "quack." Because the field of perception of the child's consciousness is very narrow, all of the characteristics, partial perceptions, are possible, and appear in the perceptual complex, while other characteristics are excluded. Thus the thinking tends to relative concreteness.

Keeping in mind the energetic conception of the libido, we can understand then that a symbol is an expression of ourselves. The particular person or thing is used as a symbol because it represents our way of thinking and feeling about the fact it stands for. It stands, therefore, for ourselves, or so much of ourselves as is represented in our feeling attitude toward the thing symbolized. The patient who, in a dream, symbolizes the sexual by a

wild animal, has not only made a symbol for sexuality, but has also expressed in that symbol an element of his own sexuality recognized as wild.

511 East Eleventh Street.

THE PRESENT STATUS OF GENERAL ANESTHESIA FROM THE HOSPITAL VIEWPOINT.

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The subject of anesthesia presents the following topics of especial interest to hospitals: 1. The administrative requirements of the general anesthetic. 2. Who should give anesthetics? The prerequisite requirements. 3. The staff member as the anesthetist. 4. The interne as the anesthetist. 5. The trained nurse as the anesthetist.

The Administrative Requirements of the General Anesthetic. (*a*) *Nitrous Oxide and Oxygen:* No modern hospital can consider its anesthesia department complete without suitable provisions for the administration of nitrous oxide, with or without ether. The advantages resulting from its use are many. The induction is rapid and very pleasant; it is safe; recovery is rapid; there is little or no irritation of any of the organs; after-effects are completely absent or greatly diminished; complications are reduced to a minimum.

Most institutions find it more convenient to buy their supply of nitrous oxide. Hospitals, however, which use very large quantities of this gas, or those which contemplate changing to larger and more modern buildings, would do well to consider the question of manufacturing their own supply. While the initial investment for the installation of the plant is quite large (according to the Lakeside Hospital reports it is about $3,000), it would pay for itself in the course of time, and there would be the great advantage of a knowledge of the absolute purity of the gas.

There are two distinct types of apparatus for the administration of nitrous oxide with oxygen—one delivering a continuous flow of the gases, with or without rebreathing, and the other giving an intermittent flow, with rebreathing. It is a matter of opinion among anesthetists which type is the better. My own preference is for the method of intermittent flow of gases with rebreathing, because it eliminates the large, cumbersome tanks, the necessity of reducing valves, and freezing troubles; it is more economical; and the rebreathing, I believe, is decidedly beneficial. Of these two types of apparatus there are, at present, any number of different makes, each one claiming special advantages. It is not a matter of great importance which of these is chosen. One anesthetist will give a good anesthesia with the apparatus which he is accustomed to use, while another will use a different apparatus and get the same results. It is simply a question of being expert in the use of a given apparatus. I prefer the apparatus which is so equipped that the ether can be added drop by drop, as with the Coburn or Flagg instruments. The various attachments for warming the gases are not important because, by the time the gases reach the larynx, they are warmed to body temperature.

(*b*) *Insufflation Anesthesia:* In using ether (or rarely chloroform) in operations on the head, neck or chest, it is generally recognized that the most satisfactory method of anesthesia is by means of insufflation. In head and neck surgery the anesthetist can keep out of the field. In operations in and about the mouth and nose, which would otherwise require the intermittent use of the mask, it is ideal. In chest work, it permits keeping the lungs inflated when necessary. In fact, where ether only is to be used, the insufflation method may be employed to advantage because the anesthetic vapor is delivered to the patient, whereas, in the usual inhalation method, the patient must use his own respiratory efforts to obtain the anesthetic vapor. This is especially important in operations during shock, as mentioned by Crile, in observations from the front.

This method requires an apparatus, preferably motor-driven, which will deliver air under regulated pressure; this air under pressure, by means of proper connecting tubes, is then made to pass partially or completely through a bottle containing the anesthetic (ether or chloroform, or both), and from here by tube into the trachea, pharynx, or buccal cavity.

The ideal apparatus to date for this purpose is the Konnel Anesthetometer, an instrument which delivers automatically "a known volume of accurately measured percentage of ether vapor" evenly throughout the administration. This apparatus is not generally used because it is very expensive. There are, however, several moderate-priced instruments on the market, which, while not so perfected, are very practical for insufflation purposes. A good many of these are so arranged that, in addition to the insufflation, there is an extra attachment for suction; this is a great help in most of the nose and throat operations.

(*c*) *The Open Method:* While a few of the large clinics still use exclusively the so-called open method of ether administration (really a semi-closed method), most of the large hospitals now use the closed method with nitrous oxide, with or without oxygen for the induction. However, the open mask still has its field of usefulness. It is best for infants and very small children; for very adipose subjects, especially those with short necks; for the very old, especially those with wheezy chests, cyanosis or very marked arteriosclerosis, who do not, as a rule, stand the closed mask well; where chloroform is to be given. Internes who are just beginning the course in anesthesia should learn the open method before attempting the use of the closed. The best mask for this purpose, I believe, is the Yankauer mask.

As part of the requirements in any method it is necessary for the anesthetist to be provided with a suitable table, or tray attached to the operating table, equipped with a mouth gag, tongue forceps, wedge, breathing tube and anesthesia chart.

Who Should Give Anesthetics? The Prerequisite Requirements.—It is absolutely essential, in my opinion, for the anesthetist to be a physician, one who combines a general knowledge of medicine with a specialized knowledge of anesthesia and the technique necessary for handling various apparatus. A general knowledge of medicine is indispensable for

a thorough understanding of the following: (*a*) The physiology and pathology of the heart and blood vessels, lungs, kidneys and other organs of the body. (*b*) Metabolism and its diseases—diabetes is especially important, as diabetics are very poor anesthetic risks. (*c*) Acid intoxication, the action of anesthetics in inducing acidosis or aggravating it when already present, and the means of combating this condition. (*d*) Shock—its nature, causation, manifestations, prevention and treatment. (*e*) The various reflexes and their indications. (*f*) The factors contributing to the patient's condition—for example, given a patient with a depressed state of respiration, the anesthetist should be able to determine whether this condition is the result of depth of anesthesia or outside influences, such as operative manipulations in the upper abdomen, or a preanesthetic dose of narcotic. In all these instances a general knowledge of medicine makes it possible for the anesthetist to exercise his judgment for the welfare of the patient. The anesthetist's opinion of the patient's condition is helpful to the surgeon during operation, and in recommending preoperative and postoperative care. The surgeon who works with an expert anesthetist comes to rely upon his judgment as an important factor in the welfare of the patient. It is also essential to know the physical properties and physiological action of the various anesthetics used and their individual indications and contraindications.

The Staff Member as the Anesthetist.—The large hospitals have begun to recognize the need of a visiting anesthetist, a physician who devotes his time exclusively to the subject of anesthesia. This work is of such importance that it should be accorded a department of its own, with an established head, who shall assume the responsibility and control, and who shall have a position on the medical board in the same capacity as the heads of the other departments.

The duties of the visiting anesthetist should include the practical instruction of the internes assigned to anesthesia service; instruction in the use of the various methods of administration which obtain in the particular hospital; the proper care and selection of the agents, their properties, the advantages and disadvantages of each; preoperative and postoperative care and treatment; and the keeping of careful records of all anesthesias, or charts provided for the purpose. The staff member supervises the interne during routine work. Where necessary, however, in difficult and serious cases, he administers the anesthetic himself.

The Interne as the Anesthetist.—At the present time the system of medical education is such that the student receives very little theoretical, and little, if any, practical instruction in anesthesia. The hospital should afford every interne the opportunity to supply this need in a regular course of anesthesia of four to six months' duration, during which time he gives all the routine anesthesias under supervision and instruction by the staff anesthetist. It is advisable to have more than one interne doing this work during the same period so that one man relieves the other. The best time for the interne to get this instruction, when the term of service permits, is during the second half of his first year's stay at the hospital. By that time he will have received a more practical knowledge of physiological and pathological conditions of the various organs of the body, and will therefore be more ably equipped for this course.

The Trained Nurse as the Anesthetist.—Considering the prerequisites mentioned above, I maintain that a nurse is not fully competent to administer anesthetics. She may be trained in the mechanical processes of the administration, and may even have had a few months' instruction is physical diagnosis. But this at best can give her only a superficial experience, and does not prepare her to meet the conditions with the matured judgment which comes only with a thorough knowledge of medicine. She is no more qualified to do the work of an anesthetist than a nurse with operating room training and a superficial knowledge of anatomy and the mechanical skill which has enabled her to master the steps necessary to open an abdomen and remove an appendix, for example, would be qualified to do the work of a surgeon. The matured judgment which comes only with a general knowledge of medicine is wanting in each case. The fact that nurses administer anesthetics in a few large clinics is by no means proof that it is a good thing either for the patient or for the institution. Indeed, a hospital which entrusts work of this nature and importance to a nurse assumes a grave responsibility. Justice to the patient demands that he be served with the utmost skill, not only in the mechanical administration of the anesthetic, but in the ability to cope with any emergency which may arise during the anesthesia. During wartime, in communities where so many anesthetists were called to the front that it was impossible to get physicians to take their places, it may have been expedient to permit nurses to substitute them; but this should be only a temporary, not a permanent arrangement. If a nurse finds that she is interested in this work, she should study medicine, and so become thoroughly qualified from every point of view.

348 Central Park West.

SARCOMA OF THE ROUND LIGAMENT.

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Although about 140 cases of tumors of the round ligament have been reported in the medical literature, the occurrence of malignant tumors, and especially of such of larger size is quite rare in this part of the body.

As the round ligament passes from the fundus of the uterus downward and outward through the inguinal canal and through the peritoneum to be inserted just outside of the external inguinal ring, the tumors of the round ligament may be situated either inside or outside of the peritoneum. They must, therefore, be classified according to their location as well as according to their pathologico-anatomical constituents.

I consider the classification given by Frankl as good as any. This author divides the tumors of the round ligament (according to their location) into two main groups: (1) Intraabdominal (intraperitoneal) tumors, and (2) Extraabdominal (extraperitoneal) tumors. The second heading Frankl

splits up into three subdivisions: (a) Intravaginal growths that push the posterior wall of the canal of Nuck forward, and are therefore retroperitoneal like the kidney; (b) intracanalicular growths situated between the layers of the muscles without any connection with the vaginal process of the peritoneum; and lastly (c) preinguinolabial growths situated in front of the external inguinal ring or even in the labium majus. It can easily be appreciated, however, that a tumor may at times extend beyond the limits of any one of the above mentioned locations.

In the case I wish to report here, three rather unusual features were the malignancy of the tumor, its large size, and the correct diagnosis which could be arrived at before operation.

The report of my case follows:

Mrs. F. B. J., Hosp. Rec. No. 567, 1915 (Women's clinic of the Univer. of Tuebingen), 39 years old, III-para.—The woman came to the hospital because she had noticed a lump in her right groin for the past six months. It was at first only about as large as an English walnut, but had grown rapidly in size so that when she came under observation it was as large as a grapefruit. The patient never had any pains or other troubles connected with the development of the tumor. Her menstrual history was normal.

The *general physical status* of the woman was good.

Gynecological Examination: A hard, slightly nodular, somewhat kidney-shaped tumor could be made out on the ramus horizontalis of the os pubis. It extended downward well into the right labium majus and upward for about three and a half inches. The growth could be displaced in all directions for the distance of about an inch. The skin was slightly reddened and adherent to the underlying structures at the summit of the growth, but showed no pathological changes otherwise. The basis of the tumor was apparently broadly connected to the region of the external abdominal ring. The vaginal and rectal examinations showed nothing abnormal. *Diagnosis:* Solid (malignant?) tumor of the right round ligament.

The operation performed on the following day proved we were dealing with a tumor of the round ligament situated in front of the external inguinal ring. According to Frankl's nomenclature it was therefore a preinguinolabial growth.

The tumor was very vascular but could fortunately be freed in the main, without actual cutting. The adhesions between the skin and the tumor at its summit were too dense, however, to be dissected so that a piece of the skin had to be excised along with the tumor. At the external inguinal ring the scalpel also had to be used. It could then be seen that the round ligament which was slightly thicker than an ordinary lead-pencil passed directly into the growth. The round ligament was pulled out as far as the peritoneal cone and there severed without opening the peritoneum itself. Several enlarged glands in the inguinal region and along the saphenous vein were likewise removed. The patient made a good recovery and was discharged well after ten days. She was advised to undergo a prophylactic Roentgen-ray treatment but refused it. At home the patient felt well enough at first but within about four weeks began to show symptoms of metastases in the abdomen, lungs, and cerebrum. She died eight weeks after the operation. An autopsy could not be obtained.

Macroscopical Description of the Tumor.—The tumor *in toto* was about the size of a grapefruit. It was hard, nodular, and somewhat kidney-shaped. To the summit of the growth the excised piece of skin was attached. The adhesions between it and the tumor were very dense in some places. On the opposite side of the specimen the portion of the round ligament removed with the tumor had shortened to a stump about half an inch long and almost as thick. The fibers of the ligament merged without any perceptible demarcation directly with the new growth. Transection of the specimen showed a rather tough growth with a slightly yellowish cut surface which contained some softer, marrow-like looking areas. At the lower pole of the tumor a succulent bloody area about the size of the palm of the hand could be seen. The limits of this area were not distinct but merged gradually with the surrounding tissues.

The lymph nodes which had been removed formed a small grape-like bundle of glands and fat the size of a large walnut with the individual glands about as large as small beans.

Microscopical examination showed that the main part of the tumor consisted of a myofibroma whose connective tissue had undergone hyaline degeneration in many places. The (unstriated) muscle fibers were scant. In some small areas however the myofibromatous tissue had been replaced by a dense growth of small round cells with large very dark nuclei in which mitoses were frequent and not seldom irregular. These dense cellular areas had a definite infiltrating character and destroyed muscle and connective tissue by growing directly into them. In some places actual necrosis had occurred. There could therefore be no doubt that we were dealing with a sarcoma.

There was no evidence of malignancy in the stump of the round ligament attached to the specimen although distinct sarcomatous tissue was present in the direct neighborhood of the insertion of the ligament into the tumor. The increase in volume present in the ligament was due only to a growth of the muscles and the connective tissue fibers normally present here. The individual cells were increased in size as well as in number. At the summit of the tumor where the skin had been adherent sarcomatous changes were very plain.

The inguinal glands were generally somewhat inflamed but showed no malignant changes.

We were dealing in this case therefore with a myofibroma showing definite sarcomatous changes of the small round-cell type. The clinical course of the case showed the extreme malignancy of the new growth. It will be remembered that the woman died only eight weeks after the operation, despite the fact that at the time of operation there had been no evidence of sarcoma present, either in the ligamentum rotundum or in the inguinal glands.

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See also the original articles of these authors for further bibliographic references.

616 Madison Avenue.

CLINICAL INDICATIONS FOR ENUCLEATION OF THE FAUCIAL TONSIL.

By MAXWELL QUACKENBOS, M.D., M.R.C.S. (ENG.), NEW YORK.

To recommend the routine practice of the tonsil operation upon all children when they attain a certain age as a prophylactic measure directed against rheumatic endocarditis or other infection, is an opinion based upon experimental research confirmed by protracted clinical observation.[1] Certainly the complete removal of the healthy lymph organs does no harm and the incidence of subsequent rheumatic valvular disease is nil.

Selective surgical indications must not, however, be founded upon opinion, but must have for a basis actual disease or malformation of structure, and be

established by a high percentage of cures after skilled operative interference.

The absolute indications for enucleation of the tonsil may be defined regionally. There are four local conditions that indicate enucleation: (1) New growth, (2) the tonsillotomy operation, (3) recurring acute inflammations, (4) hypertrophy associated with Eustachian or nasal obstruction. To these may be added the persistent diphtheria carrier.

Three reflex conditions warrant enucleation, particularly if upon inspection faucial hypertrophy is present: (1) Cough due to an enlarged lingual tag, (2) nocturnal enuresis in the absence of acid concentrated urine, (3) petit mal, or meningism.

The removal of the adenoids by curet is an essential part of the tonsil operation. Chronic infection of the adenoids is manifested in children or young adults by continued frontal headache (sinusitis) or by chronic conjunctivitis or iritis.

Any acquired palsy in childhood (precluding hysteria) is an indication. I believe that the excellent results of enucleation reported in poliomyelitis clearly demonstrate that in such cases the patients are suffering from postdiphtheritic paralysis.

Excellent results accompany enucleation when the child is suffering from chronic otorrhea or middle ear deafness. Personally I think enucleation is an important part of the mastoid operation of antrectomy in children.

No operation on cleft palate, in my opinion, is justified after the age of eighteen months unless the tonsils have previously been removed, their presence being one of the unmentioned causes of failure.

Follicular tonsillitis in middle-aged patients gives rise to gastritis, followed by prompt improvement when the cause is remedied by enucleation. The eradication of oral sepsis, whether it be teeth or tonsils, is too often neglected previous to gastric anastomosis.

Perhaps the most frequent indication for enucleation is cervical adenitis. Any proposed operation for excision of the glands of the neck should be preceded several weeks by the tonsil enucleation and head-fixation with a suitable splint.

There is a group of toxic symptoms resulting from chronic septic absorption from an apparently healthy-looking tonsil. "Arthritis" is an example. Joint lesions or other constitutional symptoms due to a focus in the tonsil are recognized by palpable enlargement of the upper anterior chain of the deep cervical lymph-nodes.[2] The tonsillar afferent node is situated slightly anterior to and below the angle of the jaw, between the internal jugular and the common facial veins.

Enlargement of this afferent node shows that the tonsil is not only diseased but unable to combat any superficial infection, and operative interference which does not completely remove the faucial tonsil with the lingual portion "in capsule" from its sulcus defeats the purpose of the operation. Exposure of the pharyngeal aponeurosis or, if the embedded adherent type of tonsil, removal of the fascia lining the superior constrictor muscle is necessary for strictly uniform results.

While general constitutional improvement is always noted in patients suffering from any debility complicated by enlarged afferent tonsillar nodes after enucleation, as for example tabes mesenterica, before recommending the operation as in arthritis, one should recall that several foci may be the cause of the one symptom. Two male patients upon whom I operated were relieved of their joint pains but returned after a brief interval with lumbago; prostatic massage over a period of nine weeks apparently cured the latent gonorrheal infection of both men.

Of the operations designed for the complete removal of the tonsils, the dissection method of Mr. George Waugh stands paramount.[3] This ideal technique was the first advance in the surgery of the tonsil since R. Wiseman recommended "the way of excision is by making a ligature about the basis of them and snipping them close off with a pair of crooked probed scissors."[4]

In my series of nine hundred cases by Waugh's method there has been no instance of postoperative hemorrhage, all oozing being stopped before the patient leaves the table. In seventy cases I have applied plain catgut No. 2 to the bleeding point caught by an ordinary six-inch artery forceps to achieve this end. The ligature gives a point of attachment to the coagula. My experience has been that it is rarely necessary to remove the posterior inferior turbinates.

The postoperative treatment consists of a gargle of 1 per cent. Chloramine-T, as used by Mr. Waugh, with small doses of ferric iodide, and correction of the mouth-breathing habit, if present, by exercises in the prone position.

The dangers and complications are slight. Two children developed bronchopneumonia, and two with chronic discharging ears required a mastoid operation a few days later. Five adults developed unilateral acute otitis media, and in three of them incision of the drum was required.

There were two deaths. One unfortunately from an overdose of chloroform; the other patient was operated upon for acute mastoiditis superimposed upon chronic otorrhea of many years' duration, and upon the third day showed intracranial pressure symptoms, without localizing signs; postmortem examination revealed a cerebellar abscess.

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175 West Fifty-eighth Street.

Changes in the Appearance of the "Brazil Medico."—This representative South American medical journal is greatly changed in its arrangement of material with the present year and now follows closely the plan of the great periodicals of the culture countries. The editorial department in the middle of the number suggests that of the leading English and American journals. Space formerly occupied very largely by society transactions is now devoted to other classifications. The original articles appear to be more clinical in character than in former years, when they were often confined to laboratory activities. A department of news items covers the medical activities in the provinces, and there is now an abstract department. The journal is much larger and printed on better paper than before.

MEDICAL RECORD.

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SURGICAL ASPECTS OF TUBERCULOSIS AND SYPHILIS OF THE STOMACH.

BOTH these infections may give rise to their respective specific lesions in the stomach as well as in any other of the viscera, and in most varied forms. Regarded for a long time as very rare, they are now becoming more and more frequent as they are better known and are searched for with greater care. Although highly interesting from the viewpoint of diagnosis they are not particularly so, as far as treatment, especially the surgical, is concerned.

Tuberculous lesions of the stomach are met with in the form of ulcer and pyloric stenosis, usually due to a periulcerous hypertrophy of the region. The tuberculous ulcer is very similar to ordinary round ulcer of the stomach, but has a more chronic evolution, the hyperacidity is more marked, and the lesion extends superficially rather than in depth. The latter peculiarity, combined with the special property of tuberculous lesions of engendering adhesions of the serosa, results in the fact that perforation into the peritoneal cavity rarely takes place. The prognosis is nevertheless bad; the process will not give in to medical treatment and is more prone to occur in advanced cases of the infection.

The surgical treatment—very often contraindicated on account of the miserable general condition of the patient—has usually little effect upon such extensive lesions, contrary to what takes place in simple gastric ulcer, as it cannot reach the fundamental cause of the affection. When the ulcer has not developed stenosis the only surgical treatment is resection—an operation usually too serious to be entertained in these subjects. Tuberculous stenosis is an extremely serious condition and has a worse prognosis than even cancerous stenosis. Medical treatment is perfectly useless so far as a cure is concerned, and operation should be attempted when the patient's condition offers any possible chance of success. The operation may be simply a palliative one, consisting of gasteroenterostomy, which has rarely, if ever, been successful so far as prolongation of life is concerned, the limit of one to two years being the maximum, while pylorectomy is always delicate and very serious in the circumstances. Therefore, tuberculous lesions of the stomach must be regarded as most serious from all points of view and anything like a brilliant result from surgical interference should never be expected.

Syphilitic lesions of the stomach are also represented by ulcer and pyloric stenosis in most instances, although other luetic lesions occur; but these seem to be rather uncommon. The diagnosis is often impossible when the patient does not present other evidences of syphilis, but when the true nature of the gastric process has been recognized an intensive specific treatment is naturally to be resorted to at once. Strictly speaking, there is no surgical treatment of gastric syphilis, any more than there is of luetic manifestations elsewhere. However, a certain number of operations for pyloric stenosis of this nature have been done, especially pylorectomy. It is nevertheless well to remember that many cases of pyloric stenosis may properly be subjected to specific treatment, and this line of treatment should be carried out in every case where other manifestations of the disease show themselves and the patient's condition permits delaying surgical measures for a sufficient time to obtain effects by intensive specific treatment. By so doing, one may have the good fortune of occasionally meeting with a case in which the stenosis will disappear, likewise the pyloric tumor.

THE DANGERS OF INFESTATION WITH ASCARIS LUMBRICOIDES.

THE round worm is a sufficiently frequent finding in this locality so that the great majority of practitioners are well acquainted with its appearance. Most physicians also are more or less familiar with the fact that these worms have been found in the most bizarre locations and that upon occasions they may cause trouble. What is not so well recognized is that these parasites are quite frequently the source of very serious trouble. Some little time since we took occasion to call attention to the work of Ransom, who demonstrated the method of infestation and was able to show that it was quite possible for the presence of larvæ in the lungs to set up a bronchopneumonia. More recently there has appeared a description of some of the more serious results of ascariasis and, although it is based chiefly upon cases seen in the Philippines and in Brazil, there appears no good reason why their counterparts should not be encountered in this country, though possibly less frequently.

Crowell (*Am. Jour. Med. Sci.*, 1920, clix, 380) divides the effects of infestation with the ascaris into four groups: mechanical, infection carrier, bronchopneumonia, and toxic. The mechanical effects are perhaps the most prominent and are due to a certain extent to the predilection of this worm for narrow orifices. They pass through perforations in the alimentary canal, if indeed they do not hasten the actual perforation of a weakened area, crawl into the bile and pancreatic ducts, appear in

the larynx, and lodge in the appendix and in hernias. They have been found to be so numerous in the intestine as to simulate an abdominal tumor and even to produce an intestinal obstruction. They may cause suffocation when located in the larynx. They do not appear to produce an appendicitis, but their ability to carry infection has been amply demonstrated in several cases of multiple abscesses of the liver. At least once these worms appear to have crawled through the suture line after an intestinal operation and to have determined the onset of a fatal peritonitis. The causation of bronchopneumonia by ascaris larvæ has not been shown to be very frequent in man, but it is certainly possible and such cases may not have been recognized. The toxic effects of the infestation are less readily demonstrable. A toxin has been isolated but it is not certain that it causes definite symptoms. Ascariasis has been found in association with hemorrhages of the purpuric type, but it has not been shown that there was any relation between the two.

It is quite probable that we have no very great reason to fear the ascaris as a cause of death in this locality but its powers for evil should be recognized and guarded against when it is present. For instance, a patient harboring this worm should not be subjected to any operation upon the intestines until after a thorough vermifuge treatment, provided of course that the emergency is not too great. The mere presence of the worm should probably be regarded somewhat more seriously than is at present the habit, and its elimination accomplished when possible.

THE BENIGN FORMS OF ACUTE EPIDEMIC MENINGITIS.

AMONG the meningeal states which clinically recall certain forms of acute cerebrospinal meningitis, while their cytological formula approaches them to tuberculous meningitis, a certain number seem to belong to the group of medullary infections. Their clinical etiological characters are in favor of this hypothesis, but the bacteriological proofs remain to be brought forward. These meningeal processes in children have a sudden onset and the patient's pathological antecedents are most often absolutely negative. The temperature goes up quickly to 103° or 104° F., the pulse is rapid, and the patient soon becomes prostrated. There is violent headache throughout the head, or it may be occipital. A sharp persistent pain is often noted in the cervical region. Vomiting occurs, but it is never severe or abundant. Constipation is not stubborn to treatment and can easily be controlled by enemas or purgation. These general phenomena last one or two days and dominate the clinical picture.

At this phase of the disease the diagnosis is not clear; an infectious process is self-evident, but the absence of localization and an incomplete symptomatology cause embarrassment. This state is of short duration, the symptoms become more precise, and then the second phase of the affection is reached. The little patient offers a true hyperesthesia, fearing the slightest sound or touch. Clinical examination reveals typical symptoms; the temperature oscillates around 102° F., the pulse is rapid, as it was at the onset, but it will now be found manifestly unstable; the respiration becomes irregular and the pupils are unequal, sometimes with strabismus. Stiffness of the neck is marked, and the other signs of meningeal reaction are often present, while Kernig's and Brudzinski's signs are more or less distinct. The patellar reflex is often decreased or absent. Given all these signs, the existence of a meningeal reaction is evident.

This clinical picture does not differ from that of the other meningeal reactions. By the sudden onset, the intensity of the reactions, and the rise of temperature it clinically approaches cerebrospinal meningitis, but lumbar puncture usually gives exit to fluid under high tension, while the fluid is clear and contains a large percentage of albumin. Cytologically, it is interesting. Occasionally there are some large mononuclears and polynuclears, but in the vast majority of cases there is invariably a preponderant — sometimes exclusive — lymphocytosis reading as high as 20 to 30, or more. The most minute researches have so far failed to discover any trace of bacteria and guinea-pig inoculation has been negative.

In spite of the alarming symptoms at the onset, as well as of the evident signs of meningitis and an impressive cytological formula, sedation soon takes place; the symptoms retrogress, and the child becomes playful again. Stiffness of the neck may continue for a few days, while examination of the cerebrospinal fluid proves that the meningeal reaction has not entirely disappeared, but all these progressively subside. Convalescence is rapid and recovery is complete. In most cases of benign meningitis the evolution will be as described, but exceptionally, a durable or even fatal paralysis has been known to occur.

JAPANESE HUMAN EXPERIMENTS ON THE CONTAGION OF GRIPPE.

DURING the pandemic in Japan in the winter of 1918-19 fifty-two men submitted themselves voluntarily to experiment. Some of these had recently suffered from the natural disease while the others had escaped infection. Emulsions and filtrates of sputum were injected into the nasopharynx, filtrates of the blood of infected grippe patients were also injected in the same way, and filtrates of infected blood and sputum were injected hypodermically. The subjects who had been ill with the natural disease showed immunity throughout. The others after an incubation of two or three days, developed typical influenza from both emulsion and filtrate of sputum, complaining especially of severe headache, sore throat, and myalgia. The injection of filtrate of blood into the nasopharynx gave the same positive results, while the hypodermic inoculations with both blood and sputum filtrate were likewise positive. For control purposes cultures of pneumococci and strep-

tococci and Pfeiffer's bacilli with numerous other pathogenic germs, when injected into the nasopharynx, gave results absolutely negative, apparently showing that none of these germs can cause the disease even in mixed cultures. The Japanese experiments, unlike some performed in Europe and America, show that the blood in grippe may be infectious, the contrary having been inferred among us. The products in these experiments came from 43 influenza patients. The question of infection of the blood is important for as a result of the negative experiments it had been decided that the general blood state, save in the terminal stage of fatal cases, was a toxemia and not a sepsis. According to the Japanese results it is a sepsis the cause of which must be an unknown filtrable virus.

Alimentary Anaphylaxis from Pancreatic Insufficiency.

One of the best known of the food anaphylaxes has to do with egg albumin. This type comprises various clinical forms and degrees of severity, ranging from simple diarrhea and urticaria on the one hand to grave and lethal forms of edema at the other extreme, as in angio-neurotic edema of the glottis. The part played in these cases by the digestive tube has never been entirely clear. Nathan in *Le Bulletin Médical* for January 21, 1924, xxxiv, 4, asks whether we should look upon the digestive enzymes as normally our anti-anaphylactic defense forces. If this be the case anaphylaxis would mean enzyme insufficiency and the problem would be simplified. This matter has recently been put to the experimental test by Lesné and Dreyfus. Egg albumin was first treated with pepsin and then injected into a sensibilized animal and anaphylaxis was produced as usual. Pancreatin was then substituted for pepsin and anaphylaxis was absent. Here is the simple solution of a most difficult problem. Pancreatin transforms anaphylactic to non-anaphylactic proteins. An eight-year-old boy had egg anaphylaxis to such an extent that any dish which contained egg caused abundant fetid diarrhea, urticaria and other eruptions, and for years his parents had been compelled to exert the greatest care in feeding him. The child was healthy and normal, presenting only a little meteorism, but analysis of the feces showed that pancreatic insufficiency existed, the stools containing undigested fat and muscle. Pancreatic extract was now exhibited, 40 cg. daily, and at the same time egg albumin was cautiously added to the diet. Tolerance did not, however, develop for when the pancreatic extract was intermitted anaphylaxis reappeared. An exactly similar case has been recorded by Lesné.

Malta Fever in Spain.

According to an abstract from the *Extramadura Medica* published in *La Medicina Ibera* for December 20, 1919, ix, 11, Malta fever as seen in Badajos differs somewhat from textbook accounts. It is an error to accuse only the goat, which may be the chief or sole cause in Malta, for in other countries the sheep, cow, horse, dog, and hare are known to carry the germ. The employes who handle any of these animals may carry the infection on their hands. Four forms are known—ambulatory, intermittent, undulant, and malignant. But three actual patients are mentioned by the reporter in connection with receiving serotherapy. The treatment exerted a specific control over the affection but the degree was not startling. The effects may be apparent only after some patience and the victims are apt to object to the serum injections. This abstract is followed by another from the *Archivos Españoles de Pediatria* devoted to Malta fever in children. Only the milk of infected goats is mentioned under causation along with the breast milk of infected mothers. Some authors are a little sceptical of serodiagnosis by agglutination although with the technique laid down by Finzi it would seem to be beyond cavil. The author, Aguilar Jordan, states that serums and vaccines have alike generally failed at his hands but he has not renounced them, as judging from other affections this negative result may become in time positive. In certain cases some benefit is apparent. In uncomplicated cases arsenic appears to be of service and may be added to vaccine treatment. A third remedy is adrenalin when indicated by evidences of hypoadrenia.

News of the Week.

Caduceus Post of the American Legion.—The Caduceus Post of the American Legion was formed on April 6 by an amalgamation of the Medical Department Post of New York and the Harry D. Gill Post. The great majority of the members are physicians. It is hoped to have a large post of physicians who will be able to make their influence felt in the Legion and to look out for the interests of the medical profession in general, including the Medical Corps of the Army and Navy. All physicians desiring to join the Caduceus Post, either as regular or associate members (the latter class for those who are active members of other posts) should communicate with the Secretary, Dr. Samuel Bradbury, 116 East 63d St., New York City. The following officers have been elected: *President*, Dr. Howard Fox; *First Vice-President*, Dr. Harlow Brooks; *Second Vice-President*, Dr. George E. Maurer; *Third Vice-President*, Dr. Graeme M. Hammond; *Secretary*, Dr. Samuel Bradbury; *Treasurer*, Dr. William P. Cunningham; *County Delegates*, Drs. Harlow Brooks and Chas. J. Imperatori; *Members of the Executive Committee*, Drs. Wiley E. Woodbury, Samuel Lloyd, Russell L. Cecil, and Hector J. MacNeile, and Messrs. Chas. H. Rose and Paul M. Wood.

A Phi Delta Epsilon Banquet in Boston.—A banquet and initiation of the Phi Delta Epsilon Medical Fraternity, Boston, Mass., was held at Hotel Thorndike, Saturday evening, April 10. Representatives from the New York and the Philadelphia Chapters were entertained. Sunday afternoon Chapters Rho and Alpha-Theta, of Harvard and Tufts Medical Colleges, respectively, held an interfraternity smoker at Hotel Copley Square. After a sight-seeing trip through the city the guests departed for a tour among the Western Chapters.

Shortage of Doctors in Bay State.—Dr. Walter

P. Bowers, Secretary of the Massachusetts State Board of Registration in Medicine, is given as authority for the statement that there are seventy-six towns in Massachusetts which are wholly without medical assistance. The war is largely blamed for this state of affairs.

Parker Hill Hospital Head Removed.—Surgeon-General Cummings, of the United States Public Health Service, has announced the removal of Dr. Frank A. Davis, surgeon in charge of the Parker Hill Hospital, Boston, following an investigation of the conduct of the hospital.

Hospital for Babies.—Plans for the $250,000 Anita M. Baldwin Hospital for Babies at Los Angeles, California, are complete and the construction of the first unit of fifty beds is under way. The completed hospital, which will be located near the College of Medicine of the University of Southern California, will contain 250 beds. The directors of the hospital are Dr. Alfred J. Scott, Dr. Gustav Bjorkman, Dr. R. E. Ramsey, Robert A. Anderson and Albert L. Stephens.

Richmond Hospital for Crippled Children.—The Dooley Hospital, in Richmond, Va., just completed at a cost of $65,000, which was intended for contagious diseases but which has not been used for that purpose, is to be given over temporarily to the care and treatment of crippled children until an independent and specially designed institution can be provided for them. The Orthopedic Association of Virginia is interested in making such permanent provision. The Dooley Hospital, endowed by Major James H. Dooley, forms one of the large group of buildings under the control and direction of the Medical College of Virginia.

Anesthetists to Meet.—The eighth annual meeting of the American Association of Anesthetists will be held in New Orleans April 26 and 27, under the presidency of Dr. Albert H. Miller of Providence, R. I. Dr. F. H. McMechan of Avon Lake, Ohio, is secretary.

Physicians Needed for Panama Canal Service.—The United States Civil Service Commission has announced open competitive examinations for physicians in the Panama Canal Service to be held May 5 and July 7. Both men and women are eligible. The entrance salary is $200 a month; promotion may be made to as high as $300, and to higher rates for special positions. Applicants should apply for Form 1312 to the Civil Service Commission, Washington, D. C., or to the secretary of the local United States Civil Service Board.

A "Batty" Story.—According to press reports, a physician living in San Antonio, Texas, has invented and satisfactorily demonstrated the effectiveness of a "Malarial-Eradicating-Guano-Producing Bat-Roost," which has been officially adopted by the city of San Antonio. Having observed that bats subsist chiefly on mosquitos, Dr. Campbell conceived the idea of constructing a roost for bats, to be used in mosquito infested districts. The Texas legislature has taken official cognizance of the invention and has passed a law making it a misdemeanor for anyone to kill a bat in that State. A fine of from five to ten dollars is provided for each bat destroyed. Incidentally, mention is made of the commercial value of the refuse from the bat roosts. It is estimated that five hundred thousand bats will produce about twenty tons of guano annually, which he claims could be sold for one hundred dollars per ton. The principal ingredients in bat guano are ammonia and phosphoric acid. The fertilizer produced by bats is said to be pronounced by experts second to none for productivity.

Charitable Bequests.—By the will of the late Daniel G. Carroll of New York City, the bequests of $100,000 were provided for each of the following institutions: The R. C. Orphan Asylum Society of Brooklyn; the New York Catholic Protectory at Van Nest, Bronx, and St. Vincent's Hospital, New York City. The Cancer Hospital in Cherry Street, New York City, and the Industrial Home for the Blind in Brooklyn, each received $25,000, and the Brooklyn Home for Consumptives was left $20,000.

By the will of the late Catherine A. Delk of Philadelphia bequests are made as follows: Home for Incurables, $1,000; Home for Consumptives at Chestnut Hill, $1,000.

Dr. G. Kirby Collier, formerly Assistant Medical Superintendent of the Craig Colony for Epileptics at Sonyea, N. Y., has removed his office to 525 Lake Avenue, Rochester, N. Y.

Medical Interne Needed.—The United States Civil Service Commission announces an open competitive examination for medical interne. Vacancies in Saint Elizabeths Hospital, Washington, D. C., at $1,200 a year and maintenance, and vacancies in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Appointees whose services are satisfactory may be allowed the temporary increase granted by Congress of $20 a month. The positions are tenable for one year. During the year, however, a postgraduate course in mental and neurological diagnostic methods is given, an examination is held, and promotions to the next grade, junior assistant physician, are made. Beyond this there is regular advancement for employees whose services are satisfactory. Saint Elizabeths Hospital has over 3000 patients and about 800 employees to care for. In addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed. Both men and women, if qualified, may enter this examination, but appointing officers have the legal right to specify the sex desired in requesting certification of eligibles. On account of the needs of the service papers will be rated promptly and certification made as the needs of the service require. In the absence of further notice applications for this examination will be received by the Commission at Washington, D. C., until the hour of closing business on July 1, 1920. If sufficient eligibles are obtained the receipt of applications may be closed before that date. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of the local United States Civil Service Board.

Obituary Notes.—Dr. GEORGE S. DARE of Rising Sun, Md., died March 25, at the age of seventy-six. He was graduated from Jefferson Medical College, Philadelphia, in 1866.

Dr. Nicholas C. Trout died of diabetes mellitus, at Fairfield, Pa., on March 24 at the age of fifty-five years. He was graduated from Jefferson Medical College in the class of 1896. He was a member of the Adams County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. Vallindingham Bodey of Dayton, Ohio, died March 23, at the age of fifty-five. He was graduated from Starling Medical College, Columbus, in 1895.

Dr. Samuel Doty Risly of Philadelphia, died April 1, at the age of seventy-five. He was graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1870, specializing in ophthalmology. He was a member of the American Medical Association, the Section on Ophthalmology of the College of Physicians, and of the Wills Hospital Ophthalmic Society, Philadelphia.

Dr. William Martin, Medical Inspector of the United States Navy, retired, of San Francisco, died April 1, at the age of seventy-one. He was graduated from Tulane University School of Medicine, New Orleans, La., in 1874.

Dr. Robert Elliott Clarke, at one time medical adviser to Queen Victoria, died March 27, at the Matteawan Hospital, where he had been a patient for two years. He was sixty-six years of age.

Dr. Charles Dudley Prescott of New Bedford, Mass., died March 26, at the age of seventy-five. He was graduated from Darmouth Medical School in 1867. For many years Dr. Prescott was attending physician to St. Luke's Hospital, and he was a member of the state and local medical societies.

Dr. Ovila C. Gelineau of Indian Orchard, Mass., died March 27. He was graduated from Baltimore Medical College in 1894.

Dr. Joab Stowell, Jr., of Amherst, Mass., died suddenly March 27, at the age of fifty-eight. He was graduated from the University of Minnesota Medical School, Minneapolis, in 1890. He was a member of the state and local medical societies.

Dr. Edgar C. Loehr of Noblesville, Ind., died recently following a stroke of paralysis which he had suffered several weeks previously while attending the theater in Indianapolis. He was 70 years of age, and was graduated from the Medical College of Ohio, Cincinnati, in 1871.

Dr. John T. Blank, for twenty years a practising physician at Elk City, Kansas, was instantly killed on March 30, when his car was struck by a passenger train. Dr. Blank was graduated from the Electic Medical College of Cincinnati in 1890.

Dr. George P. Cooley of New Britain, Conn., the oldest practising physician in the State, died April 3, at the age of 91. He was graduated from the Pennsylvania Medical University, Philadelphia, in 1862.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent.)

London, April 2, 1920.

Heart Disease and Its Treatment.—It does not happen often that a dissertation on medical science is given in the British House of Commons. This is, however, what happened the other day, on March 19, a bill was brought to the House to prevent the vivisection of dogs and in the discussion which ensued Capt. W. E. Elliot, a medical man who is also an M.P., told his fellow members of the results and hoped for results of experiments on animals. The speaker began by saying that it was not a bill to prevent giving pain to dogs. It was simply a pettifogging bill to obstruct as far as possible the progress of medical science. He went on to point out that owing to experiments on dogs the discovery of what heart disease really is, was well on the way and that the experiments already done were carried out on dogs under complete anesthesia, the dogs were killed before they recovered from the experiment, and these experiments would have been completely stopped by the passage of the bill which was before the House of Commons last March. According to Capt. Elliot these experiments have proved that the heart beat starts by an impulse beginning at the top of the heart and passes down in a cerain sort of current through the muscle. In heart disease the wires are faulty and the circuit is bad, in fact, disease is due to the break up of this impulse passing through the heart from the top to the bottom and that gives a direct line how to successfully treat this condition. The speaker said that all these things had been found out very largely during the past twelve months, and very largely because of the rejection of the bill by the House last March. Capt. Elliot declared that when really definite results of this kind had been obtained, the House would be taking a step of the gravest responsibility to stop such experiments, to squash the results of nine years of experiment, scrap it, and throw it into the waste-paper basket and cause another step to be made. Lastly, the speaker drew attention to the fact that the Medical Research Committee which was set up by the House of Commons published a very strong and an absolutely unanimous recommendation about the dogs' bill. They consider that the passage of the dogs' protection bill, designed to prevent experiments on dogs, would mean serious and in some instances fatal hindrance to research work.

Surgical Treatment of Gastric and Duodenal Ulcers.—While it is freely allowed that the correct, indeed, the only hopeful treatment of chronic gastric and duodenal ulcers is by operation, it must not be forgotten that several points must be decided before operative measures are undertaken and then the question arises what form of operation shall be done. Sir Berkely Moynihan and his followers point out that gastric ulcer is not nearly so common as the duodenal variety and the reason why it is so frequently operated for is because the diagnosis has been inaccurate. They state that clinical diagnosis is wholly unreliable and that the only certain way of finding out the exact situation of the ulcer, is by an exploratory operation or by the *x*-rays. Employed by an expert, the *x*-rays as means of diagnosis are quite sufficient in the great majority of cases. As for the form of operation for gastric ulcer Moynihan and his school say that partial gastrotomy is the best. They

give several reasons for this statement, perhaps the chief of which is that it precludes the occurrence of carcinoma. At a meeting of the Section of Surgery of the Royal Society of Medicine on March 3, last, a discussion of the remote effects of the surgical treatment of gastric and duodenal ulcers took place. Mr. Herbert G. Paterson opened the discussion, dealing with the remote effects of the operation of gastrojejunostomy and concluded as a result of the experience and deductions therefrom that gastrojejunostomy was not a mechanical but a physiological operation, and its action was to enable nature to counteract hyperacidity and neutralize the effects of hypersecretion. With regard to the effects of the operation on metabolism, a series of experiments showed that the operation did not appreciably diminish the proportion of nitrogen or fat absorbed from the food. Therefore we were justified in concluding, by both clinical and pathological evidence, that the operation of gastrojejunostomy did not appreciably interfere with the metabolism of the human body, and was compatible with the enjoyment of perfect health. Mr. Paterson favors the operation of gastrojejunostomy. Mr. James Sherren thought that as a rule gastrojejunostomy correctly done was quite effective but there were instances in which he employed partial gastrectomy. Malignant disease of the stomach might occur at remote periods after treatment of chronic gastric ulcer by gastrojejunostomy alone. In 3 per cent of chronic ulcers of the stomach which he had removed at operation, the naked eye diagnosis being simple and there being no evidence or suspicion of malignancy, carcinoma starting at one edge was discovered on microscopic examination. It may be pointed out that there is no standardization of operative treatment for gastric and duodenal ulcers. In Great Britain there is a general concensus of opinion among surgeons that gastrojejunostomy is the operation of choice for duodenal ulcers, but there is a wide difference of opinion with regard to its value in gastric ulcer. A considerable number of surgeons here are inclining to Moynihan's views that partial gastrectomy is the best form of operation for chronic gastric ulcer.

Dinner to Sir John MacAlister at the Connaught Rooms.—On Thursday evening, March 18, the Royal Society of Medicine which he created, gave a dinner to Sir John MacAlister, its secretary, to congratulate him on his recently conferred knighthood. Sir John MacAlister is well known, and thoroughly esteemed and appreciated by the numerous American army medical officers who when in London during the war were given the freedom of the Royal Society of Medicine and largely for whose hehalf, the Fellowship of Medicine and Post Graduate Association was founded. But there is no need for anyone to praise Sir John MacAlister to those Americans who have met him or known him and it is sufficient to say that their good feeling is thoroughly appreciated. It is an open secret that the secretary of the Royal Society of Medicine is a great admirer of American medical men and that it was a pleasure to him to meet them and to observe their keenness in all that concerned the pursuit of medical knowledge. At the dinner to Sir John there was a very large and representatvie gathering which included well-known members of every branch of the medical profession and of every town in the country. Sir Humphrey Rolleston, president of the society, was in the chair. The keynote of the meeting was struck by Sir Arbuthnot Lane who pointed to the material results of Sir John's labors. According to the audited accounts of the society in 1887 the balance of assets standing to credit was £3,040. In the last audited balance sheet the balance of assets as audited by chartered accountants stood at £75,000. But in that account the value of the society's new house was merely put down at the actual cost of site and building. Since then the lease has been extended from 80 years to 999 years. The value of this asset alone must therefore be at least £100,000. The real difference between 1887 and 1920 was over £120,000. It is no exaggeration to say that Sir John MacAlister has placed the Royal Society of Medicine in the high position it occupies at the present time. The Royal Society of Medicine came into being with the object of uniting a large number of smaller societies and thus to give more weighty expression to the medical opinion of the country. It goes without saying that the work of amalgamation was extremely difficult and one which called for the employment of a great deal of tact. Sir John MacAlister was equal to every occasion and succeeded in all his efforts. His reward has consisted in seeing the aim of his life accomplished, the Royal Society of Medicine established on a firm foundation and its work enlarged in every direction. During the war its house became the meeting place of medical men of all nations, and especially of Americans and Canadians, and as is known to the readers of these letters has been made the headquarters of the Fellowship of Medicine and Post Graduate Association. There is no doubt that Sir John's many friends in America will be delighted to learn of the well deserved honors that have been paid him and will wish him many years of good health in which to enjoy them.

The Cooperation of Sir Robert Morant and Sir George Newman.—Sir Robert Morant who died the other day and who was responsible for the working of the British insurance bill and largely responsible for the initiation and establishment of the Ministry of Health coordinated with his complimentary personality Sir George Newman, chief medical adviser of the Ministry of Health some years ago. In fact, they first met in 1907 when the then Dr. George Newman and Mr. Robert Morant were both members of the Board of Education. They had visions then of a Ministry of Health, which mainly by their exertions has come into being. Sir George Newman's appreciation of his friend and coworker in the *British Medical Journal*, March 20 last, is interesting and somewhat pathetic.

Triennial Meeting of la Société Internationale de Chirurgie in Paris.—The fifth triennial congress of the International Society of Surgery will be held in Paris instead of in Brussels, July

19 to 23, 1920. The delegates of Great Britain and Ireland to the General Committee are Sir William Macewen, C.B., Sir D'Arcy Power, R.B.E., and Mr. Paul Bush, C.M.G., C. B. E. The International Committee has drawn up the following provisional program: Cardiovascular Surgery: Surgery of the Heart, M. Tuffier, Paris; Surgery of the Great Vessels, Mr Sencert, Strasbourg; Transfusion of Blood, M. Tembraux, Montpellier; Surgery of the Heart and the Great Vessels, M. Alessandri, Rome. Surgical Radiology: The Treatment of Tumors by X-rays and Radium, M. Regaud, Paris, and Dr. U. S. Finzi, London. Surgical Hematology: Analysis of the Blood and Biological Reactions in Surgical Affections, M. M. A. Depage and Goovaerts, Brussels. Fractures of the Thigh, M. Ratel, Lyons, and Major Maurice Sinclair, Fairport; Prophylaxis and Treatment of Tetanus, M. Donati, Modena, and Mr. Cummins, London.

At the close of the congress a week's tour will be made of the battlefields in France and Flanders. The ticket for the tour is 815 francs, which includes railway and automobile transport, together with the service of guides. The meeting will be under the presidency of Professor W. W. Keen, of Philadelphia.

A Notable Work on Oto-Rhino-Laryngology.—Dr. Georges Laurens is a well-known name to medical men everywhere as an authority on diseases of the nose, ear and throat and their treatment. To those who know French his text-book dealing with oto-rhino-laryngology is familiar and is perhaps acknowledged to be in many ways the best published. It is unique in character, for it tells with the most minute and most meticulous adherence to details how to treat a large variety of nose and throat cases. It is a book indeed which describes "what to do" and "what not to do" in each particular case. It is a manual especially adapted for the use of the general practitioner and for students who do not live near large centers of population and in consequence are out of touch with specialists, whose knowledge is mainly theoretical but who are anxious to know something of the technique of this branch of medicine.

A feature of the book is its numerous illustrations and diagrams which serve to elucidate the text and to enable the practitioner to gain a very good idea of how to put the instructions laid down to practical use. The ground covered is remarkably extensive and by following the precepts of the book, the general practitioner should be able to give expert advice to those suffering from diseases or affections of nose, throat or ears, tell them when to seek the advice of a specialist and not to have always to say, "Oh, I know nothing about that branch of medicine." The book throughout is written and expressed in the clear, logical style distinctive of the French. Lauren's work has been translated recently into English by Mr. Clayton Fox, a well-known London laryngologist. The translation is really excellent. It is faithful insomuch as it succeeds in not only converting the French into good readable English, but what is more difficult by far clearly conveys the meaning of the French phraseology. It may be said that Mr. Fox has done English-speaking medical men a good turn by rendering available to them such a work as that of Laurens. The English translation is published by John Wright & Sons, Ltd., of Bristol.

CONCERNING MASSEURS AND MASSAGE.

To the Editor of the Medical Record:

Sir:—For an unsuspecting mechanotherapeutist who arrives in New York to exercise his profession there is a strange welcome in store; all the more strange if he happens to be a Swedish Medical Gymnast, coming straight from Sweden, where he has been fostered to regard himself and his profession as quite respectable. He has heard of the fifty-story buildings in this strange fantastic city of New York, and enjoys the thrill of being thrown up to quite remarkable altitudes in really most excellent elevators—in itself a mechanical treat—(ment)—only to find in the next moment that there are also depths, unsuspected abysses of humiliation at the bottom of which he begins to wonder what sort and manner of a person he might be, after all. Is it possible that he is only just emerging from a fool's paradise into hard reality, that in choosing what was considered a decent profession he lowered himself into the lowest strata of social life, with only one step to its pariahs.

Says the Cosby's Code of Ordinances of the City of New York, 1919, Chapter 14—*Licenses*:

"Article I, Sec. 1. In addition to the business, places, trades, occupations and things required to be licensed by statute or by other chapters of this code, the following must be duly licensed as herein provided, namely: Bowling Alleys, Dealers in Second-Hand Articles, Handorgans, Itinerant Musicians, Peddlers, Hawkers, and Vendors, Shooting Galleries, Street Musicians, Junk Dealers, Dirt Carts, and Masseurs."

That is the first slap in the face, but while still blushing under the humiliation that the City of New York affords the newcomer by placing him in such charming company his breath fairly fails him when he reads:

"Sec. 2. No person shall be licensed under any provision of this chapter or of Chapter III of this ordinance, except a citizen of the United States or one who has regularly declared his intention to become a citizen."

Now, sir, that is a tall order to ask a young man, at least a Swede, to swear that he intends to renounce forever all allegiance and fidelity to his king and country—*so help him God*—before he has ever had time to find a roof over his head. I put it to you that that is more than has ever been demanded of any American citizen in any other country on earth.

Why does he not stay at home, somebody suggests. Exactly, and why do not Americans stay at home? Why all this sentimentality about a League of Nations, International Brotherhood, one nation needing another, the blind helping the lame, the Americans doing dentistry for the Arabs; the Danes pastry for the Americans?

American citizens may actually have requested him to come here to assist them. He had still the choice of staying at home. Maybe! One thing is

certain; if he be a Swedish Medical Gymnast, seeing what he has been led into there will appear to him no choice at all but to go back. But there is the ocean and even if he has the means and the chance of obtaining a berth, maybe he has a strong aversion for sea voyages. So he is more or less compelled to stay and face the music. Cheerfully.

And, if he be married, just hear him cautioning his wife and children: "Great country this; plenty of money over here, at least so they say. Haven't seen any as yet. But, as for social position, the country is so tremendous that you will only rank somewhere between a peddler and a dirt-cart."

Once in Cairo I happened to mention to an American diplomat of the arrival at Alexandria of Count Hamilton, the scion of one of the oldest families in Sweden, officer in one of the king's crack regiments and a medical gymnast.

"Good Heavens!" exclaimed this shocked democrat. "You don't want to be massaged by a count; he must be badly down on his heels to have taken up such a profession." "Not more," I ventured to say, "than Baron Cederström, who married Patti." "But he was an aviator." "Yes, but first and last a medical gymnast."

I do not suggest that masseurs should be titled. On the contrary, I sincerely believe that the institution which has brought so many of our Swedish officers into the profession—the Royal Central Institute of Gymnastics, in Stockholm—no longer possesses its *raison d'être*. True, it has given to the profession a number of well-bred, socially well versed representative young fellows who, commandeered to the institute for military purposes have availed themselves of its medical course, and who later naturally enough have given in to the temptation of the more interesting field of therapeutics, and while remaining in the reserve of the army, have gone abroad as medical gymnasts.

But the combination of medical and pedagogical gymnastics must needs be considered a disadvantage to both, from the point of view of practical science. No, I do not suggest that masseurs should be titled or that the fact that so many Swedish masseurs are titled has in any way added to the efficiency of the Swedish School of Massage. Aristocracy has to-day, by far, not the same high rate of exchange in Europe as evidently it has on this side. But, for that very reason—speaking of the social status of the masseur in this country, I have mentioned these names merely to give a stronger relief to the absurdities with which this article concerns itself.

Let us return to them! The greatest of them all is the Food Handlers' Card.

To obtain a license as a massage operator the newcomer must produce a food handlers' card—that is, a card upon which a medical man states that the applicant is free from consumption, syphilis, and objectionable skin diseases in general; is of suitable height and weight, in short, is fit to handle—meat, and this is where the thing becomes positively funny. Evidently, the good New Yorkers are considered by the municipal authorities as so many fillets of beef, and nothing more. But better not laugh too soon. The matter is exceedingly grave. The applicant must produce affidavits from five citizens, duly attested by a notary public, stating that he is to them known as an honest individual. Which, of course, the police officer before whom he has to pass finds absolutely incredible. Can any honest man be a masseur? With these affidavits in front of him, the Mighty One will look at his prey searchingly and thus interrogate: "Ever been in prison?" "No." Ever been convicted of crime?" "No." And then, leaning forward, and with a look that could make any honest youth feel like a criminal: "Sure you have never committed a crime?" And when the answer is still in the negative, he is evidently disappointed.

And, if after weeks of waiting, the applicant obtains a license he is at the absolute command of the police—a chartered libertine. Ah, but there is a reason for all that, I am told. No, there is no reason. It is unreasonable! It is unpardonably clumsy—"groft," to use a Swedish word. The fact that in this country crimes and indecencies have been, and are possibly still, committed under cover of "massage," constitutes no reason for discrediting so important a factor of healing as massage, or its duly qualified operators as a class.

The fact that in Ancient Greece the physician was a beggar who largely relied on charity for a living does not necessarily entitle even a Greek to look upon an American physician of to-day as a mendicant. Not even the fact that in this city of New York members of the medical profession are caught performing illegal operations makes it a valid reason for anyone to denounce that profession as disreputable. Black sheep *will* crop up in every camp, and I guess the massage fraud is the clumsiest and easiest to detect. And so there are deplorable exceptions also among Swedish masseurs and masseuses, but on the whole, and as a class, the medical gymnasts, as representing the Swedish school of mechanotherapy, have brought home to the world the importance and the undeniable value of massage and have kept aloof from the mire and filth which they found within their profession abroad.

This is, I think, freely admitted by the medical profession of most countries to-day.

If, then, medical men in this country realize and appreciate the value of massage as a factor of healing, and masseurs as a necessary auxiliary in their work, why is it that they on the whole seem so indifferent as to what really happens to both massage and masseurs? Why is it that while tolerating the mysterious development of a Turkish bath attendant into a "masseur," they permit the properly qualified men to be exposed to the humiliating indignities of a nonsensical law?

And why is it that certain mechanotherapeutists not only are exempt from that law, but even suffered to style themselves "doctors"—merely because they camouflage their manipulations with strange and resounding names. (Only this morning I received from a school of "chiropractice" an offer to turn me into a "doctor" in far less time than it took me to graduate as a medical gymnast. "A wonderful future" I am promised. No doubt!)

Surely the Academy of Medicine, or some such body, could bring some kind of cosmos into this chaotic state of affairs.

FRITHIOF NORBERG.

682 LEXINGTON AVENUE.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 1, 1920, clxxxii, 14.

1. Osler as a Bibliophile. Edward C. Streeter.
2. Osler as His Students Knew Him. Joseph H. Pratt.
3. Osler in the Early Days at the Johns Hopkins Hospital. W. T. Councilman.
4. Renal Function in Vascular Hypertension. James P. O'Hare.

4. Renal Function in Vascular Hypertension.—James P. O'Hare emphasizes the importance of differentiating vascular hypertension from chronic nephritis. He considers it so easy that no one should be excused for error except in the rare borderline case. The vascular hypertension patient can be recognized clinically by his characteristic healthy appearance, by his lack of pure renal symptoms, and by routine physical and laboratory examinations. He can be recognized more surely and more readily by the tests of renal function. Twenty-five cases of vascular hypertension are tabulated to show how readily the functional tests in common use establish the diagnosis. The uranalysis is included because in these cases it resembles closely that of the patient with nephritis, and yet it may show certain elements which would lead one to suspect the true diagnosis. The writer summarizes the table of cases by stating that in vascular hypertension the specific gravity of the urine shows no loss of power of concentration, as in chronic nephritis; albumin and casts appear in the same quantities in both diseases; the functional tests show but little renal impairment; a markedly increased night volume of urine indicates a possible renal death.

New York Medical Journal.

April 3, 1920, cxi, 14.

1. A Study of the Effects of Alcohol from a New Angle. Charles S. Potts.
2. Alcohol a Nerve Stimulator. William Henry Porter.
3. Some Chemical Aspects of the Wood Alcohol Problem. Charles Baskerville.
4. The Lesions in Wood Alcohol Poisoning. Charles Norris.
5. Wood Alcohol and the Eyes. Colman W. Cutler.
6. Wood Alcohol Poisoning. Alexander Comora.
7. Narcotic Drugs and State Legislation. A. D. Greenfield.
8. The Management of Empyema. Alexius McGlannan.

7. Narcotic Drugs and State Legislation.—A. D. Greenfield, discussing the problem of alcohol from the legal point of view, holds that in order to determine what is needed in State legislation relative to narcotic drugs it is necessary to consider, first, the facts with regard to the use and abuse of these drugs, and, second, the scope and effect of Federal legislation. The general nature of the legislation demanded will naturally depend on a determination of the conditions requiring remedy; and the particular scope and purpose of State legislation will depend on how far and how effectively these conditions are already dealt with by the Federal law. Every State law should contain a provision calculated to prevent the abuse of the physician's privilege. Such provision should be drawn with the greatest care not to interfere with medical treatment of cases other than drug addiction. The simplest way of covering this point is by forbidding physicians to prescribe or dispense these drugs except when required in the *bona fide* treatment of a disease or condition other than drug addiction, permitting personal administration, however, in any case. To forbid personal administration would interfere with legitimate institutional treatment of addicts by the reduction method. The practical effect of such a law as this, if adopted by all States and strictly enforced, would be to force addicts to be cured; and as a corollary to it the States or municipalities ought to make provision for institutional treatment of their addicts. With respect to many features that would be proper subjects for State legislation, uniformity would be most desirable; in others it probably would not be necessary or practicable. The judicious drafting of proposed legislation which would be suitable for adoption by all the States could best be accomplished, the writer believes, by a committee, whose labors should be based on a careful study of all existing State legislation on the subject.

Journal of the American Medical Association.

April 3, 1920, lxxii, 14.

1. Basal Metabolism Determinations in General Internal Diagnosis: Clinical Application, with Illustrative Cases. G. W. McCaskey.
2. The Treatment of Bronchial Asthma. Mark J. Gottlieb.
3. Nutritional Edema and "War Dropsy." Maria B. Mayer.
4. The Cause of Abscess of the Lung after Tonsillectomy. Logan Clendening.
5. Hand and Foot Prints as Records in Lesions of the Peripheral Nerves. Lewis J. Pollock.
6. The Thézac-Porsmeur Method of Sun Treatment. Robert W. Lovett.
7. The Treatment of Injuries to Athletes. Harry Eaton Stewart.

1. Basal Metabolism Determinations in General Internal Diagnosis.—G. W. McCaskey holds that the routine determinations of basal metabolism are applicable to the following groups of cases: 1. In all cases of definite goiter, and especially if associated with health disturbances, to ascertain the degree, if any, of its toxicity. 2. In a large group of cases, either with or without goiter, with symptoms resembling, either closely or remotely, those of thyrotoxicosis. He considers that the procedure has passed the experimental stage and he has given it a place in his diagnostic armamentarium along with the roentgen ray, the electrocardiograph, serology, calorimetry, clinical chemistry, etc., to be used as occasion requires. While its precise limitations and scope will, of course, be more clearly defined with larger experience, and especially with a fuller knowledge of the endocrinopathies, the attainment of which will be greatly stimulated by its use, the information which it gives in certain cases appears to be indispensable in the writer's experience, and cannot be otherwise accurately obtained. He reports in detail the histories of eight patients.

6. The Thézac-Porsmeur Method of Sun Treatment.—Robert L. Lovett reports a series of twelve cases of chronic suppuration in the orthopedic service of the Children's Hospital, Boston, which were treated by heliotherapy applied by means of a double convex lens with a diameter of twelve inches and a focal length of seventy-two inches. At the focal point, of course, the heat is very great, as it would be in any lens used as a burning glass, and in general the patient should be placed at a point where the sun's rays form a circle of from three to five inches in diameter. As the patient is moved farther away from the lens the heat increases, and as the patient is moved nearer to the lens the heat diminishes. The degree of activity to which it is desirable to submit the wound can be regulated by carrying the lens nearer the patient or farther away. The duration of the treatment should lengthen progressively. The first treatment should last for five minutes, increasing at the rate of five minutes a day up to thirty minutes. The effect of the treatment on suppurating wounds was perfectly definite: 1. The discharge immediately increased and then diminished; 2. pale granulations took on a healthier color, and 3, sensitiveness diminished. The cases treated were selected because of the severity of the suppurating wounds. The value of the treatment would seem to have been demonstrated in cases of chronic suppuration from tuberculosis, syphilis, and chronic osteomyelitis.

The Lancet.

March 13, 1920, cxcviii, 11.

1. Hunterian Lecture on the Surgical Aspect of Dysentery. Zachary Cope.
2. Pleural Effusion: Its Cytology and the Results of Paracentesis. D. S. Page.
3. The Periodicity of Influenza. B. E. Spear.
4. A Note on the Use of Univalent Serum in the Treatment of Cerebrospinal Fever. Stanley Banks.
5. Notes on the Aetiology of Effort Syndrome. R. Gordon Barlow.
6. The Use of Autogenous Bone Grafts in the Treatment of Certain Simple Fractures of Bone. Basil Hughes.
7. Some Thoughts on the Arbitration. H. B. Brackenbury.
8. Military Hygiene in Olden Time. Sir John Goodwin.

1. Surgical Aspect of Dysentery.—Zachary Cope states that surgical complications are not common in dysentery; yet when the disease is very prevalent many occasions arise calling for the opinion of the surgeon, and not infrequently needing his operative interference. The surgeon may meet with dysentery in three ways:

1. Dysentery may develop as a complication of surgical conditions; 2. various surgical conditions may be simulated by dysentery; 3. complications needing the surgeon may arise in the course of dysentery. The surgical complications of dysentery may be classified as those due to local processes in the intestine; those following on the remote effects of the organism or its toxines; associated surgical conditions. Under the first category are included: 1. Perforation of colon causing general peritonitis, pericolitis, or pericolic abscess. 2. Acute edematous localized colitis—for example, typhlitis. 3. Dysenteric appendicitis. 4. Extensive sloughing, the colon pus sac. 5. Cicatrization and stricture of the colon or rectum. 6. Perinephric abscess. 7. Periproctitis. The associated lesions are parotitis, boils and abscesses, thrombosis (gangrene of foot, pseudo-elephantiasis of leg).

British Medical Journal.

March 13, 1920, i, 3089.

1. An Address on War Lessons for Radiology. C. Thurstan Holland.
2. An Address on Some Points in Connexion with Renal Disease. Charles R. Box.
3. The Life-History of the First Case of Myxoedema Treated by Thyroid Extract. Professor George R. Murray.
4. The Use of Antistreptococcic Serum in Quinsy. Noel C. Forsyth.
5. Three Cases of Acute Perforation of Duodenal Ulcer: Laparotomy: Recovery. E. Huntley.
6. Papilliferous Carcinoma of the Thyroid Gland. Basil Hughes.

3. The Life-History of the First Case of Myxoedema Treated by Thyroid Effect.—Professor George R. Murray reviews the history of the first case of myxedema successfully treated by thyroid extract, the results obtained in this case not only affording definite proof that the thyroid gland produced an internal secretion, but showed that the thyroid insufficiency of myxedema in man could be made good by maintaining an adequate supply of thyroidal hormones from an external source. He recalls the publication of the report, in 1888, of the special committee which was appointed by the Clinical Society (London) in 1883 to investigate the relation of myxedema and allied conditions to the thyroid gland. The experimental work of Sir Victor Horsley, which was undertaken at the request of this committee, first proved that myxedema, and cachexia strumipriva were due to loss of function of the thyroid gland. Although at that time it had not been proved that this function was to provide an internal secretion, he suggested that grafting a portion of healthy thyroid gland would be a rational method of treating these maladies. The striking improvement which followed the adoption of this suggestion in the case of Bettencourt and Serrano led Murray to suggest and carry out the treatment of myxedema by thyroid extract in the case whose life history he now records as an example of the value of observation of individual cases over long periods of time in the elucidation of certain problems in medicine. This patient, a woman of forty-six when the treatment was begun, in 1891, lived until early in 1919, when she died at the age of seventy-four. By the regular and continued use of thyroid extract she was enabled to live in good health for over twenty-eight years after she had reached an advanced stage of myxedema. During this period she consumed over nine quarts of liquid thyroid extract or its equivalent, prepared from the thyroid glands of more than 870 sheep.

4. The Use of Antistreptococcic Serum in Quinsy.—Noel C. Forsyth reports a series of ten cases of quinsy in which the following routine was adopted: Serum (10 c.c. was injected at once; if there was any doubt of diphtheria, 2000 units of antidiphtherial serum were added. The injection was made in the thigh, hypodermically. The usual initial purge was given, and thymol, carbolic lotion, and hydrogen peroxide were used for washing out and swabbing the mouth and throat. The most definite result obtained with this treatment was the relief of pain, which was appreciably relieved in from six to twelve hours. The more or less acute pain when swallowing was eased some hours after that, but within a definite time before the abscess ruptured. In no case was incision of the abscess required by reason of the severity of the symptoms, and in all but one case pus was discharging from the abscess on the fourth day of the illness, and in this one on the fifth day. A polyvalent antistreptococcic serum was used.

Hygiea.

January 31, 1920, lxxxii, 2.

Diagnosis of Basedow's Disease.—Troell first refers to the conventional triad of symptoms—struma, tachycardia, and exophthalmus. He next enumerates other evidences which are due presumably to the disturbance of thyroid activity, as emaciation in the presence of normal appetite and the neuropathic symptoms, notably those of motor activity, which may be numerous and varied. He quotes extensively from the writings of Goetsch of Johns Hopkins, who makes use of provocative adrenalin injections in diagnosis. This method he has tested on his own material. In one patient in whom the disease has existed for many years the injection of adrenalin raised the pulse frequency from 106 to 130 and the blood pressure from 145 to 175. Hemistrumectomy was then performed, after which the increases were as follows: pulse 80 to 88, blood pressure 130 to 135. In another case with severe type of disease, but relatively low pulse and blood pressure, the provocative injection caused an increase of pulse from 98 to 128 and of blood pressure from 145 to 228. But after ligation and subsequent strumectomy the adrenalin test was no less positive than before, although patient had rapidly improved and had gained 17 kilograms. The results in general do not appear to show any definite necessary relationship between adrenalin hypersensitiveness and the degree of severity of Graves' disease.

Lumbar Puncture in Wood Alcohol Blindness.—Zethelius mentions the negative results of diaphoresis and potassium iodide in the prevention of blindness during acute methyl alcohol poisoning and states that in three cases treated by himself with lumbar puncture he obtained one good and one fair result. One patient, a syphilitic and alcoholic, drank 50 to 60 c.c. of wood alcohol without apparent ill effect, and for several days be continued to consume this substance. On the fourth day abdominal pain set in, with failure of vision. The Wassermann of the blood and spinal fluid was negative, but the puncture showed that the fluid was under pressure with a positive Nonne. He improved under the puncture and this was repeated several times, with the end result that his vision was left but little impaired—slight retraction of temporal visual field of the right eye.

Le Progrès Médical.

February 28, 1920, xlviii, 9.

Aliments.—Loeper in a lecture on this subject brings out numerous points of interest. One of the most necessary constituents of the body—sodium chloride—can be a menace in disease of the kidney. Despite this drawback it has been termed the "money of exchange" of the organism. But 1.5 daily gms. are necessary, yet many men take in ten-fold that quantity, which is mostly waste, going off by the kidneys. We need potassium badly, but only about 45 cgs. daily. We need calcium, but it absorbs poorly. If we take 1.5 gms. as our daily requirement, only half is absorbed into the tissues, the balance escaping by both urine and feces. The child needs much more in proportion and so can absorb more. We need to ingest phosphorus to the tune of 3.6 gms. of phosphoric acid daily, but at least 2 gms. of this is excess which will go off by the kidneys. Iron in anemia wastes away by the intestine and can be recovered from the villi. The nervous system needs magnesium, the muscles potassium, the tendons sodium, etc., etc. The child utilizes milk much more completely than the adult, and this includes the calcium content. In health cooked foods seem more digestible, but in certain illnesses this rule does not apply, and raw milk, for example, is more nutritious than cooked milk. The utility of raw eggs, raw beef juice, raw fruit juices, in certain ailments is well known, and this leads us naturally to enzymes and vitamines, which products are largely destroyed by cooking and other methods of preparation.

Book Reviews.

La Diatermia como Medio de Tratamiento de los Procesos Ulcerativos de Aparato Digestivo. By Dr. Santiago Carro, Profesor de Vias Digestivas del Instituto Rubio, etc. Madrid: Sucesor de Enrique Teodoro, 1919.

This small pamphlet of thirty pages comprises an account of eight cases of miscellaneous gastric disorders treated with diathermia. Each case is accompanied by chemical analyses and blood counts and in each the diagnosis of ulcer was made, presumably ulcer of very limited extent, the management being largely of the prophylactic type and suitable for suspicion or presumption of ulcer. The theory is that elevation of the temperature of the stomach to 45° C. or thereabout will notably facilitate cicatrization. If there is a tendency to hematemesis the treatment is distinctly contraindicated because of the liability of the current to cause hyperemia.

La Tension Artérielle en Clinique; Sa Mesure, sa Valeur Séméiologique. Par le Docteur L. Gallavardin, Médecin des Hôpitaux de Lyon. Second edition. Paris: Masson et Cie, 1920.

Although the full significance of blood pressure changes is by no means as yet accurately determined, there is nevertheless no question of the value of its indications and the promise its study holds out in the way of diagnosis and especially prognosis. Already, indeed, it has been said that what thermometry is to the diagnosis and prognosis of acute diseases that is sphygmomanometry in chronic diseases.

The first part of this book is devoted to a description of the various forms of apparatus employed in the estimation of systolic and diastolic pressures and their use, but the larger part deals with the clinical and therapeutic study of arterial tension. This part of the work is admirably done, the author being an expert in this branch and speaking with the authority of one with wide experience. The book will repay study by anyone who can read French understandingly, for he will thereby approach the subject from a different angle and will learn the methods and viewpoints of the foreigner, which are not always the same as his own.

The Surgical Clinics of Chicago. Vol. III, No. 3. June, 1919. Pp. 348 with 118 illustrations. Philadelphia and London: W. B. Saunders Co., 1919.

This issue not only contains more than the average number of pages, but the material itself embraces a wide and interesting field, so that not only the general practitioner and occasional operator, but the expert surgeon as well will find much that is well worth reading. Among the most interesting clinics and lectures are: Moodie's article on ancient skull lesions and trephining in prehistoric times; and clinics by Davis on cysts of the urachus, by O'Neill on persistent patent omphalomesenteric duct, by Lounsbury on cases of plastic repair of the heel, by Lespinasse on sterility, by E. L. Moorhead on strictures of the esophagus, by Halstead on diverticula of the esophagus, by Meyer and Moncreiff on volvulus, and Bevan's case of obstruction of the common bile duct.

Anesthésie à la Stovaïne en Chirurgie et en Médecine Vétérinaire. Anesthésie Régionale. Anesthésie Locale. Par Gustave Perol, Médecin-Vétérinaire, Officier du Mérite Agricole, Lauréat de la Société Centrale de Médecine Vétérinaire, etc. Paris: Masson et Cie., 1919.

This small brochure contains 32 pages of text and 6 photographic plates comprising a total of 8 figures. The subject matter is extremely simple—the blocking of the nerves of the four extremities by conduction anesthesia with stovaine solutions. The aim of the author is to call attention to the possibility of regional as opposed to general anesthesia. In addition to the therapeutic possibilities this anesthesia is of value for diagnosis and the same injection may answer for both ends. Local anesthesia receives a short mention, but the text and plates deal chiefly with blocking. For this purpose the author originally used only cocaine but was led later to experiment with the less toxic drugs, and stovaine proved to be the most satisfactory for nerve trunk analgesia.

The Peritoneum. By Arthur E. Hertzler, M.D., F.A.C.S., Surgeon to the Halstead Hospital, Halstead, Kan.; Associate Professor of Surgery, University of Kansas; formerly Professor of Pathology, Experimental Surgery and Gynecology, University Medical College, Kansas City, Mo. Two volumes. Vol. I, Structure and Function in Relation to the Principles of Abdominal Surgery. A contribution from the laboratory of the Halstead Hospital and from the Department of Anatomy of the University of Illinois. Vol. II, Diseases and Their Treatment. St. Louis: C. V. Mosby Co., 1919.

The first volume of this work is devoted to a consideration of the structure and function of the peritoneum in relation to the principles of abdominal surgery. The physiology, histology, development and gross anatomy of the peritoneum occupy about three-fifths of the volume, the remainder covering wound healing, various problems regarding peritoneal adhesions, changes in circulation, pericolic and other membranes, and the inflammatory reaction of the peritoneum. The latter half of the book is particularly rich in material of special interest to the operating surgeon. The futility of using olive oil and other such agents for the prevention of adhesions, and the need for being careful to avoid unnecessary abrading of peritoneal surfaces, are pointed out, also the need for care in making incisions so that peritoneum will be available for the covering of raw surfaces made by dissection or resection of tissues or organs. All these subjects are very well covered; but for the benefit of both students and surgeons, the majority of whom are less well versed in embryology than the author, we would suggest that in the next edition, before discussing in detail the development and gross anatomy of the peritoneum, a chapter be inserted covering these subjects in a concise but clear way, in narrative style and with the least possible digression to take up technical points, so that the anatomic puzzle which the peritoneum presents to the non-expert may be elucidated in a general way and the main facts may not be lost sight of in a maze of detail. The reader will then be better able to follow the text, with its mass of detail, as it now stands, and appreciate the elucidation of the more complex problems of special regions as well as those of the peritoneum as a whole.

The second volume is devoted to the discussion of diseases of the peritoneum and their treatment, and is divided into two parts. Part I is concerned with a very exhaustive discussion of the classification, etiology, pathogenesis, symptomatology, diagnosis, prognosis and cause of death in peritonitis, the treatment of acute peritonitis, and a chapter on operations on the peritoneum. Part II takes up the discussion of peritonitis as found in appendicitis and cholecystitis, also various types of peritonitis such as gonococcic, pneumococcic, puerperal, traumatic, fetal and tuberculous. Finally there are chapters on thrombosis and embolism of the mesenteric vessels, diseases and injuries of the great omentum, and tumors of the peritoneum, this last appealing to the reviewer as giving a remarkably interesting and instructive presentation of that phase of the subject.

Throughout the work, and in the second volume particularly, the relation of the matter under discussion to clinical surgery is kept well to the fore. The author seems somewhat timid at times in his suggestions regarding operative technique, as, for example, in his advice regarding drainage rather than removal of the gall bladder in certain cases; but without doubt the conservative methods suggested are generally advisable except in the hands of the expert surgeon.

In general we would say that this is an excellent work which everywhere shows evidence of painstaking personal research as well as a very comprehensive grasp of the literature. The illustrations are excellent, but the value of many of them would be enhanced by a little elaboration of the underlying legends; while in some, especially those copied from other works, as on page 85, the letters indicating portions of the illustration are not translated in the legend at all. There are many typographical errors, but generally the meaning is clear, one of the exceptions perhaps being in the word "present," line 9, page 740, where *prevent* would seem to be intended. These books will well repay reading and will grace any surgeon's library.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

SECTION ON MEDICINE.

Third Day—Thursday, March 25.

SYMPOSIUM ON GASTROINTESTINAL DISEASE.

Practical Clinical Laboratory Diagnosis in Gastrointestinal Disease.—Dr. HOWARD F. SHATTUCK and Dr. JOHN A. KILLIAN of New York, presented this paper (by invitation), read by Dr. Killian. The importance of some of the new methods of examination, particularly the *x*-ray, had lessened the use of chemical examinations or rendered the consideration of them less important. Yet an intelligent study of the findings was of value as they often yielded findings in some clinical problems where every bit of evidence was needed. In a series of examinations made at the Post-Graduate Hospital the authors were impressed by the high free hydrochloric acid in cases of gastric ulcer as compared with duodenal ulcer. The average percentage of free hydrochloric acid was under 0.50 in cases of duodenal ulcers. The free hydrochloric acid ranged from 0.53 to 0.80 per cent. in cases of gastric ulcer. In carcinoma of the stomach the average percentage of the free hydrochloric acid was very much under 0.50, reaching that figure in only one instance. A large group of miscellaneous conditions yielded results in which the total percentage of free hydrochloric acid was under 0.50. A second interesting point was the association of hydrochloric acid and lactic acid in cases without retention. It was common to find lactic acid in the gastric contents with retention, and rarely was lactic acid present without retention. In regard to the value of the Wolff-Junghans test: Smithies had reported that next to the Boas-Oppler bacillus a positive Wolff test was the most frequent finding in gastric cancer. This test was present in 80 per cent. of the cases; lactic acid was present in 75 per cent.; the Boas-Oppler bacillus was present in 90 per cent. Of their cancer cases 80 per cent. gave a positive or suspicious Wolff test. The test had been of value in distinguishing the malignant from the benign achylias. Their records of gastric cases had brought out the great value of gastric analysis in the diagnosis of true achylias from psychic achylias. In none of the cases of true achylia gastrica or pernicious anemia were they able to demonstrate the presence of any free hydrochloric acid at any time in the digestive cycle. There were cases that appeared to be true cases that showed when examined that they were spurious or psychic achylias. Undoubtedly functional or psychic factors were present. In these cases improvement was obtained by hydrochloric acid. As regarded enzyme activity of the duodenal contents: Einhorn had shown the value of this procedure in pancreatitis. It gave us qualitative rather than quantitative results. The duodenal contents were obtained by any of the duodenal tubes after test meals and removed at intervals. In 31 cases in which there were two of pancreatic involvement the pancreatic enzymes were present except in the cases of pancreatitis in which the protease was absent and the lipase present in small amount. What they wished to bring out from the data they had obtained was the proportion of the total acidity that was in the form of free hydrochloric acid. In a series of normal cases they found that the free hydrochloric acid formed about 40 per cent. of the total acid in the Ewald meal and about 30 per cent. in the retention meal. It was always less than 50. In a series of cases of gastric ulcer they were impressed with the fact that the total acidity was never very high. In only two cases was there marked hyperacidity. But the constant feature of these gastric ulcers was that the proportion of the free acid to the total was always greater than 50 per cent. and in most cases it approached close to 75 per cent. In gastric carcinoma the free hydrochloric acid ranged from zero up to 40, and in the retention meal it ranged from zero up to 20. Now in these cases of gastric carcinoma it would be observed that there was free hydrochloric acid. Some of the cases gave a high percentage of free hydrochloric acid in which there was an ulcer degenerating into carcinoma. So far as examination of the feces is concerned there are two factors; one is the diastase activity of the stool and the other is the presence of occult blood. In the diastase we have found the normal activity of the stool varies from 25 to 30 per cent. When stools are incubated with starch 30 per cent. of the starch will be converted into sugar. In diseases of the pancreas the diastase activity of the blood is increased, whereas the diastase activity of the stool is either absent or very much decreased. With regard to the presence of occult blood in stools, we have during the past year employed various reagents. We have found the most reliable agent to be benzidin. We formerly procured this product as a grayish powder, but we have procured a product (made by Dr. Fine) which is absolutely white and when dissolved in glacial acetic acid it makes a five per cent. solution and when to this the fecal contents are added we get a definite reaction of greenish blue or deep blue of which there can be no doubt.

Dr. SEYMOUR BASH of New York said he was interested in the presentation of the degree of free acid both in the gastric ulcer, postpyloric ulcer ,and duodenal ulcer, and he thought it was a matter which ought to be either substantiated or thrown out. He thought the question of hypersecretion should have been mentioned, which was important to find out both in the fasting stomach and in the test meal. It was his experience that there was less hypersecretion in genuine organic ulcers than in extraneous diseases such as appendicitis, cholecystitis, and others, especially in the neuroses. He thought the cause of that was vague excitability.

Dr. SOBEL of Rochester said that in cases of ulcer of the stomach or duodenum in which free hydrochloric acid was found, it had never been his experience to find lactic acid. He understood that the authors referred to cases that were undergoing change due to cancerous conditions. The presence of lactic acid meant stagnation fermentation ,and it had always been his belief that free hydrochloric precluded the possibility of lactic acid. He would like to say that it was a matter of great pleasure in these days, when the *x*-ray had been so enthusiastically received in the diagnosis of gastrointestinal diseases, to learn that the chemical examination of the gastric contents had not been entirely abandoned.

Practical Clinical Examination of the Upper Gastrointestinal Tract.—Dr. ALLEN A. JONES of Buffalo read this paper. He presented a tabulation of diseases most commonly encountered. (1) Gastric and duodenal ulcer: symptoms—pain was one of the most important manifestations of ulcer. Many times in young women the first symptom was hematemesis. He had noticed pain to be more frequent in men than in women, it was relieved by digestion. It supervened sooner after eating in gastric than in duodenal ulcer. If the ulcer was located far back postprandial pain occurred; the pain was intermittent in those cases with peristalsis. Typical hunger pain was strongly indicative of duodenal ulcer. It was a misery variously felt as a gnawing. The pain of gastric and duodenal ulcers was temporarily relieved by alkalies. Pain simulating hunger pain might arise from extragastric conditions. Vomiting or lavage relieved the pain of ulcer but not the pain from extragastric conditions. In perforation the pain was excruciating and prostrating and was accompanied by increased frequency of the pulse and muscular rigidity; a leucocytosis was found soon after perforation occurred. Pain in the back at or near the tenth dorsal vertebra was an important symptom, as it indicated ulcer on the posterior wall of the stomach. Tenderness due to ulcer was usually present in some part of the epigastric region. A full stomach gave rise to tenderness. Vomiting was not common in ulcer unless stenosis existed. Hematemesis was one of the classical symptoms of ulcer. In some cases of ulcer with hyperesthesia vomiting was present. Fever might be present if there was suppurative peritonitis. Cholecystitis and cholelithiasis: the most important symptoms were irregular temperature and pain and tenderness in the region of the gallbladder. Suppurative cholecystitis might be sus-

pected if there was a decided leucocytosis. If cholangitis accompanied the cholecystitis there was evidence of some degree of jaundice. If rupture occurred there was tenderness over the liver, rising pulse, and shock. The symptoms of cholelithiasis often gave rise to confusion. Indeed, this affection many times was painless and the symptoms might be gastric. Some sensory gastric disturbances might be present, tenderness over the liver was a varying factor, it might be elicited only on pressure or by Murphy's hammer stroke over the liver. Pyloric spasm, turbid bile withdrawn through Einhorn's tube, a trace of bile in the urine, was not infrequently found in gallbladder disease. Gastritis and achylia gastrica: Acute gastritis with its distress after eating should be remembered as a cause of sudden pain in the upper abdomen. The immediate response to lavage and rest and starving gave the diagnosis. Chronic gastritis was caused by bacterial invasion. When the mucous membrane was involved, there was nothing to prevent the growth of the microorganisms, and the condition was prolonged. Microscopically an abnormal number of leucocytes was found. The food is poorly digested as shown by examination of the stools. Duodenitis: Streptococci and colon bacilli were found in the duodenal contents. Catarrhal jaundice had long been considered infectious in nature. The presence of jaundice which gradually deepened without pain was indicative of an inflammatory state of the upper part of the digestive tract. There was stasis of the duodenal contents. how far the pancreatic duct and the pancreas might be involved was difficult to estimate. That infection might extend upward into the liver must not be forgotten. Carcinoma of the stomach: A tumor at or near the pylorus, vomiting, increased peristalsis, loss of weight, etc., stamped the diagnosis. The diagnosis should be made as early as possible. Occasionally an instance was seen where there was no anemia and no pain, no tumor was to be felt, and no ecessive peristalsis was present; the appetite might be maintained, and the tongue clean. In these cases occult blood in the gastric contents and feces, and the radiographic evidence of a filling defect, were suggestive. One examination was apt to be inconclusive, but repeated examinations seldom failed to lead to a conclusion. Carcinoma when involving the cardia usually caused dyphagia. The differentiation from cardiac spasm was important. Pyloric stenosis: The common and important symptoms were copious vomiting of the gastric contents, a prominence in the epigastric region, and the presence of peristaltic waves across the stomach. In cases of benign stenosis there was an absence of blood, and the appetite was good. Acute dilatation of the stomach: This occurred in the course of grave infectious diseases and was recognized by marked gastric distension and sypmtoms of collapse. Lavage was absolutely essential to save life. The differential diagnosis between a benign and malignant stenosis might be worked out by the Wolff test. Gastroptosis: The habitus of the body showed the diagnosis. There was a sense of weight in the abdomen. Patients found it impossible to gain weight. It lowered the powers of the patient. It might be accompanied by one or more motor or sensory disturbances of the stomach. Fluoroscopic and radiographic examinations determined its presence. However, gastroptosis might escape notice at the bedside. It might be diagnosed by inflation of the stomach when its outline could be percussed.

Dietetic Treatment of Disease of Upper Gastrointestinal Tract.—Dr. ARTHUR F. CHACE of New York presented this paper. The functions of the cardiac and pyloric portions of the stomach were brought out by the investigations of Professor Cannon of Harvard University. Peptic digestion occurred only in the pyloric end. Furthermore, if the empty stomach was in a state of contraction peristalsis came on and continued until the stomach was empty. Experiments had shown that fat emerged from the stomach so slowly that it was present in the intestines in the same amount without variance. Carbohydrates emerged rapidly, and the small intestine received a large bulk of carbohydrates. Proteins were not discharged to any considerable degree for an hour or more. In nine out of 16 cases no food had passed out of the stomach in half an hour. In mixtures of fat with protein the protein left the stomach more slowly than it would if alone. In mixing fats with carbohydrates and proteins if proteins were the first element given, they held back the carbohydrates. The average rapidity of discharge increased from fat to protein and from protein to carbohydrates. Rehfuss and others conducted experiments to note the gastric response to various foods, as beef, etc. The fractional method of analysis was used. It was found that milk drunk slowly left rapidly. Milk which had been boiled five minutes formed small flaky curds. It was concluded that boiled milk dietetically is to be preferred. Eggs left the stomach sooner than meat. With beef products the average evacuation time was two hours and a half in an individual with rapidly emptying stomach. Pork products showed an average evacuation time of two hours and three-quarters for rapidly emptying stomachs. Lamb was found to require an average of two hours and a half for a rapidly emptying stomach. Lamb stimulated acidity more than beef or pork. Having in mind these physiological facts regarding normal digestion, we might proceed to the treatment of hyperacidity, subacidity, and other conditions. First, hyperchlorhydria: This was a gastric disorder in which the secretory glands elaborated a gastric juice so high in ferments that it caused symptoms of pain. Hyperchlorhydria should not be confused with a gastric succorrhea in which an increase of gastric juice was secreted without reference to food and in which a large amount might be found in the stomach for several hours; this was more serious than hyperchlorhydria. The ideal diet was one which produced the minimal stimulating effect on secretion and caused the highest amount of hydrochloric acid. Meats containing few extractives answered the purpose well. The diet should be protein, but in the case of animal protein the extractives should be removed. Beef should not be basted. Olive oil before meals and unsalted butter with meals constituted a good form of administering fat. Highly seasoned food, alcohol, uncooked vegetables, and above all the sugars should be avoided. This latter food stuff was perhaps more responsible for producing hyperacidity than any other article in the diet. The great increase in the number of cases of hyperacidity at the present time was due to the increased ingestion of sugar. All sugars increased the gastric distress after meals. They checked secretion but caused osmosis. The presence of hydrochloric acid checked the ptyalin digestion so that dextrine was found in the stomach. Bread should be partially dextrinized. Only finely divided bread should be used. It was better to use cereals with butter than with sugar. It was very desirable to distribute the amount of food evenly taken at each meal in hyperchlorhydria so as to prevent the accumulation of free gastric juice in the stomach. In cases of continued secretion of gastric juice substantially the same methods were in order. Subacidity: This was a gastric disturbance in which the glands elaborated juice so deficient in ferment properties that the stomach did not call for food. In this condition all food should be insalivated. Secondly, it was desirable to utilize any psychic means to make the food palatable. The diet should be made to include substances which stimulated gastric secretion such as meat extractives, and seasoned food, although the amount of protein should be reduced. In cases of atrophic gastritis where there was an entire absence of gastric juice, the dietetic principles used in subacidity must be applied, realizing that gastric digestion must be carried on by the pancreas. No animal protein should be given, and the maximum amount of protein should not be more than 40 grams a day. The diet should be a carbohydrate one. After a period of three months these patients could again take animal protein.

Myasthenia gastrica: This was a functional gastric disorder in which the stomach wall had lost its muscular tone, and the chemical and mechanical reflexes controlling the pylorus permitted stagnation of food in this organ. The condition was one of the most common of gastric disorders. It was characterized by belching after meals and by a feeling of satiety after a small amount of food. The history showed overeating and frequent eating and distention of the stomach with liquids. In outlining the diet the effect of the emptying time should be considered. Only 6 ounces of liquid

should be given at each meal, since this amount was all that was required for the proper mixing of the food. A mixed diet was preferable; carbohydrates in the form of cereals and vegetable purees should be given. The nourishment should be evenly distributed throughout the meals of the day; each meal should be small in amount, so as to avoid overloading the stomach, and independent feedings should be given midway between breakfast and luncheon, and between luncheon and supper. In severe cases the patient should have one hour's rest after meals. Where marked dilatation was present the foot of the bed should be raised. In such cases the stomach should have complete physiological rest for a few weeks, since such thorough rest induced contraction of the stomach to its normal size. Such rest was obtained by duodenal feeding. Eight ounces of warm milk, with an egg injected through the duodenal tube would be found of value. Rectal alimentation did not insure maintenance of nitrogen equilibrium so that duodenal feeding had superseded it.

Gastric ulcer: It was necessary to neutralize the acid, but the food should be soft, so as not to irritate the ulcer. Food should be given every one or two hours, and contain plenty of carbohydrates. In extreme cases of a neurotic type the administration of milk, eggs, and lactose through the duodenal tube was indicated. In patients with hemorrhage from ulcer nothing should be taken by the mouth for three days; on the fourth day milk with lime water was to be given every hour, and then the intervals lengthened. The dietetic treatment of ulcer required individualization. The tendency was to give a full Leinhartz diet. Two important points must be emphasized—that of giving an adequate amount of iron in the food, at least 15 milligrams a day. This iron could be given in a carefully prepared vegetable pulp; second, avoid scurvy.

Cancer: The dietetic treatment of cancer was different from that of ulcer. In this condition meat juices were indicated in order to stimulate the secretion. The food should be made palatable; condiments and alcohol were indicated. Many of the predigested foods could be utilized.

Drug Treatment of Disease of Upper Gastrointestinal Tract.—Dr. WALTER A. BASTEDO of New York presented this paper. With atropine and belladonna a summary of the results obtained by Rehfuss and others was as follows: (1) In ordinary hyperacidity cases atropine had no useful effect in any dose. (2) In continuous secretion cases it might check the secretion, but only in maximum doses. (3) In spasm it might relieve but only in maximum doses. (4) In hunger pains it might relieve, but only in dogs, not proven in man. (5) In diminishing hypersecretion due to extragastric causes it might be useful. (6) In the doses usually employed atropine and belladonna were wholly without effect on the secretory and motor function of the stomach.

Hydrochloric acid: (1) In cases of achylia gastrica a deficiency of hydrochloric acid might be partially overcome by gastric medication. (2) Hydrochloric acid should always be accompanied by pepsin. (3) In the achylia accompanied by diarrhea acid promised good results. (4) When acid produced diarrhea alkalies should be given at the same period but not at the same time, the amount to be required to be judged by the reaction of the urine.

Bitters: (1) In convalescence from acute illnesses bitters should be given provided they were taken within ten minutes before eating. (2) They should be given in bitter doses. (3) In subacidity to promote secretion of gastric juice. (4) In achylia to act as an appetizer. (5) If the patient was in a state of normal nutrition but physically disturbed, they would be useless. (6) In hyperacidity they should not be given. (7) If the stomach and bowels were deranged the bitters might nauseate. (8) The effect on appetite was solely on the taste buds, so that they should never be given in capsule.

Strychnine: In full therapeutic doses strychnine tended to increase the tone of the stomach, the peristaltic response to food, and to promote secretion.

Alkalies: Given for the pain of distention and for contraction pains coming early and coming late. Pain in ulcer which came in three or four hours after eating and was relieved so successfully by alkalies; it was known as hunger pain or empty pain. To understand drug action we should know what we were combating. First, the irritation of food. In cases without pyloric obstruction the pain did not come on when the stomach was filled with food, but only when it was empty, and then the pain was relieved by taking food. In patients with pyloric obstruction the pain might come on at the usual time although the stomach was filled with food; for example, a patient was required to relieve his pain at 5 o'clock every afternoon by malted milk; one day when he had obtained complete relief at 5 o'clock a stomach tube was passed and not only the soda and malted milk but the food he had eaten at lunch was obtained. Therefore the irritation of food is not the cause of pain. What was the cause of pain? In ulcer the contents might be highly acid, and yet there was no pain. A fair proportion of ulcers were not accompanied by hyperacidity. The Mayos had found ulcer in a number of cases of achylia. Could the contact of the acid with an ulcer produce these pains? It was agreed that the acid of the gastric juice secreted by the stomach seldom exceeded one-half of 1 per cent., and this was mixed with mucin and other colloid substances, yet Hearst and others had repeatedly placed hydrochloric acid in stomachs without causing pain, and furthermore hunger pain might be relieved by acids such as lemons. The author had seen a patient who was habitually relieved of pain by lime juice. Therefore, if acid relieved the pain and the same kind of pain came on with hyperacidity, acid did not cause hunger pain. Pyloric spasm would seem in certain cases to give a pain, yet this was frequently present without any pain whatever. Whether or not the pain was due to the passage of acid into the duodenum had not been shown. Hyperstalsis was present only during the digestive period; furthermore hunger pain was relieved by food, though this sets up peristalsis. Hunger contractions, now recognized as normal, occurred at the usual time of hunger pains, and had been assumed to be the cause of hunger pain; they were immediately stopped if any food was placed in the stomach or in the mouth. Contractions were not the cause of hunger pains. Carlson attributed the pain either to tension of the stomach wall or to hyperexcitability. There must be a hyperexcitability of the pain nerves; but radiography had shown that hypermotility and hunger pains occurred at the same time. Alkalies were of little use during the digestive period except when there was accumulation of gas, when sodium was the choice. Alkalies relieved hunger pains and should be given at the time or after the meals. Alkalies did not check adhesion pains.

Dr. HOWARD STOCKTON of Buffalo said that in cases of jaundice from obstruction when that jaundice depended on duodenitis and not upon involvement of the ducts and their branches we might find a complete absence of amylase in the duodenal tract, and then when that duodenitis subsided a reappearance of the amylase. Of course, there would be a certain amount of bile present in the ordinary case of cholangitis, but bile as well as all pancreatic ferments was absent in duodenitis that caused obstruction at the papilla. In the diagnosis of those cases of cancer in which the appetite remained but in which there were nevertheless irritative symptoms, and in which there were no changes in the blood, and when there was doubt as to the diagnosis and when the radiogram did not help, he had found that in benign cases proper treatment would ordinarily give relief in an ulcer case, but in a cancer case the more one treated the cancer the worse it behaved. He would like to ask Dr. Bastedo if in general practice he did not find cases in which there was relief of the symptoms of spasm and hyperacidity by atropine. He thought there were cases which were relieved by safe doses of atropine given by the mouth as well as subcutaneously, and yet thought other cases were not helped by it, and that only dangerous doses produced effects. Dr. Bastedo, in his remarks on the use of alkalies, did not mention that the sodium was more rapidly absorbed and ceased to give relief for as long a time. Magnesium was not quickly evacuated from the stomach, whereas soda gave relief, but with a return of symptoms. He did not think the action of soda was due to the CO_2, as Dr. Bastedo seemed to

believe, nor did he believe that CO_2 would ordinarily give relief to an irritated stomach.

Dr. ABRAHAM H. AARON of Buffalo said repeated fractional gastric analysis in the suspicious cancer cases would show that there was a gradual diminution of the hydrochloric acid. That had worked very well in making a problem diagnosis in a gradually decreasing hydrochloric acid. What Dr. Bastedo had said in relation to atropine was revolutionary. The textbooks all said that motility was decreased by atropine. He said that in hunger contractions the administration of atropine would give relief.

Dr. ROSE of New York said that he had made an analysis of an average sample diet and found that from articles not classed as protein one obtained about 35 grams of protein, so that it was easy to see that a patient could be fed on a diet of that kind without giving him heavy protein food. In the treatment of myasthenia gastrica where we wanted to give small meals of easily digested food, he had found that in giving milk in small amounts we added to the protein in the diet and could practically exclude meat. Therefore we could get these patients to take frequent meals and maintain their weight. There was one point regarding the use of hydrochloric acid which he had never seen mentioned, and that was that it helped in dissolving mucus in the stomach, especially in cases of subacute gastritis. Even in cases where hydrochloric acid was not well borne where we had to reduce the amount to seven drops, hydrochloric acid seemed to relieve the symptoms produced by the mucus.

Dr. ANTHONY BASSLER of New York said it was interesting to note that perhaps not more than five years ago we had not advanced in the knowledge of these things far enough to render possible such a symposium as the society had been listening to. Hyperacidity was one of the most difficult diagnoses to make, and yet generally it was one that was made perhaps more commonly than any other gastric condition. Sugar was one of the most concentrated articles of food we had to deal with. He thought the future would develop an interest as to the infections of the duodenum from the hepatic side rather than from the gastric, because organisms gained access to the circulation and it was the duty of the liver to eliminate them. His experience had been different from that of Dr. Jones in the occurrence of bleeding in ulcer. When one found hematemesis, the diagnosis had already been made. Hematemesis was not an important initial symptoms of ulcer.

Dr. ELIZA M. MOSHER of New York said one thing that had been omitted was the shape of the stomach. She had found a number of cases having a big colon. What did this do to the stomach? In the first place, what caused it? One would find in those cases a separation of the recti muscles at the umbilicus; it would be found in operative cases where the muscles had not held together in women who had borne children, and in people of sedentary habits. In these cases it was very easy to find a hollow below the navel. It dragged the stomach down, distended it, and delayed the emptying time. Auscultatory percussion should be used in the diagnosis to learn the location of the stomach and intestines. In treatment one must put on a suitable support to hold up the colon.

Dr. ALLEN A. JONES of Buffalo said amylase might be absent in cases of jaundice. The fact was that the pancreatic secretion varied, and this variation itself might account for the fact that at times in the duodenal contents with slight jaundice amylase was absent but might be found later. Carcinoma, which was causing stagnation and vomiting, could be relieved as to symptoms by repeated lavage, and these might be a temporary pick-up on the part of the patient. Dr. Bastedo spoke of bicarbonate of soda as the alkali of preference in cases of hyperacidity. The speaker had not had that experience with bicarbonate of soda even in large doses. The relief in hyperchlorhydria from hunger pains which had been afforded by the administration of bicarbonate of soda had been but temporary and had been followed by just as severe pains before the welcome meal came. The use of magnesia would seem to be preferable to soda because it gave longer relief. But bismuth was the remedy that does the most good. A half a teaspoonful to a teaspoonful of the subnitrate of bismuth taken before breakfast would render it unnecessary for the patient to take alkalies during that day.

Dr. BASTEDO wanted to correct the misapprehension that might have been conveyed that soda acted simply by giving off CO_2. In the stomach with distention from gas the latter was not always swallowed air, and in those cases he had seen it act better than magnesia. He agreed with Dr. Jones that magnesia might act better than soda in some of the resistant cases in keeping away the hunger pains for a time. Years ago he gave atropine and belladonna in quite large doses, and it did not give any results, so he gave it up. He found in the laboratory that atropine had to be used in large amounts to get results so that I have a prejudice against it; and then the literature came out favoring atropine and he used it again but it seemed to give no results. He thought bismuth was a wonderful drug, it was a protective to the mucous membrane of the stomach.

SYMPOSIUM ON GOITER.

Joint Meeting with the Section on Surgery.

Practical Points in Goiter Surgery.—Dr. GEORGE W. COTTIS of Jamestown presented this paper. The term goiter was applicable to many conditions. Until some medical genius solved the question of etiology we must aim at better therapy. The three phases of his paper were: Selection of cases, anesthesia, and operative technique. For practical purposes it was sufficient to divide goiters into three classes: toxic, nontoxic, and malignant. Statistics on the relative frequency of the toxic and nontoxic varied because there was no standard rule of classification. In the case of true primary exophthalmic goiter there must be three things—a history of toxic symptoms beginning soon after or even before the recognition of thyroid enlargement, exophthalmos, and parenchymatous hyperplasia. On the other hand, toxic adenomata might form an obvious goiter long before toxic symptoms appeared, and they never caused exophthalmos. These cases should not be classed as exophthalmic goiter even though they had a fatal termination. Physiological goiters of adolescence and pregnancy were medical rather than surgical problems. Adolescent goiters might be prevented by the use of iodine, and a large percentage disappeared without treatment. In general, nontoxic goiters should be given a chance to subside under medical treatment. Even large colloid goiters, if not of too long standing, would respond to medical treatment; the adenomata did not. In some cases the method of anesthesia was the least important part of the technique, in others it was the decisive factor. In removing small goiters any method was advisable. Local anesthesia added to the strain on the operator, prolonged the operation, and in case of hemorrhage was a serious embarrassment. As a routine anesthetic he used Gwathmey's colonic ether. This was valuable because it was administered in bed and the patient turned over and went to sleep without realizing an anesthetic had been given; and then it caused less postoperative vomiting, did away with the face mask, and a minimum amount of ether was used. Local anesthesia was indicated in old people, in cases of large goiters of long standing, and in extremely toxic cases. In extremely toxic cases local anesthesia was the best, and it permitted an estimation of how well the patient was standing the operation. If the patient became restless it was best to discontinue the operation and pack the wound with Dakin's solution and euresol. With local anesthesia it is by no means sufficient to secure analgesia of the field, the patient must be kept comfortable, a comfortable posture maintained, and a tactful nurse should be present to apply ice-cold compresses. Anyone who had operated on toxic cases with local anesthesia had been embarrassed with the thyrotoxic symptoms during anesthesia. The almost universal use of adrenalin suggested that this was a Goetsch reaction, and since the speaker had omitted the adrenalin he had had fewer symptoms of this sort. The technique is now so standardized that a description would be superfluous. Simple goiters might be enucleated. A lobectomy would often reveal the hidden tumor. One should always search both lobes to see that there was some normal tissue left. In all

general operations the posterior lobe should be left in situ. A lobectomy should be done under local anesthesia so as to avoid the recurrent laryngeal nerve. A lobectomy leaving the upper lobes should never be done. Tetany might develop after some surgical operations, especially when one removed the parathyroids. There were four parathyroids, but there might be only one in a given case. One should never remove the posterior capsule. In toxic goiters ligation of the thyroid artery is indicated. Ligations furnished an index of the patient's reaction to operation. On the other hand, in cases of a single encapsulated adenoma a ligation did very little good unless we could palpate and ligate and artery leading to the tumor. It was logical to assume that ligation excited the tumor to activity without removing the blood supply. The most difficult problem was postoperative hyperthyroidism, which was still the chief cause of mortality. It was increased by undue loss of blood, and the speaker intended to transfuse his next patient. The best treatment was undoubtedly preventive, and the most important factor was the surgeon himself.

Surgical Treatment of Hyperthyroidism; Relation Existing Between the Amount of Gland Removed and the Permanence of Relief.—Dr. GEORGE E. BEILBY of Albany presented this paper. His remarks would be confined to the treatment of hyperthyroidism, and did not include cases of simple goiter, tumors, or cysts. There had been a marked lowering of the mortality rate in recent years due to the careful selection of the patient and the selection of time for operation, and of equal importance was the employment of an anesthetist skilled in the management of these cases, and an improvement in technique whereby the time required for operation had been shortened. In reference to the stage operation, it had been his experience that it was difficult to induce patients to submit to more than one operation for the relief of this condition. If they were benefited by one operation, they accepted that; and if they were not relieved they became skeptical of operative relief. There seemed to be an idea that the removal of one lobe was all that was necessary to effect a cure. Experience had proved that patients derived little or no lasting improvement from such operations. If improvement was noted it was usually for only six months or a year, during which time hypertrophy of the remaining gland took place equal to the amount of the gland that was present before. As to the form of preliminary treatment there was no uniformity. In his hands ligation was not a favorable procedure as it necessitated two operations. It had been his experience that wherever a portion of the gland was removed and the circulation of one lobe was left, the reaction was more severe than where a subtotal resection had been done, so he thought a partial resection of the gland was not a safe procedure. The tendency had been to leave behind too much rather than too little thyroid tissue. It would be desirable if some accurate means could be devised to determine the amount of gland to be left in a given case. He believed that not so much depended on the total amount of tissue left as upon its distribution and blood supply; for instance, if one-third or one-fourth of the total amount of the gland tissue remained with a portion of one lobe with undisturbed blood supply, the chances were in favor of a hypertrophy of this portion of the gland tissue taking place and we had a return of toxic symptoms. On the other hand, if the same amount of gland tissue was left as small bits of tissue distributed throughout the gland, there was no likelihood of these pieces of tissue becoming hypertrophied. In conclusion he emphasized the following: First, the removal of one lobe of the thyroid gland in exophthalmic goiter might give temporary relief, but would not effect a cure; second, if only a portion of one lobe was left and its blood supply was undisturbed it hypertrophied and a recurrence of symptoms might be expected; third, with careful preparation and selection of time a complete operation might safely be done in most cases at one time; fourth, where sufficient gland tissue was removed the toxic symptoms promptly and completely disappeared; fifth, this relief was a permanent one if the gland tissue which remained was not left in a condition such that hypertrophy might take place; sixth, the experience in a sufficient number of cases justified the belief that with the removal of the amount of gland tissue referred to no symptoms of thyroid or parathyroid deficiency need be expected.

Differentiation of Tuberculosis from Hyperthyroidism.—Dr. EMIL GOETSCH of Brooklyn read this paper. It was his purpose to bring out encouraging surgical results in an obscure syndrome. He referred to those border line cases in which one was suspicious of tuberculosis, but in which the physical signs and x-ray findings were insufficient for a diagnosis. From a recent study of patients of this kind who were supposed to be suffering from tuberculosis it was his belief that the underlying trouble was hyperthyroidism and not tuberculosis. The reason for believing that these patients failed to improve under medical treatment, under rigid rest cures, that on expert examination little or no tuberculosis was found, and that these patients showed a constitutional hypersensitiveness to adrenalin, that following resection of the gland there was definite improvement, and last, that on histological examination a condition was found which might be called diffuse adenomatosis, in which there was an increase in the connective tissue and in the acini derived from the fetal cells of the thyroid gland—an increase in the metachondrial content. The operation to be selected in these border line cases depended on the type of pathology found in the thyroid gland. He thought the fear of myxedema had resulted in a removal of too little of the thyroid. In fact, it was surprising how much of the thyroid, even up to three-fourths, could be removed without producing hypothyroidism. A margin of gland tissue was left on either side to protect the parathyroids and the recurrent laryngeal nerve. An interesting differential point was that whereas the tuberculosis case responded promptly to rest and hygiene, these mild thyroid cases were not improved after prolonged rest. The hyperthyroid cases felt better at rest, but they could not resume activity without bringing on the symptoms of which they had complained.

Surgical Treatment of Exophthalmic Goiter.—Dr. EDWARD STARR JUDD of Rchester, Minn., read this paper. In the Mayo clinic, he said, no cases of exophthalmic goiter were called such without hyperplasia and enlargement of the gland. It was a condition of toxemia under control of the cells of the thyroid. Hyperplasia was definitely shown by increase in the size of the gland, and when a part of the gland was removed the symptoms subsided; when the symptoms returned they found that the remaining part of the gland had enlarged. In recent years the greatest improvements had resulted from a better understanding of the disease in its clinical aspects. Hyperthyroidism occurred in cycles with exacerbations of the symptoms and remissions. The time to institute surgical treatment was when the patient was in a remission, never when the symptoms were increasing. Many patients could be carried over the exacerbations by rest in bed and palliative treatment, injections of boiling water, quinine and urea, and ligation which was palliative. No matter how well these patients might appear following palliative treatment, it was always best to advise a thyroidectomy, as the danger of a relapse would thereby be materially reduced. Recently he had depended on the clinical picture to measure the toxicity, but changes in the basal metabolism now gave better results. Cures should not be reported within a short time after the subsidence of symptoms. The operation now performed was a subtotal thyroidectomy by which changed thyroid tissue was removed. This operation had the advantage of leaving a symmetrical scar, whereas lobectomy did not.

In conclusion, at the present time we were more than ever impressed with the action of the thyroid and by keeping this in mind rational treatment might be carried out. While medical treatment, x-ray exposures, and radium modified the disease, it was not certain just how much they altered the natural course of hyperthyroidism, whereas subtotal thyroidectomy removed changed tissue and as a result the metabolism rate was reduced to approximately normal and the symptoms subsided very quickly in a large majority of the cases.

Dr. C. C. WEBB of Clifton Springs said they had been following these cases for four years from every possible angle. They had done metabolism tests, and sugar tolerance tests, and adrenalin tests. They used the Benedict portable apparatus. The same confusion had

come in here as always came up, and that was what was meant by hyperthyroidism. And the same confusion came up as regarded classification. These cases that Dr. Goetsch was talking about did not show an increased metabolism test unless one put them to an increased metabolic activity. The metabolism test was quite as delicate as the adrenalin test. The metabolism test was of most value in determining the amount of hyperacidity in the extremely toxic cases whether they were due to adenomata or to exophthalmic goiter. It was of importance to determine how long one could keep that patient in bed and whether one could ligate one or two arteries at a time; and as a diagnostic test the speaker was inclined to regard it as of more importance than the adrenalin test. He would like to ask Dr. Judd how he regarded infections of the thyroid gland and how they affected the hyperthyroidism symptoms. Infections of the thyroid might be one of two forms, either a large collection of pus or a series of small abscesses in the various acini of the gland.

Dr. Samuel W. Bandler of New York asked why goiter was eight times more common in women than in men? He was interested in this subject as a gynecologist. In trying to find an explanation for the nervous symptoms in women he asked them, "How many days before you menstruate do you know that you are going to menstruate?" Some did not know, others said they had a feeling in the breasts, but the vast majority would say that five or six days before menstruation they were irritable and cross. Now that was due to hyperthyroidism in the largest number of cases, and the way a woman behaved before her menstruation was an index of what gland was sensitive. Now if one looked over one's children one will find that they were irritable at times, but no one seemed to realize that it happened every four weeks. Think of the injustice that had been done to children by not realizing that fact. The Goetsch test proved that there was no such thing as a uniglandular trouble. Adrenal cortex was going to take the place of adrenalin. There was a reason why Dr. Cottis feared to use adrenalin in his local anesthesia on the thyroid. The glands were all interrelated. We all knew that if we took thyroid extract it could do harm. Now there was not an endocrine used that could not do harm if used for the wrong thing. There must be a balance between all the endocrines and each endocrine. Now here was a thing that concerned the medical profession: We were on the verge of what we now thought was going to be a revolution in medicine; we were on the verge of endocrine experimentation, and every one of us was going to try endocrines. Now, then, why not try to correct what was going to be a very serious fault? The public were going to learn about these gland preparations, and were going to go to the druggist and buy them of their own accord, without a prescription. Now, what Dr. Bandler said he was asking for was the appointment of a committee selected from the various sections and added to that a like number of men outside of New York state to talk over this thing and to bring it to the attention of the American Medical Association, so that some action might be taken to prevent the selling of endocrine preparations without a physician's prescription.

Dr. George E. Beilby of Albany wished to say a word with reference to the symptoms of exophthalmic goiter. It had been his experience that exophthalmos was a late symptom. He thought the impression had gone abroad among medical men that unless there were very definite eye symptoms the case was not one of exophthalmic goiter; that was a very wrong impression, and it was desirable to get cases before they developed exophthalmos.

Dr. Emil Goetsch of Brooklyn did not know whether he could cover all the points which had been broached. However, he might bring up a few of them with reference to clearing up certain impressions which were evidently in the minds of some as to what he had really claimed. Now, with regard to the adrenalin test, as such, he had never said that a positive adrenalin test meant positive hyperthyroidism. He had repeatedly insisted that that was not the case. He would say that he believed that every case of hyperthyroidism would give this test, and if it was negative it was not hyperthyroidism. He had had six years' experience with this test, and had yet to find a case that violated those two statements. Now then there came a certain percentage of cases that gave a positive reaction. What the reaction meant—it was a combination affair between the thyroid and the adrenal, and the sympathetic nervous system. The test depended on all those. Whenever there was an increase of the thyroid secretion in the circulating fluid of the body it sensitized the nervous system to adrenalin. Hyperthyroidism was the one disease that did that. He ventured to say that the great majority in which that held true were cases of hyperthyroidism. In hyperthyroidism the symptoms following the test lasted an hour to an hour and a half, and there was a manifestation of the symptoms of the disease. Now, in certain neuroses there was a typical reaction in which there was a sudden rise of the pulse, with an almost instantaneous return to normal. Whereas the very characteristic symptoms of hyperthyroidism, such as flushing of the face, did not occur. So granted there might be 5 per cent. of cases that were confusing, they were again distinguishable by a very careful physical examination and a carefully taken history. Like every test, this was not fool proof. One had to use his mind. What was hyperthyroidism in the first place? He did not mean disease of the thyroid. It was a functional condition of the thyroid. We were not talking about toxic adenomata or puberty hypertrophy. It meant that we had too much of that toxic product in the circulation. Now there was no doubt that every one of us would get an adrenalin response if we were frightened. Dr. Cannon had shown that in animals which were frightened there was an increase of adrenalin in the circulating blood. Some of these transitory reactions might mean hyperthyroidism. Soldiers who were frightened to death had hyperthyroidism. So with these patients, we had to have their confidence, and must have them at rest in bed, because if we did not they would already have an adrenalin reaction. With reference to hypersensitiveness in conditions other than hyperthyroidism: It did occur in neurocirculatory asthenia, but one of the differences was that in neurocirculatory asthenia they could not remember the day when they were really well, whereas in hyperthyroidism they had a starting point. It was a question whether hyperthyroidism occurred before puberty, whereas neurocirculatory asthenia did begin before puberty.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

California State Board of Examiners.

October, 1919.

(*Continued from page* 592.)

PATHOLOGY AND BACTERIOLOGY.

(Answer ten questions only.)

1. Define the following terms: Anemia, embolism, thrombosis, toxin, ptomaine, leucomaine, glycosuria, hemorrhage, edema, inflammation, atrophy, degeneration, necrosis, tumor.

2. Give the etiology, microscopic pathology, and results of an acute endocarditis.

3. Give the etiology and differential diagnosis of enlarged cervical lymph glands.

4. Give the etiology and morbid chemistry of fatty degeneration.

5. Name two malignant and five benign tumors.

6. Give the differential diagnosis in the gross between a malignant and benignant tumor.

7. Name the types of pneumonitis. Give the differential diagnosis gross and macroscopic between lobular pneumonia and multiple hemorrhagic infarcts of the lung.

8. What is the difference between active and passive immunity? Give an example of each.

9. Name four methods by which active acquired immunity may be produced artificially and give an example of each method.

10. What is tuberculin? Why does the injection of tuberculin fail to produce a reaction in a healthy person? Why does it produce a reaction in an individual affected with tuberculosis? Why may it fail to produce

a reaction in an individual that has recently reacted?

11. Explain what is meant by complement fixation and describe briefly the elements and principles involved.

12. Describe in detail how you would make a diagnosis in a case of suspected diphtheria; also name the organisms that might be mistaken for the Klebs-Loeffler bacillus.

SURGERY.

1. Discuss acid intoxication following general anesthesia, its etiology, prognosis, prophylaxis, and treatment.

2. Draw schematic diagram, anteroposterior, of a Pott's fracture. Give treatment in detail.

3. Give the indications for operation in traumatic insanity.

4. Discuss congenital talipes: (*a*) Theories as to cause, (*b*) varieties, (*c*) when should treatment be instituted, (*d*) briefly describe treatment.

5. Give the diagnosis of stone in common duct. Describe in detail the surgical treatment.

6. Describe the pathology in dislocation of femur (hip joint). Name the varieties and give treatment for one.

7. When is taxis contra-indicated for the reduction of strangulated hernia. Describe its application in strangulated, oblique, inguinal hernia.

ANSWERS.

PATHOLOGY AND BACTERIOLOGY.

1. *Anemia* is a diseased condition in which the blood shows a diminution in the number of red corpuscles, or in the amount of hemoglobin, or in both red cells and hemoglobin.

Embolism is the obstructing of a blood-vessel by the lodgment of a foreign body.

Thrombosis is the coagulation of blood within the vessels during life.

Toxin is a poisonous product of bacteria.

Ptomaine is a product of bacterial activity on dead protein matter.

Leucomaine is a basic product of cell metabolism occurring in the tissues of living animals.

Glycosuria is a condition in which sugar is discharged in the urine.

Hemorrhage is the escape of blood from the vessels.

Edema is an accumulation of serous fluid in the tissues of the body.

Inflammation is the name given to the series of changes which occur in a part as the result of injury, provided that the injury does not at once destroy the vitality of the part.

Atrophy is a decrease in the amount of tissue owing to a diminution in the number or size of the elements of which it is composed.

Degeneration is a morbid condition in which the cell protoplasm is gradually changed into a new material.

Necrosis is the complete and permanent arrest of nutrition of a part.

Tumor is an atypical new formation not the result of inflammation.

2. ACUTE ENDOCARDITIS. *Etiology:* Simple endocarditis is associated with rheumatism or scarlet fever. Malignant endocarditis is also associated with rheumatism, scarlet fever, and also with pneumonia or septic processes. Micrococci are often found.

MALIGNANT ENDOCARDITIS. *Pathogenesis:* "Diplococcus of Poynton and Paine, *Streptococcus pyogenes, Staphylococcus pyogenes aureus, Diplococcus pneumoniæ,* gonococcus, and *Streptococcus viridans* are the chief bacteria found; but others have also been observed in this condition. Their etiological significance is not settled.

Morbid Anatomy: In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium; superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegetations. These vegetations are most marked at a slight distance from the free borders of the valves—*i.e.*, those parts which come into apposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survive, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact.

Microscopical Changes.—The vegetations are seen to be nonvascular, structureless masses composed of fibrin and fused blood-plates; bacteria may or may not be present. If the inflammation is severe on or near the mitral valve it may spread to the chordæ tendineæ and papillary muscles. Hyaline degeneration, coagulation, necrosis, or round cell infiltration may be found in the endocardium."—(Wheeler and Jack's *Handbook of Medicine.*)

3. *Enlarged cervical lymph glands*—"In *chronic simple lymphadenitis* some source of continuous irritation in the area drained by the lymph glands may be discovered. Although the glands are enlarged and perhaps tender, they do not tend to mat together or to suppurate. Removal of the source of irritation results in cure. If recovery does not follow appropriate treatment, a strong suspicion of tuberculosis should be entertained. *Tuberculous lymphadenitis* progresses despite local treatment, and successively involves gland after gland. The glands show a strong tendency to adhere to each other and to the skin, and to undergo caseous degeneration. The condition is most common in children, in whom other signs of tuberculosis may be recognized. The family history is of some importance. *Syphilitic lymphadenitis* is diagnosticated by the history of a sore, by associated lesions of syphilis, by the Wassermann test, and by the results of treatment. The glands are hard, discrete, not adherent to each other or to the skin, do not tend to suppurate, and are neither painful nor tender. The enlargement in the primary stage is confined to the glands anatomically related to the sore; during the secondary period the distribution is general, the epithrochlear and post-cervical glands always being involved; in the tertiary period the glands may become gummatous, the diagnosis then resting upon the history and the results of treatment." (Stewart's *Manual of Surgery.*)

4. FATTY DEGENERATION. *Etiology.*—"Grave depression of the vital activity of a cell—leading to (1) too rapid destruction of protoplasm, (2) lessened ability to repair losses, and (3) impaired oxidizing power. This depressed vitality is always the *proximate cause,* and is usually induced by (*a*) alteration in the quantity and quality of food brought to the cell; or (*b*) by change in the physical condition of the cell; or (*c*) by the gradual but natural death of the cell, for there is a natural limit to the life of a single cell, as there is to the life of the whole organism."—(Greene's *Pathology.*)

Morbid chemistry.—"Fatty degeneration represents either or both of two conditions: (1) It may result from an increase in the normal quantity of fat in an organ undergoing parenchymatous degeneration, through an infiltration of fat from the outside; this is particularly true of the fatty degeneration of the liver; (2) or there may be no increase in the total

amount of fat, but the invisible fat becomes visible through autolysis of the cell proteids. (3) Finally, of course, both factors may occur together. Of these various forms, in only the first and last can we properly consider the organ fatty," and the form that will occur seems not to depend upon the cause of the cell injury, but rather upon the organ under consideration."—(Wells' *Chemical Pathology.*)

5. *Two malignant tumors.*—Carcinoma and sarcoma. *Five benign tumors.*—Lipoma, chondroma fibroma, myoma, and adenoma.

6. "*Benign* tumors are usually very slow in growth and distinctly localized, having a definite capsule. They rarely attain excessive size, but occasionally, owing to their intrinsically benign character, may attain huge dimensions without injury to the general economy. Generally they are movable (unless bound down by surrounding inflammatory tissue or primarily attached to bone). They do not metastasize or become disseminated throughout the body, and when completely removed do not recur. They exert no influence whatever upon the general economy when favorably situated, but may endanger life by their size and situation when they interfere with the normal functions of any of the important organs of the body.

"*Malignant tumors* exhibit diametrically opposite characteristics. They grow rapidly and usually diffusely. They are not encapsulated and may quickly attain considerable size, although huge malignant tumors are rather exceptional, since they usually prove fatal before they attain such proportions. They are intimately connected with the surrounding tissues and quickly become bound down and immovable. They metastasize and become disseminated rapidly through the lymph or vascular system, progressing steadily toward a fatal termination by the interference with vital functions caused by metastatic growths, or by an autointoxication which undermines the general health and produces the condition commonly known as cachexia."—(Rodman's *Diseases of the Breast.*)

7. *Types of pneumonitis.*—Lobar pneumonia, lobular pneumonia, broncho-pneumonia, interstitial pneumonia, tuberculous pneumonia, syphilitic pneumonia, also aspiration pneumonia and septic pneumonia.

Lobular pneumonia.—"At first dark red in color, the lobular areas of consolidation in broncho-pneumonia become more gray at the center through degeneration of the exudate, while the advance of the process in the periphery is marked by a less solid, redder zone. On section of the fresh lung these areas usually project somewhat above the general surface, and at their centers the involved bronchi may appear as lighter spots, from which pus may exude or be easily pressed out. Such areas may coalesce, forming larger consolidations. The exudate, which more or less completely fills the air spaces, consists of serum, old and new-formed epithelial cells from the walls of the air-spaces, red blood cells, and often fibrin and polymorphonuclear leucocytes with various forms of microorganisms. As a rule, however, fibrin and leucocytes are not as abundant as in the exudate of lobar pneumonia. Mucus and bronchial epithelium may be aspirated into the air spaces and mingled with the exudates."

Hemorrhagic infarct of the lungs.—"These infarcts are often multiple, usually circumscribed and rounded or wedge-shaped, from the size of a walnut to that of an orange. They are of dark red color, hard and unaerated, with the air spaces distended with blood, and are often surrounded by a zone of inflammatory exudate. They may be situated in any part of the lungs, but are most common in the lower lobes. At the apices of the infarcts, the occluding thrombus or embolus may be discovered. When, as is usually the case, they are near the surface of the lungs, a circumscribed inflammation of the pleura often occurs. The air spaces within the infarcts are filled with blood and the capillaries distended."—(Delafield and Prudden's *Pathology.*)

8. *Active immunity* is that form of acquired resistance to infection which is brought about by the activity of the cells of a person or animal as a result of having had the disease, or as a result of artificial inoculation with a modified or attenuated form of the causative microorganism.—*Example.*—Vaccination against smallpox.

Passive immunity is that form of acquired immunity which depends upon defensive factors not originating in the person or animal protected, but is passively acquired by the injection of serum from one that has acquired an active immunity to the disease in question. It is a sort of secondary immunity acquired by virtue of having received antibodies actively formed by another animal that has had to resist the infecting agent in order to produce them. *Example.*—Prophylactic use of diphtheria antitoxin.—(From Kolmer's *Infection, Immunity,* etc.)

9. *Four methods by which active acquired immunity may be produced artificially.*—(1) *By accidental infection,* such as that which follows an attack of an infectious disease such as scarlet fever, measles. (2) By *inducing an attack of the disease* by artificial inoculation; this is mostly used in veterinary practice, where animals are inoculated with a mild form of a disease (such as Texas fever) in order to produce immunity against a graver form of the disease. (3) By *vaccination,* such as is practised against smallpox. (4) By the *use of bacteriolysins,* as in typhoid vaccination.

10. *Tuberculin* is a glycerin extract of cultures of the bacillus of tuberculosis. It is used as a means of diagnosis of tuberculosis. The reason for a reaction in the case of a tuberculous person, and the absence of such reaction in the case of a well person is thus given by Kolmer: "The antibody-like substance produced by the (tubercle) bacilli and diffused through the tissues enters into combination with the tuberculin, giving rise to the formation of a toxic substance in the general circulation, as well as at the point of inoculation of the tuberculin. The tubercle bacilli are considered as stimulating the body-cells to produce an antibody or a "ferment" in the nature of an amboceptor, which splits the tubercle protein contained in tuberculin, liberating a protein poison, which produces a general, local, and focal reaction."

11. *Complement fixation.*—"The reaction depends upon the fact that when an antigen, *i. e.*, a substance capable of stimulating the formation of antibodies in animals or man, is mixed with its inactivated antiserum, in the presence of complement, the complement is firmly fixed by the combined immune body and antigen in such a way that it can no longer be found free in the mixture. If such a mixture is allowed to stand at a suitable temperature for an hour or more, and to it is then added an emulsion of red blood cells together with a suitable quantity of inactivated hemolytic serum, no hemolysis will take place, since there is no free complement available to complete the hemolytic system. If, on the other hand, the original mixture contains no antibody for the antigen used, the complement present is not fixed and is available for the activation of the hemolytic serum later added. The reaction thus depends, in principle, intimately upon the fact that neither antigen alone, nor amboceptor (antibody) alone, can fix complement, but that this fixation is carried out only by the combination of antigen plus amboceptor. Any specific amboceptor can be determined by this method, provided the homologous or stimulating antigen is used; and *vice versa,* by the use of a known antibody a suspected antigen may be determined."—(Hiss and Zinsser's *Bacteriology*).

12. A sterile swab is rubbed over any visible membrane on the tonsils or throat, and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appear as short, thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts. *Methods of culture:* The bacillus of diphtheria grows upon all the ordinary culture media, and can be readily obtained in pure culture. Loeffler's blood serum, particularly with the ad-

dition of a little glucose, is an admirable medium for the rapid growth of this bacillus. The medium should be alkaline and not less than 20° C. *Method of staining:* It stains with any aqueous solution of an aniline dye, and quite characteristically with Loeffler's alkaline methylene blue. Neisser's stain is also recognized. The bacilli also stain well by Gram's method.

The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are nonmotile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline methylene blue.

Other organisms which may be mistaken for the diphtheria bacillus are: Pseudodiphtheria bacilli and xerosis bacilli.

SURGERY.

1. *Acid intoxication following general anesthesia.*—"In certain cases in which dangerous symptoms arise after anesthesia, the urine contains albumin, casts, and either diacetic acid or acetone or both of these substances. Acid intoxication is very much commoner after the administration of chloroform than of ether, but may follow the giving of any general anesthetic. It may occur in individuals whose tissues contain areas of fatty degeneration, but it also occurs in those entirely free from degeneration; in fact, children particularly suffer in this way after the use of chloroform. The actual operation has nothing to do with the trouble, and sepsis is not causative. The drug used as an anesthetic causes acute fatty degeneration of the liver, quantities of toxins are formed, and these toxins cause the symptoms. Acetone, diacetic acid, and beta-oxybutyric acid are by-products of the process and are antecedents or precursors of acetone. The symptoms arise after the patient has emerged from anesthesia and reacted from shock. There is persistent vomiting of thin and foul fluid, the patient is extremely restless and much excited, there may be delirium, but dulness and heaviness may take the place of restlessness and excitement and coma may arise. Usually the temperature is subnormal, but sometimes there is elevated temperature. In many cases jaundice arises. There is an odor of acetone on the breath. The urine contains albumin and casts, and either diacetic acid or acetone or both. Some cases recover, but most of them die in from one to five days. A knowledge of this condition explains some otherwise inexplicable deaths, and also some cases of retarded convalescence. In acid intoxication there is fatty degeneration of the kidneys, of the liver, of the suprarenal glands, and of the gastric mucosa. The occurrence of such a condition is an impressive admonition that a surgeon should operate quickly, that as little of the anesthetic should be given as possible, that the urine should be carefully examined each day after operation for certainly several days, and that chloroform should not be used for prolonged administration. Severe acid intoxication is treated as follows: Encourage skin activity by wrapping the patient in blankets and surrounding him with hot-water bags. Give salt solution with bicarbonate of sodium by hypodermoclysis and by the rectum. In mild cases of acetonuria simply give sodium bicarbonate by the stomach."—(DaCosta's *Modern Surgery.*)

2. *Pott's fracture* is very common, and is due to indirect violence, such as turning over on the inside of the foot. The strain tears through the internal lateral ligament of the ankle or tears off the tip of the malleolus; then the astragalus is pressed against the inner side of the external malleolus by the continuation of the violence. The fibula is overbent, and breaks about three inches above the tip of the malleolus. At the same time the foot is displaced outward or outward and backward. In many cases, however, the displacement is slight.

Treatment.—"An anesthetic should always be given, and the fracture reduced by relaxing the calf muscles and applying traction to the foot. The limb must then be fixed on the back splint, with side splints in addition. The foot must be at right angles to the leg, the bony points in line, and the posterior displacement corrected. The surest way of maintaining the foot in good position is to at once apply plaster of Paris. Other splints used are Dupuytren's and Syme's horseshoe splint. Massage and passive movement at the end of ten days are advisable, the fragments being firmly grasped to prevent displacement."—(*Aids to Surgery.*)

3. *Indications for operation in traumatic insanity.*—We should operate on cases "in which insanity has soon followed a head injury; if the site of the trauma is indicated by a scar, a depression of bone, local tenderness, fixed headache, or some localizing symptom—motor or sensory—operation should positively be undertaken. In a case in which the insanity has developed later, in which the intermediate period between the injury and the development of the insanity has shown the change from the normal mode of thinking and way of acting previously alluded to, and in which the site of trauma is indicated by any of the evidences mentioned above—operation should positively be performed. One should not operate upon a case simply because there is a dubious record of an antecedent fall or blow, which merely suggests the possibility of a traumatic origin for the insanity. In any case in which there are positive signs of increased pressure it may be considered proper to trephine as a palliative measure."—(DaCosta's *Modern Surgery.*)

4. *Congenital club-foot.*—By club-foot is meant a deformity of the foot due to muscular, ligamentous, or osseous causes, the displacement occurring mainly at the ankle and mid-tarsal joints. It may be congenital or acquired. *Congenital malformation* is responsible for a certain percentage of the cases, resulting from imperfect formation of the bones of the foot, occasionally from absence of the lower end of the tibia or fibula, or very rarely from intrauterine paralysis of central origin. Other cases are due to malposition of the feet *in utero*, possibly resulting from a deficient amount of liquor amnii, as a result of which the feet are abnormally compressed and held in one position. Naturally the legs of the fetus are in a state of flexion, and the feet usually in a position corresponding to that of talipes varus; it is easy then to understand that in an unusually small uterus this position may become fixed. Spina bifida in the lumbar region is occasionally associated with congenital talipes, which is then probably due to impairment of nervous control. The congenital variety is often hereditary, and may occur in several members of the same family, or be transmitted through many generations.—(From Rose and Carless' *Surgery.*)

Varieties of talipes: Talipes equinus consists in extension of the foot, with spasm or shortening of the Achilles tendon, and usually with a loss of power in the anterior tibial group. *Talipes varus* is an inversion of the foot, associated with rotation at the midtarsal joint. *Talipes calcaneus* is characterized by elongation of the tendo Achillis and of the muscles associated therewith, by shortening of the anterior tibial group of muscles, and by slight flexion of the toes. *Talipes valgus* is a deformity of the foot in which eversion is a prominent feature. *Talipes cavus* results from bony subluxation at the midtarsal joint and contraction of the plantar fascia, and produces an exaggeration of the normal transverse arch of the foot.

Talipes equinovarus is a deformity in which the heel is drawn up, and the anterior part of the foot is inverted and drawn inwards.

Treatment.—"It may be treated in the early stages by fixing the foot in good position by a series of plaster of Paris casings, or by using a malleable metal splint. Tenotomy of tendons which hinder reduction in some cases is necessary, with the subsequent application of plasters. If the ligaments on the inner side of the ankle hinder reduction, they should be divided. In the neglected cases, where the patient has been walking on the outer side of the foot, tarsectomy is necessary. A wedge of bone, with its base outwards, is removed by a chisel or saw, irrespective of the joints, from the tarsus in front of the peroneal groove on the cuboid. The foot can then be brought into good position and maintained so by plaster of Paris."—(*Aids to Surgery.*)

5. *Gallstones.*—"While the calculus remains free in the gall-bladder, usually there are no symptoms. Impaction of the stone in the common duct gives rise to intermittent jaundice, following sharp pain in the right hypochrondiac or epigastric region, frequently radi-

ating toward the right scapula, nausea, vomiting, sweating, depression, and often intermittent fever (Charcot's intermittent fever). When the stone is impacted in the cystic duct, jaundice is less common, but the hepatic colic is severe, and dropsy of the gall-bladder may occur. The diagnostic points are the age, sex, history of previous attack, with jaundice and intermittent fever, location of the pain, dark, amber-colored urine, containing bile, and sometimes the finding of the stone in the feces.

"*Cholecystotomy*, or opening the gall-bladder, is done through an incision parallel to and 1½ inches below the costal margin over the gall-bladder. The liver is drawn up and the intestines packed away with gauze. If the gall-bladder is distended, the fluid is removed by tapping it with a trocar and cannula. The opening is then enlarged, and the stones are removed with a scoop. The bile-ducts are examined along their whole course by a finger externally, and by a long probe internally. If the interior is fairly healthy, the opening is sutured with two layers of continuous sutures and the abdomen is closed. Usually it is necessary to drain the gall-bladder for a time, in which case the margins of the opening are stitched to the peritoneum and transversalis fascia of the abdominal wound. The fistula thus established soon closes if there is no obstruction to the passage of the bile into the intestine. If not, it must be closed by a plastic operation or cholecystenterostomy."—(*Aids to Surgery.*)

6. *Pathology of dislocation.*—"Dislocation is a displacement of the articulating ends of the bones entering into the formation of a joint, with rupture of the ligaments. The immediate effect is the occurrence of some hemorrhage, followed in uncomplicated cases by absorption of the blood and connective-tissue proliferation by which repair is brought about. The changes vary according to the position of the bones. If the bone enters its normal position again—that is if the luxation be reduced—the subsequent changes amount to no more than a *restitutio ad integrum*. If the luxation be not reduced and the displaced bone remains in an abnormal environment, somewhat complicated changes occur. Those tissues pressed upon by the bone atrophy. The articular end, no longer in conjunction with its fellow, becomes covered with connective tissue that chiefly develops from the lacerated capsule. The cartilage becomes fibrillated and gradually changes to connective tissue. New bone is formed, and the condyle of the articulating end becomes diminished in size. The proximal bone also suffers. If, however ,the two bones come together in an unusual position, either they unite by ankylosis or a new joint is formed. This is accomplished through the excavation of the bone by pressure atrophy, and partly by a surrounding bony reinforcement caused by ossifying periostitis. The surrounding connective tissue forms the analogue of the capsular ligament. A synovial membrane finally develops, and a true nearthrosis results."—(McFarland's *Pathology.*)

The *varieties of dislocation of the hip*, are: *Backwards*, (1) on to the dorsum of the ilium, (2) on to the sciatic notch; *Forwards*, (3) on to the obturator foramen, and (4) on to the pubic bone. *Treatment:* In posterior luxation of the hip joint the patient should be placed on a mattress on the floor, and then be anesthetized. The leg is then to be flexed on the thigh, and the thigh flexed on the abdomen; adduction is to be increased so that the knee is beyond the middle line of the body; then abduct, freely circumduct outward, and finally extend the limb so that it is parallel with the other.

7. "In treating *strangulated hernia* place the patient upon his back, bend the knees over a pillow, and rigidly interdict the administration of food. In applying *taxis*, flex and adduct the thigh of the affected side. Always lower the shoulders and head, and raise the pelvis, and accomplish this by lifting the foot of the bed and placing pillows under the pelvis. Grasp the neck of the sac with the fingers and thumb of one hand, and employ the other hand to squeeze the hernia and urge it toward the belly; in *oblique inguinal* hernia the pressure should be upward, outward, and backward. If the bowel is reduced, it passes from the hand with a sudden slip and enters the belly with an audible gurgle; omentum, when reduced, slowly glides back without gurgling. Taxis is never to be continued long, and *it is not even to be attempted* in cases of great acuteness, in cases where strangulation has lasted for several days, in cases known to have been previously irreducible, in cases associated with stercoraceous vomiting, or in inflamed or gangrenous herniæ."—(Da Costa's *Modern Surgery.*)

(*To be concluded.*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE TWENTY-SIXTH ANNUAL REPORT OF THE MANAGERS AND OFFICERS OF THE CRAIG COLONY FOR EPILEPTICS. 104 pages with illustrations. Published by Craig Colony Press.

APHASIA AND ASSOCIATED SPEECH PROBLEMS. By MICHAEL OSNATO, M.D. 190 pages. Published by Paul B. Hoeber, New York.

EDUCATION IN WAR AND PEACE By STEWART PATON, M.D. 106 pages. Published by Paul B. Hoeber, New York.

PHYSICAL RECONSTRUCTION. By HARRY EATON STEWART, M.D. 240 pages, with 67 illustrations. Published by Paul B. Hoeber, New York.

INJURIES TO HEAD AND NECK. By H. LAWSON WHALE. 322 pages, with illustrations. Published by Paul B. Hoeber, New York.

RAMBLING RECOLLECTIONS. By A. D. ROCKWELL, M.D. 332 pages. Published by Paul B. Hoeber, New York.

CAN THE CHURCH SURVIVE IN THE CHANGING ORDER? By ALBERT PARKER FITCH 79 pages. Published by the Macmillan Co., New York.

THE OPIUM MONOPOLY. By ELLEN N. LA MOTTE. 84 pages. Published by The Macmillan Co., New York.

FIRST ANNUAL REPORT OF THE CLINIC FOR FUNCTIONAL RE-EDUCATION OF DISABLED SOLDIERS, SAILORS AND CIVILIANS, 1918-1919. 52 pages. Published at 5 Livingston Place, Stuyvesant Square, New York.

A CONCISE HISTORY OF MEDICINE. By SIR WILLIAM OSLER, M.D. 66 pages. Published by The Medical Standard Book Co., Baltimore, Md.

A MANUAL OF FOOT CARE AND SHOE FITTING. For Officers of the U. S. Navy and U. S. Marine Corps. By Dr. W. L. MANN and Dr. S. A. FOLSOM. 124 pages, with 58 illustrations. Published by P. Blakiston's Son & Co., Philadelphia.

SWANZY'S DISEASES OF THE EYE. By Dr. LOUIS WERNER. 671 pages, with illustrations. Published by P. Blakiston's Son & Co., Philadelphia.

PRACTICAL ORGANOTHERAPY. By Dr. HENRY R. HARROWER. 268 pages. Published by the Harrower Laboratory, Glendale, Cal.

ADDRESS ON THE METHODS AND RESULTS OF NATIONAL HEALTH INSURANCE IN GREAT BRITAIN. By FREDERICK L. HOFFMAN. 72 pages. Published by the National Civic Federation.

DIE INDIKATIONEN ZUR KÜNSTLICHEN STERILISIERUNG DER FRAU. By Prof. Dr. G. WINTER. 104 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

MANUAL OF TROPICAL MEDICINE. By Drs. ALDO CASTELLANI and ALBERT J. CHALMERS. 2436 pages with illustrations. Published by William Wood & Co., New York.

COMMON DISEASES OF THE SKIN. By Dr. G. GORDON CAMPBELL. 229 pages with illustrations. Published by the Macmillan Co., New York.

DIE GESCHLECHTSKRANKHEITEN. By KARL ZIELER. 182 pages. Published by Georg Thieme, Leipzig.

DAS HUNGERÖDEM, Eine klinische und ernahrungsphysiologische Studie. By Drs. C. MAASE and H. ZONDEK. 135 pages with illustrations. Published by Georg Thieme, Leipzig.

THE MEDICAL CLINICS OF NORTH AMERICA. January, 1920. 1165 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

Therapeutic Hints.

Creosote Inunctions in Pneumonia and Influenza.—John E. B. Wells, in 1898, used the axillary inunction of creosote in a severe case of pneumonia. Within half an hour the patient sweated, and the temperature fell from 104° to below 100°. Uninterrupted recovery followed. Since that time he has made frequent use of this method, with almost unvarying success. He considers the results too constant to admit of the change in the patient's condition being merely a coincidence with the crisis occurring at the time of the administration of this treatment.

The method of administration is simple. For adults, 10 minims of pure creosote are gently rubbed into the right axilla with the finger. If necessary, which he has found to be rarely the case, a second dose may be given, this time in the left axilla, for fear of blistering. The patient must be dressed in woollen or flannel and placed between blankets so as to avoid a chill after the sweating which follows the inunction. Only slight discomfort attends the treatment, a slight burning of the skin, which passes off in a day or two without vesication, being the only disagreeable effect. For children he dilutes the creosote with soap liniment, reducing the proportion of creosote according to the age of the patient. For infants, in place of the axillary inunction, he has at times substituted rubbing the back and front of the chest with a liniment containing creosote.

Practically all cases of influenza under Wells' care have been treated by rest in bed, plenty of fresh air, and the administration of creosote by the mouth. Half a minim of creosote shaken up with half an ounce of water is the simple mixture. The addition of half a minim of oil of peppermint makes it more palatable. Very few cases treated in this way developed pneumonia. When the signs of pneumonia developed the axillary inunction of creosote was nearly always followed by its abortion, or it was so modified that the patient recovered. When the pyrexia of influenza has gone, quinine or strychnine, or both, may be necessary.—*British Medical Journal.*

Digitalis in Cardiac Affections.—G. Canby Robinson made a study of the rapidity and persistence of the action of digitalis on hearts showing auricular fibrillation in a series of 26 cases. Large single doses of the tincture of digitalis were administered by mouth. The drug used was standardized and was usually given in doses ranging from 15 c.c. to 25 c.c. The study of these cases demonstrated that such doses of digitalis affect the heart of cases of auricular fibrillation or flutter at a relatively constant time after administration, in from two to five hours, indicating that the drug is absorbed from the alimentary tract at a fairly rapid and uniform rate. The series of cases also demonstrated that the maximum effect on the heart is usually obtained in about twenty-four hours, and generally continues to be effectual for from four to fifteen days, or on an average of nearly ten days.—*American Journal of the Medical Sciences.*

Acute Eczema.—In acute papular or papulovesicular eczema the skin is is often so irritable that salves and ointments as well as pastes are poorly tolerated. In these instances applications of a mild alcoholic solution of 0.5 per cent. of salicylic acid followed by the use of a bland dusting powder are indicated every three or four hours.

Salicylic acid	1	2
Diluted alcohol	240	

Label: Apply to affected parts.

Starch	
Talcum	āā 60

Label: Use as dusting powder.

Should the papules prove resistant after the eczematous outbreak has been controlled by this treatment, the following may be used:

Zinc oxide		
Talcum	āā	15
Petrolatum		30

Label: Apply to inflamed parts.

Zinc oxide	
Starch	
Glycerin	
Distilled water	āā 15

Label: Zinc oxide lotion.

Under this treatment the acute cases become subacute, the papules lose their redness, and become darker or somewhat livid or brownish in hue. At this point a high dilution of some drug which hastens desquamation may be added to the ointment or paste:

Zinc oxide		
Talcum	āā	10
Petrolatum		20
Rectified oil of birch tar		3

Label: Tar-zinc paste.

The use of tar preparations is indicated especially at this stage because of their effect in controlling dilatation of the blood vessels. They must be used carefully, however.

The above preparations are not to be used in cases of vesicular and moist or weeping eczema, in which the skin is in an even more irritable and intolerant condition. Impermeable substances, such as oil of silk or gutta percha tissue, should not be applied over wet dressings. It is distinctly desirable, however, to change the dressings frequently. Dressings saturated with any number of solutions meet the indications. Lead water diluted with from five to eight parts of water, solution of aluminum subacetate diluted with nine parts of water, and an aqueous solution of ichthyol 1:100, have proved efficacious. These solutions are best used cold, and should be changed every ten or fifteen minutes. Should there be no improvement from the use of these aqueous solutions or mild ointments, it is advisable to resort to the use of ointments or pastes of greater consistency; for example, zinc oxide ointment or Lassar's paste, applying the ointment on linen or mull bandage and swathing the part. If even thicker ointments and pastes do not bring results, it may be necessary to resort to energetic stimulation, which causes a crust to form. The crust acts as a protective covering under which the repair process goes forward. Stimulating applications may be made by painting the part with a 5 per cent. nitrate of silver solution, or with a 10 per cent. alcoholic solution of tar. After application the part is covered with starch powder.—EISENSTAEDT, in the *Journal of the American Medical Association.*

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Original Articles.

PROBLEMS OF BOARDING-OUT, WITH AN ATTEMPTED SOLUTION.*

BY HENRY DWIGHT CHAPIN, M.D.,

NEW YORK.

ONE of the most difficult problems in child-saving is concerned with the care of abandoned infants and little children. There are only two possible solutions of this question—either to collect the infants in institutions or to board them out. While institutions have somewhat improved their methods, the drift of opinion among those who know is strongly against the collective management of these cases, especially when the numbers are large. There has been an extraordinary agreement on this question among those who have had the widest chance for observation and experiment.

As far back as 1909 a conference on the care of dependent children was held at Washington, D. C., at the call of President Roosevelt, who was much interested in this vital human problem. A large number of practical workers and experts in child-saving from all parts of the country took part in the deliberations of this conference. Among many conclusions reached upon diverse problems of child-saving, the following especially concern us in this discussion: "Home life is the highest and finest product of civilization. It is the great molding force of mind and character. Children should not be deprived of it except for urgent and compelling reasons. . . . As to the children who for sufficient reasons must be removed from their own homes, or who have no homes, it is desirable that, if normal in mind or body, and not requiring special training, they should be cared for in families whenever practicable. The carefully selected foster home is for the normal child the best substitute for the natural home." We have thus represented in these words the national opinion on this subject.

Ten years later an international conference of Red Cross Societies held at Cannes gave what can fairly be said to represent the best world thought on this question as follows: "Permanent institutional care for infants and young children should be discouraged on account of the almost insuperable difficulties in maintaining nutrition in infancy under these conditions and because of the great susceptibility of young children to infection; preference should be given to placing such children in suitable families. All crêches, day nurseries and the like should be under close medical inspection."

As expert opinion is in such wide agreement upon stressing the family home rather than the institution in the care of the abandoned young, it is strange that more thought and effort have not been placed on the problems of boarding-out. The latter has not always functioned as well as it should, owing to lack of proper oversight and regulation. The old baby-farming experience, where an ignortant, careless woman, living in squalor, took as many babies to board as she could accommodate, with a sick and death rate rivaling the worst institution, at once comes to mind.

The two main difficulties of boarding-out consist, first, in selecting a suitable home, and next in exercising constant and proper supervision. Where boarding-out has fallen short, one or both of these factors have not been sufficiently emphasized.

In 1902 the writer developed what is known as the Speedwell System that represents a sustained effort so to regulate and systematize boarding-out as to place its good effects at a maximum and its possible bad effects at a minimum. This has been accomplished by developing what may be called a unit system of intensive boarding-out. A unit is a neighborhood that has been selected after a survey has been made to learn the general conditions of healthfulness and the number of good homes that may be available in the locality. There is then inaugurated a constant oversight, especially as to diet and hygiene, on the part of a salaried physician and nurse who are thoroughly familiar with this class of cases and competent to deal with them. The children are kept indefinitely, until digestion and assimilation have improved sufficiently to result in a permanent increase in weight and strength. Accordingly, work is kept up during the whole year and not limited to certain seasons. Efforts are made to train in each neighborhood a number of foster mothers, who, by natural aptitude under instruction and by constantly taking infants and young children into their homes, become fairly expert in handling them under conditions totally unlike those offered by institutions and far superior to them. We thus try to carry on an important educational work among the families taking our children. The constant oversight of our doctor and nurse is aimed to help each foster mother in the care of her own children as well. The homes in which the children are placed are to be helped finan-

*Read before Pediatric Section, New York Academy of Medicine, March 11, 1920.

cially by the board paid, and morally by the good advice and watching of the trained observers. Thus the simple machinery that endeavors to really and permanently help the abandoned and ailing child will, at the same time, assist in edu-

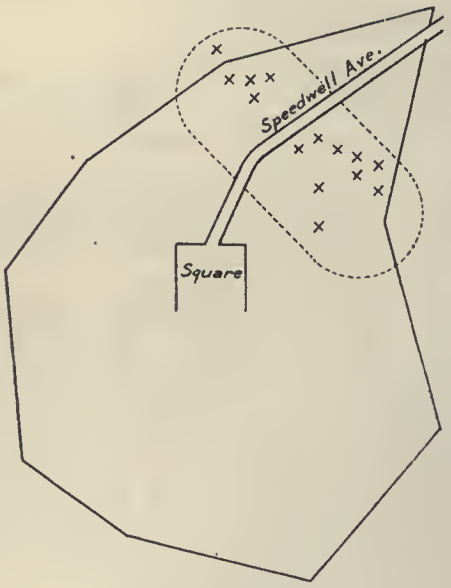

Fig. 1.—The Morristown unit.

cating each community in which it operates in prevention and care of its own ailing children. This by-product, involving improved social ideals and a higher standard of living, may be made a very important feature of this work. It need hardly be stated that this individual and social ideal, in order to attain its highest success, must be operated by those who believe in it and are willing to put forth enthusiastic efforts toward its support. In other words, the human effort is here

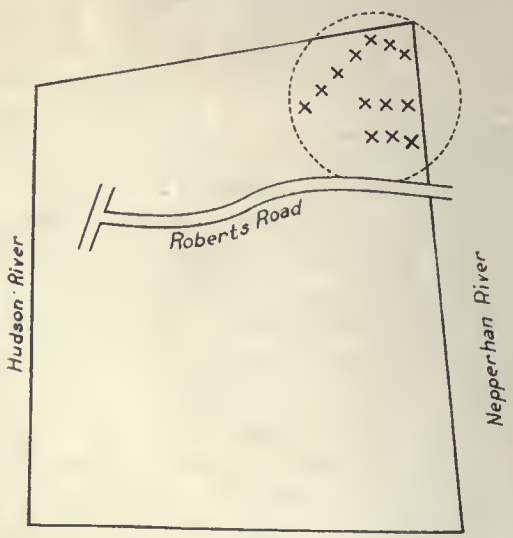

Fig. 2.—The Yonkers unit.

the important factor, and the system in order to attain its greatest efficiency calls for high-grade workers who can idealize their efforts and for good family homes where the boarded-out children will be reared under constant and intelligent supervision. The emphasis is thus placed on *human agents* rather than on bricks and mortar.

The underlying idea of a unit is to comprise a certain area in city or country, that will be sufficiently circumscribed to allow the workers to be acquainted with the personnel of a neighborhood and accessible for communication. It may include a part or whole of a village, or a ward in a city.

The formation of a unit involves first the picking out of a number of promising homes after the preliminary survey. Our experience has shown that it is a mistake to be too fastidious in selecting the homes. If the woman of the household has motherly instincts and fairly healthy children of her own, and seems teachable, a certain amount of dirt and disorder can well be overlooked at the start. A porch or back yard, or some open space, is essential, as plenty of fresh air is one of the most important features of this work.

The next step is to select a committee of women

Fig. 3.—An uncovered porch, a kitchen chair, a basket and a towel to shade it; one of our best plants.

living in or near the locality selected for the unit, who are familiar with the neighborhood and the people, and who constitute the local managers of the undertaking. They help in raising money and supplies, assist in friendly visiting in the homes, acquaint themselves with neighborhood conditions and in these and other ways exercise general supervision of the work.

The records kept of the children are uniform in all the units and careful histories on a card system show the conditions and results of their care.

The following card blank is used for this purpose:

SPEEDWELL SOCIETY.

(——— X Unit)

Name	Sex.	Age.	Received from.
Date of arrival.	Weight when received.		Weight when discharged.
Previous history.			
Present condition.			
Diagnosis.			
Food and treatment when received.			
Treatment.	Boarded with.		

Our experience shows it to be a mistake to try and keep too elaborate and complicated a system of histories. The object in this work is not research but helpfulness to the children, and not many data are required for this purpose.

Fig. 4.—The upper figure is that of an infant three months old weighing 5 lb. 12 oz. The lower figure shows the same infant returned after ten months, weighing 25 lb.

In comparing the results of institutional care with systematized boarding-out, it will be found that both mortality and morbidity are less under the latter plan. The mortality in institutions as elsewhere, is greater the younger the infant and hence published statistics should always be rendered at intervals of six months in order to have a true interpretation of existing conditions.

The reports of the New York State Board of Charities for the years 1914 to 1918 show that 14,525 children under two years were discharged from institutions in the State. Of that number 6583 were deaths. Of 12,437 little children who on the date of separation from the institution had been there one year or less, 6503 died. It should be noted that these figures do not include hospitals for acute cases of illness. In New York it was found that during four years the death rate of infants under two years of age through the State was only one-fifth that of children in institutions included in the same area.*

Aside from the large death rate there is a large morbidity in the institution, largely due to atrophy and to the many forms of contact infection. It seems impossible to avoid manifold cross infections when these susceptible infants are handled in mass. Their mucus membranes soon show a low resistance with resulting catarrhal inflammations that are difficult to control. All kinds of colds, especially of the influenza type, run unchecked, and many cases of bronchitis, bronchopneumonia, otitis media and subacute vaginitis are thus explained. All these factors result in the devitalized babies so often seen in institutions. Many of these dangers are avoided in a properly regulated boarding-out system.

Not only has our death rate been low, but there has been little sickness, especially of the communicable variety. A certain amount of illness is unavoidable, particularly among children of this type, but communicable diseases and cross infections that abound in institutions are usually a direct *result* of the environment. This danger is largely avoided in the Speedwell plan. As an example, 1,094 children were received and treated in a little over five consecutive years. Their stay in the boarding-homes varied from a few weeks to several months, with an average of about four months. During these years, and among this large number of children, only twenty-one cases of communicable disease occurred, as follows: Seven cases of chickenpox, seven cases of whooping-cough, three cases of measles, one case of Liberty measles, two cases of diphtheria—one nasal and one only bacterial—and one case of scarlet fever. These cases were nearly all in the stage of incubation when sent out, so that the disease was not contracted owing to the operation of the system. Two cases of chicken-pox and one of whooping-cough were contracted in the boarding-homes. As far as can be learned, few, if any, of the local children have been infected by our cases. We know of no other plan that could handle such a large number of children of this type with so little spread of infection.

Fig. 5.—The upper picture is that of an infant 5 months old, weighing 8 lb. 5 oz. The lower picture shows the same child returned after eleven months, now weighing 26 lb.

The results for 1919 in the two units directly operated by the Speedwell Society are as follows:

*Transactions American Association for Study and Prevention of Infant Mortality, 1914.

Morristown Unit (From November 30, 1918, to December 31, 1919).

	Admitted.	Discharged* Improved.	Discharged Unimproved.	Died.
Under 6 months	15	13	..	2
6 to 12 months	3	3	..	..
12 to 18 months	8	8	..	..
18 months to 2 years	9	9	..	..
2 to 5 years	79	79	..	..
Over 5 years	58	58	..	..
Total	172	170	..	2

*Twenty-three still in care and soon to be discharged: are all gaining.

Yonkers Unit (From January 1, 1919, to December 31, 1919).

	Admitted.	Discharged Improved.	Discharged Unimproved.	Died.	Remaining January 1, 1920.
Under 6 months	22	12	2	3	5
6 to 12 months	20	15	3	....	2
12 to 18 months	7	7	....	....	.....
18 months to 2 years	11	6	....	1	4
2 to 5 years	18	17	....	....	1
Over 5 years	6	6	....	....	.....
Total	84	63	5	4	12

In order to consider a case improved, before or at discharge, there must be a gain in weight and better appearance and vitality.

After considerable experience we have found that this method of operation is not adapted to handling cases of acute sickness that are best managed in a hospital.

In the earlier years of experiment all kinds of cases were sent out to the boarding homes, such as acute toxic infections, unresolved pneumonias, and, in the summer months many babies who were near death from bowel disturbances, in the hope that change and fresh air would give them a chance. This gave a hospital mortality. Besides, the foster mothers became fatigued and discouraged and did not possess the necessary nursing skill or appliances. After acute disease has subsided, however, the results in rapid convalescence have been most satisfactory. It is rarely possible

Fig. 6.—The child seen in the left-hand picture was 16 months old and weighed 14 lb. 12 oz. On the right is seen the same child returned after four months, weighing 23 lb.

for an infant or young child to get strong in a hospital. If kept too long, recurrences of the original disease frequently happen from auto- or hetero-infection. The results in those difficult cases of wasting, or atrophic infants, taken from institutions or tenement houses, have been most encouraging. In the institution these babies lie for hours unattended, and especially at night receive insufficient care. They need to be handled more, to be occasionally carried about, and to receive

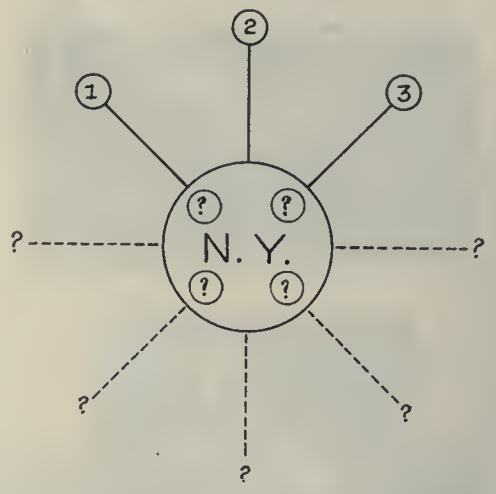

Fig. 7.—Diagram showing the three units thus far developed by the Speedwell; these are at Morristown, N. J., and Yonkers and New Rochelle, N. Y.

more fresh air. A little personal loving attention also has a therapeutic value.

Finally, the children have nearly always left our care in good physical and mental condition, such as would be apt to follow a more or less prolonged stay in a natural home. Too much praise cannot be given to some of our foster mothers who have done splendid work. They have recreated many a weak and ailing child who would otherwise have dragged out a feeble and inefficient existence.

The daily per capita cost for 1919 was $1.23 for the Morristown unit and $1.20 for the Yonkers unit. This is obtained by dividing the total number of days service into the total cost of operation. It includes traveling expenses of nurse and child to and from the country, extra clothing, special milk, the price of board and salary of doctor and nurse, with occasional unforeseen additional expenses. The cost for 1920 will be higher.

It is becoming increasingly difficult to secure good boarding homes for little babies, especially those of the atrophic type. They require constant care, night as well as day, and are liable to die in spite of all that can be done for them. There should be a sliding scale of prices, paying women who take such cases a much larger sum than is usually allowed. A system of prizes might also be offered for the successful handling of these little babies. We now give $18 a month and in addition pay for the best grade of milk, but this payment must still be increased if necessary to hold women on this important job.

If the lives of these little waifs are worth anything, they are worth much more than is usually paid to try and save them. It must be remembered that in the boarding-out plan there is no interest on invested capital, no overhead expense in running a plant, and no remitted taxes to be counted in the cost. If the large institutions will sell their expensive plants and use the money in

intensive human service, i. e. in paying doctors and nurses, with more generous treatment of foster mothers, this problem would be in the way of solution. A striking comparison between institutional and boarding-out mortality, as influenced by care and cost, is afforded by the results obtained by the Sage Foundation and Dr. Baker of the Department of Health, taken from the marasmus ward of a large infant's institution.* This ward receives only the chronic cases of extreme atrophy that have always resulted in death. In boarding out a number of these babies, an extra bonus per month was given to selected women. and a doctor and a nurse were furnished to every ten babies. There was an eventual mortality of 46 per cent. Thus nearly half of the babies were saved by special treatment in the homes, who were bound to die in the institution. We must note the way this boarding-out was done. Constant supervision and intensive working produced these brilliant results. There is no reason why such operation could not be continued on a large scale.

A few small plants could serve as collecting stations which would be all that would be necessary from the institutional standpoint when operating this form of regulated boarding-out. This would not only result in a great lessening of devitalized babies but would let loose educational and social propaganda whose effects would be widespread and beneficial.

These babies are not having a fair deal. Let us try and give them natural and watchful care in the way they need. They are brought into the world singly, not in droves, and they suffer in the crowd. We often hear the old adage, "Eternal vigilance is the price of liberty." Let us paraphrase it and say, "Eternal watchfulness is the price of life," as far as the weak, abandoned baby is concerned. We believe the plan sketched in this paper affords the most practical method of watching and saving these babies. We would like to see every large city develop this work according to the scheme shown in the following diagram. This would consist of various collecting units in the city that would be in constant communication with units in the surrounding villages. Thus far the Speedwell has developed three of these units, one at Morristown, one at Yonkers and one at New Rochelle that is operated by the Free Synagogue for the care of Jewish children in preparation for adoption.

51 West Fifty-first Street.

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WEAKENED FOOT: ITS MEASUREMENT AND CORRECTION.

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Weakened foot represents an adynamic condition, giving rise to varying degrees of disability or deformity or both. "All degrees occur from slight strain of the ligaments and tendons by which the arch is maintained, to complete descent of the arch with osseous deformity." It is evident, therefore, that weakened foot would never occur under proper conditions maintained by proper use.

The overwhelming predominance of weakened foot with resultant deformity to some degree of pes planus uncovered by the draft examinations leaves

Fig. 1.—Represents the location and indicates the specific action of the supinators-tibialis anticus and posticus, and the main accessory—flexor longus hallucis. The illustration serves to demonstrate that the anticus is the supinator in dorsal flexion of the foot, and the posticus in plantar flexion. The passage of the hallucis under the sustentaculum tali aids in supporting the anterior end of the calcaneus. Weakness of these muscles is the first step in weakened foot.

little to speculation that the man power of the country is materially affected thereby. "The condition was found in the ratio of 177.45 per thousand, or nearly eight times as frequent as any other defect."

There is, according to the Munson Board, "no dispute over the primary cause of flat foot; the structures are not sufficiently strong to support it." *Structures* refers to the soft parts; and their agency in the maintenance of foot integrity is commensurate with their physiological competence. To quote further from the findings of the Munson Board, "if pressure from above is greater than the tension exerted by the elastic muscles below, the excess pressure falls directly on the ligaments of the foot." This results from either increased body weight or weakness of muscles. As long as muscle tone and tension is commensurate with the superimposed weight; as long as the muscles are guarded from fatigue and overstretching; as long

Fig. 2.—Lower segment shows the bony structure of the lateral arch; the part of the foot receiving the weight in walking, and carrying the brunt in the passive four square position. Upper segment (the tangent) delivers the thrust for the succeeding step. Alterations in the bony relations begin in the posterior arm of the lower segment, turning the exposed facet inward and downward.

as they function in ordained lines unmodified by improper shoes, tender points, or toeing out, equilibrium will sustain the component parts in proper relation.

Studies in causes and results in pes planus have

brought the conviction, that whatever the original cause of disuse in any part, contractility and elasticity of fibroelastic elements have become affected and the reciprocal relation disturbed.

Machinery of the Foot.—The tissues that compose the foot and their general anatomical relations are so well understood as to preclude the necessity for a detailed review. A study of the values of the components, the distribution of force, the behavior of the segments in meeting that force, and the selective functions of the several parts in the performance of the act of walking has, however, an intimate relation to the disabilities and subsequent, if not consequent, deformities to which the foot is prone. For it has been generally observed that sooner or later the weakened foot develops symptoms and malposition.

FIG. 3.—Radiograph of antero-posterior view of normal foot (left) (Case 6149) without weight bearing. CD defines the weight bearing (Meyer's) line, depicted by lead wire strapped on anterior surface of leg. AB shows lead wire strapped vertically to posterior surface of heel as near the center of calcaneus as can be estimated from surface markings. The decipherable outlines of calcaneus, astragalus and scaphoid are indicated by dotted lines.

The foot is a complex structure; it is more, it is a complex mechanism. In an analysis of the foot as a functioning organ, an enumeration of muscles, ligaments, and bones brings out certain patent facts, which are generally accepted. The structure and shape of each bone, the arrangement of the laminæ, the facets clearly evidencing the direction and extent of the joint motion, the tubercles, prominent ridges, and the gradual tapering of the bony structure from calcaneal tuberosity to phalanges show plainly the part each is to play as an individual in the piece.

The foot is a lever of the third order. The weight lies between the power and the fulcrum. This applies, of course, to the walking or active foot, which is the one under discussion. It is a double-action third order lever. The act of walking embodies two distinct performances; the body weight is received upon the forward foot and

FIG. 4.—Identical with Fig. 3 in position, but with weight bearing. Note the black line of lead tape near C. Rotation of heel under weight bearing is not present, as the relation of lines AB and CD is unchanged in the normal foot.

brought to a point where the center of gravity of the body is over the intermalleolal line; the second action begins at that juncture, consists in deliver-

FIG. 5.—Lateral view of normal foot. AC is drawn from inferior border of heel to head of fifth metatarsal; CD from same point to lower border of anterior part of calcaneus. The angle at C represents the obliquity of the posterior arm of the lateral longitudinal arch. B is the posterior margin of the fifth metatarsal.

ing the body weight forward, and terminates when the foot leaves the ground. In the performance of the receiving functions, the fulcrum is at the heel and the power is supplied by the dorsal flexors (Fig. 1); in accomplishing the forward

thrust of the body, the fulcrum is at the head of the first metatarsal and the power is exerted through the tendo Achillis. Let us follow the transferrence of weight along the bony framework. From the tuberosity on the plantar surface of the calcaneus posteriorly, part of the weight moves along the "lateral longitudinal arch," to use the designation of Lewis, through the cuboid to the fourth and fifth metatarsals. Lewis pertinently calls attention to the calcaneocuboid joint, which, he says, "possesses a special mechanism for locking and allows only a limited motion. The most marked features of this arch are its solidity and its slight elevation." From this point the weight to be borne by the anterior lever is diffused to the heads of all the metatarsals and the point of equilibrium is reached. In advancing for the next step, such weight as the calcaneus bore is transferred along the lateral arch and the whole accumulates at the inner half of the anterior metatarsal arch and is transmitted therefrom through the first, second, and third metatarsals, the cuneiforms, navicular, and talus to the tibia. The calcaneus carries the power and not the weight.

Fig. 6.—Without moving the foot in the slightest from Fig. 5, weight bearing was assumed. Note here again that the secondary change of depression of anterior end of calcaneus is not present, and that the angle at C remains the same.

Fig. 7.—Case 5177. Fourth degree planus. Without weight bearing. Line AB (vertical marker on heel) not quite parallel to Meyer's line (CD). This is due to extreme relaxation of fibro-elastic structures and demonstrates that bony relations are not reestablished on removal of weight.

Fig. 8.—Case 5177. With weight bearing. Note divergence of AB, revealing pronounced external rotation of calcaneus. Deformity has progressed so far as to curve Meyer's line in eversion from the subastragaloid joint down.

It is evident, then, that the physiological division of the internal set of bones from the external set, as Davis puts it, separates the third and fourth metatarsals, the external cuneiform and cuboid, and the talus and calcaneus. Quinn and Kuss have a more fanciful than rational concept of the internal segment as furnishing support and the external segment balance. Where else in the skeleton, I would inquire, do bones and joints mislead in their compensating attributes of strength and motility? Is it not wholly logical to liken the lateral arch to the lumbar spine and the median arch to the cervical?

From the mechanical standpoint it is illuminating to consider the astragalus, navicular, the three cuneiforms, and their articulating metatarsals as forming a tangent to the lateral arch and resting by an offset on the vertex of that arch (Fig. 2). This harmonizes with weight transferrence and with the subdivisions of the mechanical processes. It is of small moment as a topic of argument, but vital to the estimation of comparative values of fundamental and accessory parts in beginning dysfunction. And on the mus-

cular side muscle sense represents the accurate grading of motor impulse and therefore stimulates contraction in proportion to the work to be accomplished. There is rarely any damage done to muscle under this impulse; it rather makes for increased strength and power to perform. Suspend muscle sense or let it fail to measure up to the demand from weakness or other cause when interposed between bodies whose impact force is a fixed quantity, and overstrain will inevitably result. This situation develops only as the foot receives the load. In delivering it, on the other hand, the muscle acts within its ability to discharge the motor impulse. Since it is patent there will be no driving force without muscle tension, the tangent itself is safeguarded in shifting its load far more positively than is the fundamental arch in coping with what is thrust upon it. Compare the power of the combined contraction of the gastrocnemius, soleus, tibialis posticus, flexor longus hallucis and digitorum, and peroneus longus acting on propulsion with the comparatively weak action of the muscles of the anterior aspect gradually relaxing as the foot receives the weight. That the strongly constituted external border of the foot depends to a lesser extent on muscular support, the powerful inverters—anticus and posticus—attached to the most effective point of the tangent find no counterpart in the peronei tertius and brevis.

Fig. 9.—Case 5177. Under correction by Rotameter with weight bearing. The relations of bony parts as to eversion have been restored by internally rotating the os calcis, bringing that bone into fair relation to Meyer's line. AB is brought parallel, but is carried outward by rotation of the heel.

Fig. 10.—Case 5177. Lateral view; without weight bearing. Shows secondary effect by depression of anterior end of os calcis. Compare angle at C with Fig. 5.

Fig. 11.—Case 5177. With weight bearing. Angle at C further reduced with noticeable lowering of tangent; lateral interpretation of Fig. 8.

Much stress is wont to be laid on the ligaments in preserving the contour and function of the foot. Valuable adjuncts, as they are, in maintaining articular facets in apposition, they are inelastic structures and will ultimately yield. Were it not for the ligamentous action of muscles, sprains with their sudden solution in continuity of ligament would be as ubiquitous as the autumn leaves. Reduce this muscle support ever so little and repeat the resultant strain on ligaments the myriad times the foot is challenged to accept its inexorable burden, and the ligaments will be found to have sagged pari passu with muscle incompetence. "Muscle tension and balance thus maintain the foot arch in its proper curvature. Where this is lost, the arch tends to flatten. . ." (Soldier's Foot.)

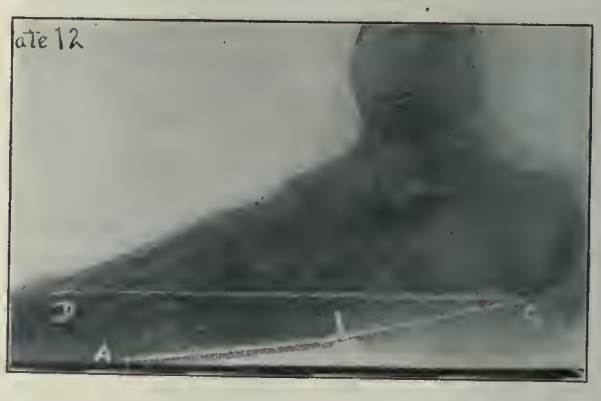

Fig. 12.—Case 5177. Under correction, as in Fig. 9. Of especial interest is the elevation of the navicular above line CD, as compared with Fig. 11.

Dysfunction.—The spread of the heads of the metatarsals with their toes checks the tendency of the calcaneus to rotate. The calcaneus, however, has had free opportunity to so rotate before the anterior part of the foot comes to the ground. In the first place the fact that it lies slightly external to the line of weight-bearing and receives the full load with no assistance in the preservation of its perpendicularity save the tibiales and flexor longus hallucis and what postural advantage the four-square placing of the foot on the ground affords, presents a predisposition to external rotation with the advent of any abnormal-

Fig. 13.—Case 4151. Gun-shot wound that punched out cuboid. Without weight-bearing radiographic relations shown to be excellent.

ity of the contributing supports. Secondly, the preachment for generations has been for the fallacy of turning the toes out, and the walking is so "done with an everted foot, the less the body is supported by the strong outer portion of the foot and the more the body weight is thrown upon the weak inner portion, *not intended to support it.*" (The Soldier's Foot). This is potential flat foot.

Displacement of the bones of the tangent supervenes readily and with increasing ease as the calcaneus rolls out from under the talus. The astragalus resting now on an incline slips downward and inward, carrying with it all the bones of the inner border and producing actual pronation. Flattened foot is, therefore, a change in structure resulting from the inability of the muscles of inversion to perform their assigned function in the

Fig. 14.—Case 4151. Although wound had been healed many months, disability was complete and crutches necessary. Much persuasion was required to secure weight bearing for the exposures because of pain. Effect of angulation produced by muscle tension to resist pain.

support of body weight. It is apparent, then, that when disability and deformity supervene, the earliest malposition must take place in the lateral arch and not in the superimposed tangent.

Predisposing causes are in the main occupational; vicariously occupational at that. Seden-

Fig. 15.—Case 4151. Lateral view without weight. Complete crippling with no disturbance of the median arch.

tary pursuits, vehicular travel, the substitution of social games for athletic, and the whole gamut of step-saving devices conspire to muscle weakness and fat accumulation. Compared with these elements of physical neglect that filch the vitality

of all tissues devoted to locomotion, modish dress with its high heels and pointed toes appears trivial. It is axiomatic that use predisposes to increased ability to perform, and conversely, that disuse predisposes to atony and atrophy.

In the course of restoring functions to lower

Fig. 16.—Case 4151. With weight. Anterior end of os calcis dropped from loss of keystone of lateral arch (cuboid); shown by acute angle at C.

extremities of wounded soldiers consequent to peripheral nerve injuries, their surgical repair, and incidental immobilization, it was apparent that many cases of weakened foot were developing. This complication necessarily developed

Fig. 17.—Case 4544. Without weight. Double trench foot, necessitating amputation of heads of first and second metatarsals. Normal relations with os calcis marker parallel to Meyer's line.

from the active use of the leg in the resumption of walking. The policy of encouraging men with drop-foot to walk with the dorsal support could not but tend to external rotation of the calcaneus, bereft of the assistance of the tibialis anticus and its homologues. The wrapped legging and snug puttee are favorable to the incurrence of weakened foot. Circular pressure on a limb interferes with nutrition and restricts the full bellying of muscles in contraction. It contributes to loss of tone and atrophy.

Fig. 18.—Case 4544. With weight bearing. Slight rotation from attempt to balance without heads of inner metatarsals. No discomfort; only disability occasioned by loss of pushing power of great toe.

Just after the conclusions had been reached that the median longitudinal arch depended for its integrity upon the preservation of the lateral arch, two cases presented themselves to the Department of Physiotherapy at Fort Sheridan. The

Fig. 19.—Case 4544. Without weight. Normal relations, although there is no completion of the tangent: therefore no so-called "arch."

one, Pvt. O. G., had a double amputation of the metatarsus, the result of "trench foot." The line of amputation ran from the head of the fourth metatarsal to the middle of the shaft of the first metatarsal. The anterior arm of the median line

of bones was ½ inch off the ground in weight bearing, eliminating any function of the inner border. There was no pain on standing or walking. Dysfunction did not exist in receiving the body weight on the foot, but there was no ability

FIG. 20.—Case 4544. No change from Fig. 19 under weight. Able demonstration that lateral arch maintains contour of foot.

to thrust the body forward; which, it is contended, is the purpose of the tangent. (See Case 4544).

Case 4151, on the contrary, had a perfectly normal median arch as to contour and flexibility. A piece of high explosive had punched out the cuboid, breaking the continuity of the lateral arch and, so far as that arch was concerned, leaving the calcaneus unsupported anteriorly. The slightest attempt at weight bearing occasioned excruciating pain at the taloscaphoid articulation. Notwithstanding, therefore, a perfectly preserved inner border, the calcaneus, unsupported by the cuboid, was unable to receive the weight of the body or a fraction of it. The patient was still on crutches, though the wound had healed months before and, realizing that efforts at relief had been vain, was urging amputation. (It might be of interest to know that the orthopedic service was considering as a preliminary procedure an arthrodesis by bone graft between the calcaneus and fifth metatarsal.)

If exciting causes are those which promptly produce symptoms, in weakened foot the line of demarcation between predisposing and exciting causes cannot be sharply drawn. When enfeebled muscles throw excessive burden upon ligaments, discomfort will result. Distinction must be made between deformity and disability. While symptoms usually occur before the deformity is apparent to the patient, they are in no respect a measure of it. And it is this class of disabled cases that appeal for relief. The strain, the obliquity, and the descent are sometimes so gradual that planus results without disconcerting pain, although "observation and study of this class of cases compel the conclusion that every case of flat foot does give symptoms sooner or later, if subjected to intensive training." (*Military Surgeon*, Jan., 1918.) Out of 2,000 cases examined by the investigator just quoted, 600 were pronated to the first, second, or third degree; and of these 60 per cent had no symptoms. Physiological pronation produces disability, whereas anatomical pronation spells deformity, whether it is disabling or not.

Estimation of Deformity.—The issues that must be taken with published findings on foot abnormality are the inadequacy and mechanical inaccuracy of (1) measuring deformity by soft tissue prints; (2) roentgenological estimation in lateral position of bone displacements of the passive foot; and (3) casting the non-weight bearing foot for correction and shoe requirement.

"Degree, as determined by foot imprints alone is not especially definite or positive." (Gosman and Perry.) Soft tissue prints obscure results by the variation in adipose tissue and, in any event, register secondary changes only. This latter criticism applies equally well to *x*-Ray findings in the lateral position, even in weight bearing, so far as the depression of the anterior end of the calcaneus and the subsequent lowering of the talus and navicular are concerned; without weight bearing the finding is deceptive from disregard of elastic elements. Of the third method referred to above it is sufficient to call attention to another conclusion of the Army Board that developed the best shoe ever issued to a soldier: "While shoe fittings in civil life are habitually based on feet at rest and thus occupying the minimum space in the horizontal plane, the method of shoe fitting here described is based upon the fact that the foot in action differs very materially in appearance and dimension from the foot at rest . . ." The elastic content of muscle and ligament tends to return the bones of the tarsus to their normal relation when weight is removed. Therefore, estimate of the deformity can be made only when measurement is made in the weight bearing position.

Bradford as late as November, 1919 (*Journal of Industrial Hygiene*, p. 351) said "a plaster-of-paris cast is unnecessary and may be misleading since it gives only the contour of the feet at rest and not in action." And the best advice he could offer

FIG. 21.—Case 3747. Illustrating internal rotation by the rotameter to normal inversion. Elevation of inner border being measured for amount of lift required on correction plate.

to the physician for the estimation of foot defects was to "watch the gait of the individual," and to take the time-worn imprint of soft parts in the static position.

Plasticity of the foot is a prerequisite to cor-

rection. Rigidity is a complication that must be overcome before the foot is amenable to postural correction of the overstrain that occasions pain and deformity. A simple test of flaccidity is to seat the patient and so place the foot on Bristol

Fig. 22.—Cast moulded to active foot with eversion corrected. Mould is poured into undisturbed cast.

board dusted with talcum that the lower leg is vertical. Require the patient to advance the foot as far forward as possible, keeping the ball of the foot touching the board. The tension on the tibialis anticus in a well advanced position will draw up the inner border to a well-developed arch in any foot that is not rigid.

To mark the behavior of the calcaneus under weight bearing and to depict its rotation rontgenologically required facilities and a technique that U. S. Army General Hospital No. 28 supplied. Through the scholarly and earnest cooperation of Major H. G. Maul, M.C., Chief of the *x*-Ray laboratory, a technique was evolved that brought to light the primary changes in the long axis of the foot from unsustained pressure. An uniform procedure was adhered to. The exposure was anteroposterior. The patient was seated with the foot touching but not resting on the pedestal. Meyer's line was marked by a lead wire taped on the anterior surface of the leg, and a vertical lead strip was centered accurately on the posterior surface of the heel. The tube was placed 28 inches from the plate, which was vertical, against the heel and projected 4 inches below the sole of the foot. The ray was centered at the talotibial articulation and with a 5 inch gap and at 30 milliamperes, exposure was for 7 seconds.

Without changing the position of the machine or foot, the patient was assisted to the standing position and required to distribute weight equally on both feet. This exposure registered the changes produced by weight bearing. For the third exposure—that of corrected posture—the calcaneus was internally rotated by a lever operated by a screw until the gross appearance of the foot showed that adequate supination had been restored. Reference to Figs. 3 and 4 of the normal foot, show almost no rotation to the calcaneus under weight bearing. (Correction was not used in the control plates.) On the contrary, the obliquity of the heel marker to Meyer's line in Fig. 8 and even the curving of the line itself from extreme pronation, is easily decipherable. Case 5177, being a fourth degree type, is not susceptible of complete correction and the heel marker is not perfectly vertical.

The necessity for employing the active (weight bearing) foot in the estimation of the amount of external rotation of the calcaneus, and the amount of postural internal rotation required to correct it, is evident. For all intents and purposes the trained eye finds no difficulty in judging the requisite amount of heel inversion. To put it graphically, the external promontory of the tubercle of the os calcis should line anteroposteriorly with the lower border of the external surface of the trochlear of the talus. (See Figs. 21 and 22). These can readily be identified on the surface.

Studies were also made in the lateral position in quest of data that might lead to surface interpretations of the amount of downward displacement of the anterior end of the calcaneus. The change in technique for the lateral exposure including placing the tube horizontal, centering on the calcaneocuboid articulation, and reducing the exposure to three seconds. Comparison of the length of AB and BC (Figs. 5 and 10) in a group of cases revealed that AB is normally longer than BC; that when BC is greater than AB a condition of advanced pronation exists; that a fairly accurate determination of the comparative length can be made from the surface markings. In twelve cases with no foot record, selected at random in wards, it was found that in eight AB was greater than BC; in two (one a negro) AB equalled BC; in two (both with symptoms of weakened foot) AB was less than BC. (See Figs. 6 and 11).

The Rotameter.—This instrument is a platform whose floor plan fits the feet in the four-square position. The outer sides have a curb moulded to the outer border of the foot with an offset to avoid

Fig. 23.—Correction plate made for Case 5177. Note lift of 5/16 inches to reproduce correction by the rotameter.

pressure on the base of the fifth metatarsal. The heels rest on plates 2½ inches square inlaid in the base and hinged at the angle of the curb. Thumb screws operated from beneath bear upon these plates. A solid post carrying an adjustable cross

arm at the level of the inner (subcutaneous) surface of the talus stands midway between the inner malleoli. Placed on a table with the patient standing thereon steadied by a support chest-high, the operator can with accuracy and despatch determine, by plumb line (except in genu varus and valgus) and the surface anatomical points described above, if rotation exists.

The prerequisite of a device that will measure the amount of rotation of the os calcis is the fixation of the anterior metatarsal line to the weight bearing surface. The torsion of the foot normally maintained by the supinator group is disturbed when the subastragaloid joint has yielded and pronation begun. Before inverting the calcaneus, therefore, the ball of the foot is snugly secured to the platform by a transverse strap. A proposed correction that allows elevation of the inner border of the sole takes no cognizance of foot elasticity.

Correction, which means readjustment of deformity where it begins, is accomplished by turns of the screw until the designated points on the calcaneus and talus line up. The outer border of the heel is firmly held in the angle of the curb and the weight bearing line falls without the line of support. (Fig. 21). The elevation of the inner border of the heel is the amount of lift to be added to the correction plate.

The Mould.—With the ball of the foot still secured and the incline in its registered position, the heel is raised and twelve thicknesses of plaster bouillon gauze is slid under the foot to the tarsometatarsal joint. Weight bearing in the same position is resumed and the plaster moulded to the top of the fatty cushion on the outer side and just below the inner malleolus. Counter pressure on the plaster over the astragalus by the cross arm establishes a moderate leverage to preclude further strain on the subastragaloid joint and obviate any possible play between foot and plate in walking, which is the element of failure of the Thomas heel (Fig. 22). As soon as the plaster is set, the patient is released by carefully sliding the foot forward, leaving the undisturbed mould of the corrected weight bearing foot. The usual procedure of coating the skin with vaseline in plaster work is to be observed. One would wish to afford the patient a more comfortable position, but thorough preparation reduces the manipulation to a few minutes and no intolerance has been manifested even by female subjects.

The Cast.—Into the unhandled mould plaster grout is poured after the Whitman method. Similarly, too, when this in turn has set, it is delivered from the mould, smoothed and polished with talcum, the outline of the proposed support inscribed on it with the name of the patient, and the degree of angle of inversion on which it was cast. (Fig. 23).

Gosman and Perry's conclusion that "we are convinced that any form of artificial support to any arch is decidedly detrimental" (*Military Surgeon*, Jan., 1918) is to the point. It is consonant with the findings of this paper and with the pathology this heel support is designed to aid in rectifying. Aid is used advisedly, for treatment must consist in both alleviation and redemption.

Weakness of the supinator muscles is the primary etiological factor, and in the redemption of the supinators lies the hope of cure. As pronation develops, the tibiales muscles (disregarding for the moment the effect on other tissues) become overstretched from lowering of the points of insertion, which decreases their contractile power and tends to further deformity in active use. In order that this may be prevented during the period of muscular redevelopment, it is essential that the points of insertion be held to proper elevation by mechanical means that will operate to reduce the deformity at the point of origin—the calcaneus. The Thomas heel, it has been already conceded, had a similar motive, which failed of fulfilment in the majority of cases that have come to the writer's attention, because of the rotation of the foot within the shoe and the subsequent overriding of the outer counter. In like manner and for the same reason insole leather wedges of the so-called "tomahawk" type have been disappointing. "Arch supports" are beyond the pale and as unworthy of serious notice as of public confidence.

The rotating support pictured in Fig. 23 is a perfect fitting of the *active* foot by accurate measurement of required inversion. Its mechanical action is one of internal rotation of the calcaneus and restraint of the astragalus from further slipping inward and downward from its perch on the crest of the lateral arch. The calcaneus does not at any time in the act of walking escape from its grip and the supinators, relieved from overstretching, are preserved during the periods of relaxation in a position essential to reacquirement of power and tone. The secondary effect on the bones of the foot as a whole is to restore, by the torsion occasioned by walking, the midtarsal arch by elevating the upper end of the tangent, when the head of the first metatarsal is the fulcrum in delivering the load. No constriction is made upon soft tissues, save that transmitted through the os calcis; no element of the vicious plantar crutch is exerted by it.

Contour, posture, and power to perform are the trinity in foot function and the greatest of these is the last, for on it hangs the burden of the other two. It has been postulated that the foot in question is flaccid; that any rigidity due to long continued strain, or any spastic type from peroneal spasm, has been first converted into flaccidity. For the rigid foot has developed from involuntary muscular immobilization to give relief from pain produced at the periosteal attachment of ligaments following bony displacement.

When a period of rest from active weight bearing is urgent as a preliminary measure in pronounced cases of periosteal pain, and in the presence of tender points, as callosities from the use of unnatural pressure points, daily massage and passive motion with special emphasis on dorsal flexion will stimulate circulation and hasten tissue regeneration. In direct proportion to the degree of pronation, the peroneal group shortens in conformity with the natural behavior of opponent muscles. The peroneal pronator group must of necessity, then, receive the full measure of manipulative attention to prevent not only their restraint of tibial contractility, but also to reduce

tension upon the supinators during periods of rest in equilibrium. Proper massage at this time will obviate the necessity for fixation.

The kind of exercise to be selected to effect redemption and its manner of performance is of the utmost importance. Ordinary walking with the inverting support overcoming strain may be all that the patient, now relieved, can be induced to take. The conclusion of Gosman and Perry from their thorough study in reclaiming the soldier's foot, that the "non-resistant exercise plan is most effective" is generally concurred in by authorities in physical training. These authors outline a facile and effective scheme of graduated exercise, as follows:

1. With the toes projecting over the edge of the pedestal (a 2 x 12 inch plank, for instance) steady and firm contraction of the accessory flexor longus hallucis and flexor longus digitorum is practised slowly, relaxing easily between contractions.

2. Push the same exercise with greater effort until the tibialis anticus joins in the action, giving the foot the appearance of a half-closed hand. Relaxation between contractions must be slow and complete. The exercises are to be so graded, as to stop short of fatigue.

3. Emphasis is placed on walking with toes straight forward.

Many combinations of these essential actions may be devised or utilized, if one so wishes, without sacrificing the ultimate aim.

As Colin Mackenzie has specifically indicated, in harmony with muscle action, the flexors of the toes have no action on the ankle or tarsal joints; its support of the sustentaculum tali, however, makes the hallucis the most important accessory supinator. Again, joint motion must be unrestricted for the proper play of muscles acting upon and over the joint. It is well to remember in the selection of shoes, therefore, that the toes are to be allowed free movement, not only as a matter of comfort, but for the untrammeled action of the flexor longus hallucis and flexor longus digitorum.

Reduced to its lowest terms, rehabilitation of weakened foot consists in (1) measuring the degree of overstretching of the supinators of the weight bearing foot; (2) mechanically returning the bony contour by inwardly rotating the calcaneus, thereby restoring the relations of the lateral arch to Meyer's line and placing the pronators and supinators in equilibrium; and (3) by massage, active exercises and such other physical measures, as the condition of the tissues in individual cases suggests, stimulating the tibiales muscles to assume their full and proper function in the two distinct mechanical actions of locomotion.

Anatomical Diagnosis of Rabies. — Grouchmann, apropos of rabies, states that the clinical diagnosis is insufficient while inoculation with a portion of bulb of the dead animal requires too much delay. He would therefore make use of histological technique which can bring out the Negri corpuscles, the rabic nodules, neurofibrillary hypertrophy and rabic tubercles. The coexistence of these four finds is decisive while one or two alone may suffice. The Negri corpuscle is the most dependable single find. The evidence warrants a resort to the Pasteur treatment of the bitten.—*Journal de médecine et de chirurgie pratiques.*

MALIGNANT ENDOCARDITIS.

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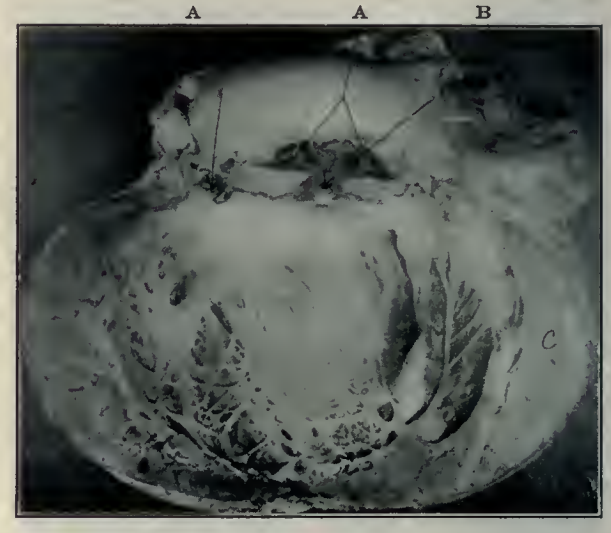
MALIGNANT or ulcerative endocarditis, so called because of the tendency to local tissue destruction and the high mortality which it causes, may be acute or chronic.

It is always a secondary disease. It may be a local complication of a systemic disease like pneumonia, typhoid fever, epidemic cerebrospinal meningitis, influenza, and rarely rheumatic fever, or it may arise from a focal infection anywhere in the body due to gonococcus, streptococcus, staphylococcus, and less frequently to other infectious bacteria. There is always an associated bacteriemia.

The bacteria which are most frequently found in the infected heart tissue, vegetations, and contained thrombi, in the blood stream by cultures, are streptococci, pneumococci, and staphylococci.



AA, Acute massive vegetations. *B*, ulcerations and perforation of aortic valve. *C*, hypertrophic ventricle wall.

Streptococci are the most frequent cause and reach the blood stream and heart from septic wounds, the septic puerperal uterus, and other streptococcus foci about the head and elsewhere. While the *Streptococcus pyogenes* is the strain which causes most of the acute types arising from acute infections, the *Streptococcus viridans* may also cause the acute type, but usually is the cause of chronic malignant endocarditis.

Bacteriemia associated with general diseases named or due to a focal infection may not involve the heart. The normal endocardium is apparently resistant while old sclerotic processes of the valves and congenital deformities of the heart and proximal vessels predispose to malignant endocarditis. Hence malignant endocarditis most often occurs in individuals suffering from chronic valvular disease.

The morbid anatomy is essentially the same in all bacterial types in the acute form. Usually vegetations are present, often massive, especially when

due to pneumococcus or to *Streptococcus viridans*. Occasionally the vegetations are not large while necrotic destructive lesions are dominant in virulent infections and especially when staphylococci are the cause. (See the illustration.)

From the circulating blood thrombus formation occur the vegetations, necrosis of endocardium, superficial and deep, with perforation of valves and other destructive lesions. The infectious bacteria are present in great number in the vegetations, thrombi, and involved tissue.

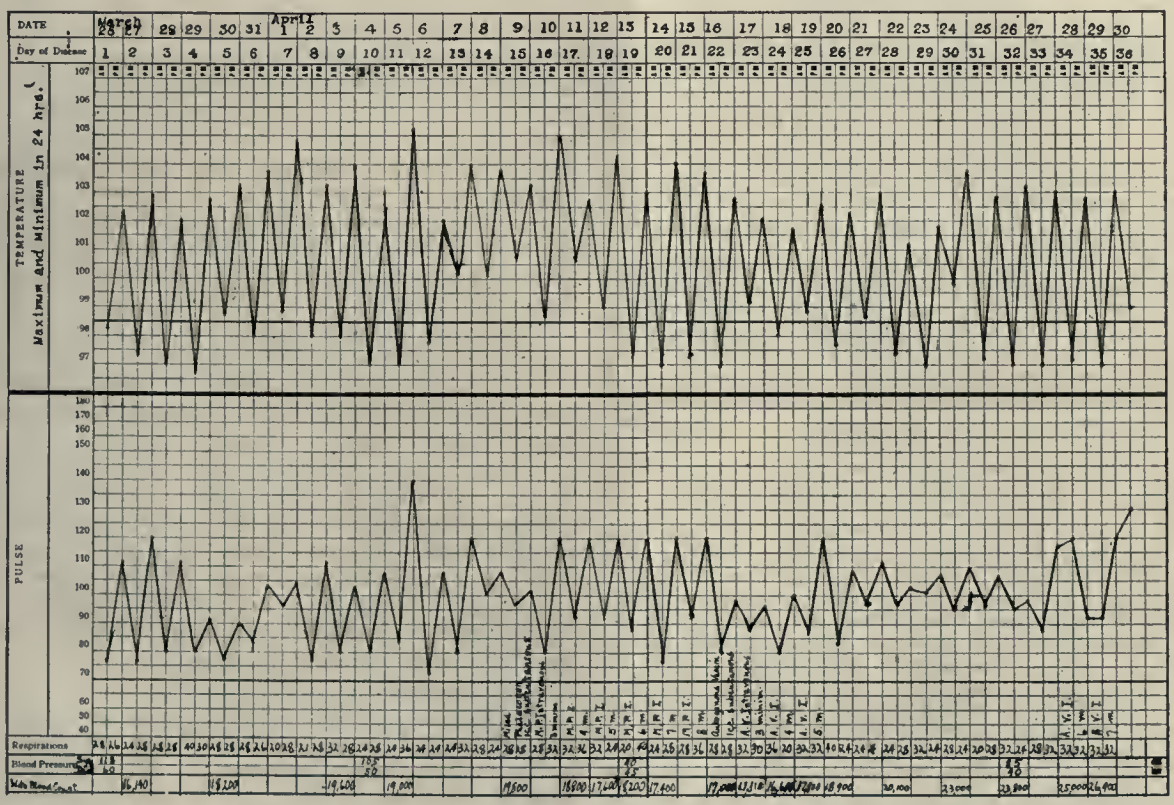
When malignant endocarditis occurs as a local complication of a general disease like pneumonia, rheumatic fever, cerebrospinal fever, or some other acute disease, it may not be recognized because the severe symptoms of the systemic disease may overshadow the local condition. As a rule the other symptoms of the general disease are intensified with evidence of failing heart, leading to a rapid fatal issue, and the endocarditis is recognized only at autopsy.

As regards characteristic symptoms which may lead to the diagnosis, the local heart condition is manifested by endocardial murmurs, supported by blood culture and increased leucocytosis. The septic type is marked by chills and an intermittent or remittent type of fever with severe sweats.

The diagnosis of malignant endocarditis is difficult, but is aided by blood culture.

You will note in the case report that the patient gives a history of general malaise of one month's duration and fever which developed gradually with steady pains in almost every joint. He had severe headaches and a chronic nasal catarrh indefinitely. On March twenty-third, three days before entrance, he was compelled to quit work on account of general weakness and extreme shortness of breath. The focus of infection here was questionable. After the cardiac findings and routine examination, a diagnosis of malignant endocarditis was made. The blood cultures made on April 3 and 8 showed a staphylococcus infection. The mixed phylacogen, 1 c.c. subcutaneously, had little effect. The following day 3 minims were given intravenously with a decided reaction. For 6 days the intravenous dose was increased by 1 minim daily up to 9 minims, without any noticeable improvement. On April 16, an autogenous vaccine was given. The results are shown in the temperature chart and stated in detail in the case report.

Mr. M. entered hospital March 26, 1918, conscious and rational, temperature 102°, pulse 112, respiration 25. He complained of general malaise of one month's duration, and fever which developed gradually with steady pains in almost every joint. He had had severe headaches and a chronic nasal catarrh for many weeks.



During the past week he developed loss of appetite and nausea, but no vomiting. On March 23 the patient quit work because of weakness and shortness of breath. No history of night sweats, cough, or sputum, no hemoptysis or precordial pain, no edema of extremities; loss of weight negligible, no palpitation.

Family history, negative.

Past History.—Ordinary childhood diseases, acute rheumatic fever at 5 years, following which patient developed almost complete deafness both ears. Had left testicle removed following an injury.

Social History.—White male, age 49, laborer and inventor, was married for two years, separated three years ago; admits gonorrhea 24 years ago, denies lues, smokes moderately, uses alcoholics very little.

Physical examination shows a well developed and fairly well nourished adult white male, skin flushed, speech high pitched, mentality normal, right epitrochlear gland palpable.

Scalp hair scant.

Eyes negative, pupils round and equal reaction to light and accommodation.

Nose negative.
Ears, almost complete deafness in both ears.
Mouth, teeth in poor condition, mucopurulent discharge in nasopharynx.
Neck negative.
Lungs negative.
Heart, no palpable friction, rub or thrill, apex impulse in sixth left interspace, left border 12 cm. to left of midline. At the apex, a faint blowing systolic murmur transmitted to axilla. In aortic area a loud systolic murmur transmitted to neck, A-2 accentuated.
Pulse 112, regular in rhythm, occasional drop beat; tension, systolic 118, diastolic 60.
Abdomen negative.
Genitalia, left testicle missing.
Reflexes, knee jerk diminished, no pathological reflexes.
Laboratory Findings.—Urine.—Sp. Gr. 1022, acid, albumin —, sugar —, granular casts, occasional red blood cell.
Blood.—Red count, 4,800,000 c.mm.; white count, 16,140 c.mm.; differential, 88 per cent. polymorphonuclear leucocytes; 11 per cent. lymphocytes; hemoglobin, 70 per cent.; blood negative for malarial parasites; Widal negative; Wassermann negative.
Fluoroscopic examination of chest negative.
Blood culture.—April 3, staphylococci; April 8, staphylococci.
For several days after admission the patient had severe chills three to six daily, followed by profuse sweats, marked anorexia, temperature 97° to 102° and 105°, septic curve, pulse 76 to 120. White count increased steadily to 19,800, the systolic murmur over apex increased daily in intensity and presently a loud blowing and roughened murmur was audible over the entire precordia.
On April 9 a mixed phylacogen, 1 c.c. subcutaneously, had little effect. The following day 3 minims of the phylacogen were given intravenously, resulting in a chill followed by profuse sweat. For six days the intravenous dose was increased by 1 minim daily up to 9 minims, without any noticeable improvement, and with but little change in the leucocyte count; however, the blood pressure which was S. 105, D. 50, on April 5, fell to S. 90, D. 45 on April 13.
On April 16, autogenous vaccine, 1 c.c. subcutaneously, was given, resulting in a profuse sweat but no chills. The following day 3 minims of the autogenous vaccine were given intravenously and continued for three days, increasing 1 minim daily. During this time the patient's appetite was ravenous. Little change in the leucocyte count which remained about 17,000; the maximum temperature was from 1° to 3° less than during the previous days, ranging from 101.5° to 103°. The patient suffered from profuse sweats and chilly sensations but no chills. The attacks of sweating usually appeared about three or four hours following the administration of the vaccine.
On April 20, the vaccine was discontinued because of the patient's objection to its use, and the profuse sweats diminished, and there was little change in the temperature curve; the pulse, however, remained high, irrespective of the temperature. On April 26, the patient developed a marked diarrhea and great weakness. The leucocyte count increased rapidly to 23,000 on April 28, when the autogenous vaccine was again given, 6 minims intravenously. The following day the patient complained of marked weakness and dyspnea, temperature curve remained the same, pulse remained at 110. The leucocyte count went up to 26,400. Blood pressure fell to S. 85, D. 40 on April 25.
On April 30, the patient's weakness became more manifest, the heart slightly more rapid and quite irregular, mentality comatose, and the patient expired.
During his last four days the patient appeared slightly jaundiced and in great mental distress; the systolic murmur became very loud and rough, audible over the entire precordia. Patient never complained of any pain in this area.
Autopsy No. 2393, May 1, 1918. By Dr. G. W. Schery.
Clinical Diagnosis.—Malignant endocarditis.
Limited autopsy.
Anatomical Diagnosis:
1. Malignant endocarditis.
2. Infarct of spleen.
3. Cystic kidney.
4. Acute parenchymatous and chronic interstitial nephritis.
5. Polyserositis of abdomen and thorax.
6. Congestion and edema of lungs.

2600 South Grand Avenue.

ADVANTAGES OF HOME OVER INSTITUTIONAL CARE.*

By MINER C. HILL, M.D.,
NEW YORK.

Boarding-out babies in private homes has been practiced since time out of memory. The foster mother was a good-hearted neighbor, or one who made it a business for profit. In either case proper supervision was lacking, and the results so far as the baby was concerned were poor, and the custom fell into disrepute.

That this type of care, under proper supervision, has many advantages over institutional care is not generally appreciated.

The development of modern hospital and nursery buildings, hygienically planned and and equipped, managed by specially trained attendants, would seem at first glance ideal and preferable to boarding out in tenement homes. The investigations of Dr. Henry Dwight Chapin of New York, and Drs. Holsclaw and Rude of San Francisco show that institutional care is far from ideal.

The latter investigators found a 50 per cent. mortality in the foundling asylums of San Francisco. Among the same type of infants boarded out in private homes under supervision the mortality was reduced to 12 per cent.

Comparing the mortality rates of sick children in the hospitals and sick children treated in the homes is not fair to the hospitals because they receive more serious cases. Hospital care for surgical conditions and many medical conditions is, and always will be, essential. But the writer is of the opinion that a great many medical cases now treated in the hospital ward can be more successfully cared for in the home.

Children away from their homes and parents are unhappy, homesick and often uncomfortable or even comparatively neglected. When they are discharged they go back to the old environment which may be responsible for the illness and which has not been influenced by their stay in the hospital.

If a child must have hospital care, the shorter the stay the better for the child.

We are all acquainted with the institutionalized baby; a hospital infant cured of his acute illness, showing an initial gain in weight, then stationary, then losing and too often a victim of some intercurrent infection. It has been the unhappy experience of some of us to see a "boarder baby" well and robust on admission, steadily decline under what was considered ideal institutional care. There is rarely a sufficient number of nurses to give the constant individual attention an infant requires. This is well illustrated by the fact that when a feeding ward is light the

* Read before Pediatric Section, N. Y. Academy of Medicine, March 11, 1920.

gains in weight are greater than when the ward is filled to capacity.

In addition to caring for the babies, there is so much routine ward work, such as charting, bed making, etc., the nurse has little opportunity to frolic with a baby during "playtime," that fifteen to thirty minutes before feeding is due.

In the home, time is always found to give affection as well as routine physical care, and it is not uncommon to see a foster mother holding a baby on her lap or carrying it about. This change from the prone position and the exercise unconsciously obtained undoubtedly improves the baby's general tone. Admitting the necessity and value of hospital care, we should bear in mind that its prolongation is bad for the baby, does not educate the parent and is expensive. Those of us who have had opportunity to observe results of institutional and home care, under the same supervision, are favorably inclined toward home care.

HOME CARE OF WELL INFANTS.

The Gramercy Nursery was opened March 1, 1916, as a temporary shelter for infants whose home care had become impossible through the illness or death of the mother (I might say in passing that this is an urgent problem deserving of more attention than is now given). This nursery had a capacity for seven babies, was well equipped and efficiently managed. During the year 1917 we handled 56 babies; the cost per child per day was nearly $3, and the average weekly gain was 4 ozs., and the mortality 4 per cent. The work was worth while, the results were good but the cost was excessive, owing to a constant overhead expense.

After consultation with Dr. Chapin, the nursery was reorganized on a boarding-out plan similar to the work of the Speedwell Society.

From October 1, 1917, to October 1, 1918—115 babies were cared for on the boarding-out plan at a cost of $1.29 per day with an average weekly gain of 5.15 ozs.; that is, in using the boarding-out plan, twice as many children were cared for with a greater weekly gain at less than half the per capita cost of institutional care. The latter plan was accomplished through the cooperation of the Babies' Welfare Association and the State Charities Aid Association in finding suitable boarding-out homes.

The greatest difficulty of the boarding-out plan is in finding suitable foster homes within a workable area, but the advantages of boarding-out care are so manifest that difficulties should not deter our efforts to extend the work.

HOME CARE OF SICK INFANTS.

The Health Center of the Bowling Green Neighborhood Association favorably illustrates what can be done in the home care of sick children. The Health Center is within easy access of all families registered.

Instruction in preparing formulæ, giving baths, enemata, ear irrigations, etc., is given the parent by the nurse at the Health Center and in the home.

During acute illness the case is referred to the Henry Street Settlement nurse who makes one or more visits daily as requested, and the Health Center physician, or family doctor, visits the home to direct the medical care.

With this equipment it is only necessary to send a few children to the hospital. Under such a plan the patients do well, are more contented in their own homes and the parent receives valuable instruction at a most impressionable time in the care of sickness and the prevention of recurrences. A reduction of the mortality rate for this district from 232 in 1913 to 59 in 1917 is a good index of the practicability of the Health Center idea.

The marked success of the home care of well children as proven by the results of the Speedwell Society, the Gramercy Nursery and of the children in the Bowling Green Neighborhood Association suggests a wider application of this plan.

If suitable boarding homes could be found in the neighborhood of the hospital, feeding cases after a few days observation in the ward could be transferred to the home and their subsequent treatment accomplished through daily visits by the internes or one of the attending physicians. In neighborhoods where there is no hospital it would seem practicable to have a small reception ward in connection with the Health Center. Here each acute case could be observed for a day or two, during which time the usual laboratory work, such as the von Pirquet test, Shick test, throat culture and vaginal smears made, and then the baby could be returned to its own home or assigned to a boarding home where the foster mother shows aptitude for the particular condition.

103 East Seventy-fifth Street.

YEASTS FROM THE HUMAN COLON.

PROTOCOL OF LABORATORY STUDIES AS TO PATHOGENICITY.

By J. M. LYNCH and J. W. DRAPER, M.D.,

NEW YORK.

SURGEONS TO ST. BARTHOLOMEW'S HOSPITAL FOR DISEASES OF THE ALIMENTARY CANAL.

On June 13, 1919, a patient, O. I., complaining of severe headache and sciatica, was referred to Dr. Lynch. For four years he had been under treatment by specialists in this country and in Europe without showing any apparent improvement. He gave a history of auricular fibrillation, of tuberculosis in the left lung ten years before, and typhoid fever twenty-five years before. His physical examination was negative.

Previous to coming to this office a culture from his stool had never been made. Feces obtained from the rectum with a sterile platinum loop, when inoculated in glucose agar, yielded a profuse growth of yeast cells, associated with a diplococcus and extremely few colon bacilli. The profuse nature of the growth, and the fact that these organisms did not ferment sugar, aroused interest, and led to further investigations. The patient had never received the Fleischmann treatment. To exclude the possibility that the yeast was a chance occurrence, a new culture was taken from the patient on June 24. The same organism was isolated, and also what appeared morphologically to be a different type of the same yeast.

The culture obtained June 13 appeared to consist

of two types of yeast. Type 1, morphologically, is a small, spherical or oval organism of fairly uniform size, and rich in granular chromatin. It never forms any mycelium in ordinary culture media. Culturally, it produces only a granular sediment, and no clouding of the broth or film formation. Type II tends to be club-shaped, and forms a definite mycelium. It produces a film on the surface of broth cultures in addition to a granular sediment. The culture obtained June 24 contained Type I, but no Type II. A new Type III was present, which morphologically is elliptical, flattened, and vacuolated, and varies considerably in size. Like Type II, it also produces a definite mycelium and a film on the surface of broth cultures.

A saline suspension of a pure agar culture of the Type I yeast was injected into six rats, three intraperitoneally and three subcutaneously. After three and ten days, animals of each group were killed and careful autopsies made. Those injected intraperitoneally showed, scattered all over the peritoneum, many small and large rounded nodules, translucent, with centrally located whitish spots. The main mass of the injected material came to rest in the tissues of the greater and lesser omentum, about the liver, and beneath the diaphragm. In these localities the reaction was slightly different, and appeared as flattened masses of translucent tissue, showing deep-seated, scattered areas of opacity. Nodules were found on the surface of the kidneys and the liver, and even in the substance of the former organ. Type I yeast organism was recovered in cultures from these lesions.

Microscopical examination of the peritoneal lesions showed a granulomatous structure very suggestive of a tuberculous lesion. It consisted of a central area of suppuration and necrosis, surrounded by fibrous tissue containing many scattered epithelioid cells, in which were also localized smaller aggregations of epithelioid cells inclosing one to several multinucleated giant cells. A special stain was made of some frozen sections of the lesion in the kidneys, and large numbers of the yeast organisms were definitely seen in the tissue showing characteristic budding.

The three rats injected subcutaneously had developed a localized, tumorlike granuloma having a general similarity to the peritoneal lesions, but no metastases were found. Intravenous injection of mice resulted in death from embolism within twenty-four hours. Four rats were fed three feedings with a mixture of the yeasts, and twelve days after the first feeding two rats were killed and the gastrointestinal tract carefully examined, but the results were negative. A culture of the contents of the cecum was made, and only Type I of the yeast was recovered. The significance of the disappearance of the other types is unknown.

As yet the organisms have not been identified. Are we dealing with three different types of yeast, or are the different morphological and cultural characteristics attributable to the phenomenon of pleomorphism, a condition commonly observed in certain yeasts? This study is not yet sufficiently advanced to justify any conclusions as to the relation of these yeasts to the pathological condition. The known relations of the inner surface of the body, the intestinal epithelium, to the outer or skin, are, however, very intimate. Skin lesions due to yeasts are very common. From embryological and clinical viewpoints it would appear probable that what attacks one surface may attack the other. Further laboratory studies of this important question are being made.

MANIC-DEPRESSIVE INSANITY AND RAYNAUD'S DISEASE.

By E. H. P. WARD, M.D.,
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Is it not possible that manic-depressive insanity is a form of Raynaud's disease affecting the frontal region of the brain? Osler defines Raynaud's disease as "a vascular change, without organic disease of the vessels, chiefly seen in the extremities, but occurring also in the internal parts, in which a persistent ischemia or a passive hyperemia leads to disturbance of function or to loss of vitality with necrosis." The incidence of Raynaud's disease is not in the majority of cases unlike that of manic-depressive insanity as regards *age*, and it occurs sometimes in several members of a family and especially in neurotic and hysterical patients. As stated above, it usually affects the extremities, and the ischemia due to constriction of the blood-vessels to a part is followed as a rule by a condition of asphyxia, during which the part becomes blue, and then there succeeds a stage of hyperemia. The condition may persist from a few days to several months and the attacks may recur at intervals of a year or more and result in edema of the extremities and gangrene. According to Osler, "the disease is the result of some as yet unknown instability of the vasomotor centers," and as complications, temporary amblyopia, due to spasm of the retinal vessels, transient aphasia, and transient hemiplegia have been met with. In one case there were three attacks of aphasia with hemiplegia from which complete recovery took place, these symptoms being associated with the features of Raynaud's disease, and the patient dying in a severe attack with pain in the right hand, gangrene to the elbow, and coma. Furthermore, epilepsy has been associated with a great number of cases of Raynaud's disease and in one case mentioned by Osler the attacks of epilepsy occurred only while the patient was suffering from Raynaud's disease.

Now I believe that these cerebral complications are undoubtedly due to a vasomotor change in the blood-vessels of the brain, just as the disease in the extremities is due to vasomotor changes. An ischemia of the motor areas of the cortex would probably lead to temporary loss of function and produce the symptoms of a hemiplegia, while a hyperemia might lead to the exaggerated activity of an epileptic attack. There has been some doubt as to whether there is any vasomotor control of the cerebral arteries, but I believe the evidence tends to show that there is such control although it is not so complete as in the arteries elsewhere. And this probably explains why the vasomotor constriction does not in the brain produce necrosis of the affected parts as it does in the extremities. Now, in the case of manic-depressive insanity, the region of the brain affected is that of the frontal lobes. Their function in health is to exert a restraining

influence on the lower centers of the brain that comprise the motor areas, the centers of intellectual activity and of the emotions, and probably of the areas concerned in the reception of stimuli from the various sensory organs. If this restraining influence of the frontal lobes is exaggerated, the function of the lower centers and areas is depressed; whereas, if the restraint is diminished, all these lower centers take on an increased and exaggerated activity—but an activity that lacks direction and control and serves no useful purpose.

Now, if the blood supply to the frontal region is greatly diminished, its functions will be interfered with and it will no longer exert its normal restraining influence on the lower centers, and we get a condition of overactivity of these lower centers without any direction and the symptoms may vary all the way from slight exaltation to mania. If, on the other hand, there is hyperemia of the frontal region, its function is stimulated to overactivity, and it exerts such an exaggerated restraint upon the lower centers that depression occurs. Furthermore, since the higher psychic functions of the personality and moral character are probably dependent on the frontal centers of the brain, any change here would lead to alterations of the personality. Thus this hypothesis will competely account for the manifestations of manic-depressive insanity, and also for the fact that no dementia or necrosis results from even prolonged and repeated attacks. For the vasomotor control of the cerebral vessels is not powerful and complete enough to shut off the blood supply completely; it is only more or less diminished.

Furthermore, on this basis we can account for many of the characteristic symptoms that accompany manic-depressive insanity—the flushing of the face, the coldness and lividity, and even gangrene of the extremities, and also the characteristic edema of the extremities. Opposed to this is the hypothesis that manic-depressive insanity is due to toxins resulting from a condition of intestinal infection, and the fact that many patients have in their blood agglutinins to certain strains of streptococci, together with a well-defined leucocytosis. This, I believe, is a secondary condition resulting from intestinal stasis and the lowering of bodily tone generally, although no doubt there is in all cases more or less toxemia, if only from intestinal putrefaction and the accumulation of waste products. We should hardly expect such complete recovery after prolonged and repeated attacks if the disease were due entirely to a toxemia severe and prolonged enough to account for the symptoms. And why should toxemia give us in one case, or at one time, exaltation, and in another depression? Also we might expect to find fever, as a characteristic feature, which we do not.

As to the cause of this vasomotor instability affecting the frontal region, it might possibly be itself the result of a toxemia affecting the vasomotor centers, and in this way the disease might be due primarily to toxins acting not on the frontal areas so much as on the vasomotor center. But I think this is very doubtful. It is more likely a disturbance of the normal vasomotor balance. Action and reaction are equal and opposite, and there is no reason why this law should not apply to the vital functions as well as in mechanics. In the child, where vasomotor control of the cerebral vessels is probably more complete, joy and sorrow, rest and play (*i.e.* work) succeed each other at short intervals; in the adult, the interval is prolonged, but not unduly so without danger. Too long or too intense application of the attention (which probably becomes operative through vasomotor control), without relaxation or change, disturbs the natural balance and suddenly the pendulum breaks loose and swings the other way. Perhaps too great repression of the sexual functions may form the basis of the disturbance in some cases. Possibly those who have been wont to seek their relaxation in alcoholic indulgence may in some cases suffer from manic-depressive insanity now that their accustomed mode of relaxation is denied them.

As to the *treatment* of this disorder, the following measures would seem to be indicated according to this hypothesis: rest in bed without food for twenty-four hours and then a greatly restricted diet, consisting of gruel, milk, eggs, etc.; no carbohydrates, as they make the intestinal contents a good culture medium for bacteria and especially for the streptococci (note the liability to streptococcic infection in diabetes, where blood and tissues are overloaded with sugar); Epsom salts in large doses, repeated as required, to clean out the intestinal tract, eliminate toxins from the blood, draw the blood from the brain, and diminish the volume of blood generally, thus reducing the strain on the heart and the vasomotor centers; hydrotherapy, especially prolonged hot baths and the needle spray with very hot water applied to the spine, especially in the cervical and lumbar regions. As to drugs, strychnine would be indicated, especially in the stage of depression; whereas the bromides might be of use in the stage of excitement, but not in sufficient quantity to depress the bodily tone too much.

Tea and coffee should be forbidden in the depressed state, since the higher psychic functions of the frontal areas are already overstimulated by the hyperemia; whereas, in the maniacal stage, where these centers are depressed by lack of blood, tea and coffee in moderation might be helpful. Nitroglycerin might be of value in both stages. In the depressed stage alcohol might prove of value, and cheerful music and other means of diversion, such as dancing, when strength permits. Above all, it is important to use drugs with care and tentatively, with the idea of holding the pendulum from swinging too far in the direction either of depression or excitement, hyperemia or ischemia of the frontal areas, rather than to attempt to push it back to normal. If vasomotor instability is the essential feature of the disease, and the tendency is to swing from one extreme to the other, we must take care not to exaggerate this tendency by the use of drugs.

Cushing has shown that, in Raynaud's disease of the extremities, momentary application of the tourniquet may restore the circulation to its normal condition. Possibly momentary compression of one of the carotids might similarly be of value in manic-depressive insanity, but should not, of course, be attempted except by an expert.

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DIAGNOSIS OF THE MYOCARDITIC SYNDROME IN TYPHOID FEVER.

THE diagnosis of the myocarditic syndrome of suprarenal insufficiency in children with typhoid fever is an affair of some difficulty on account of the possible confusion of the symptoms composing it with those encountered ordinarily in typhoid, as well as those resulting from a morbid change in organs other than the suprarenal glands. The involvement of the latter may be rather marked and it is clear that all degrees in the clinical manifestations will be the consequence. This is not the place to discuss the problem of the causal infection, but in all the cases reported by Chasseray—of which there were nine—a serodiagnosis or hemocultur was made and in each case gave a definitely positive result. It is the diagnosis of this complication that it is essential to make.

In some instances the diagnosis of the cardiovascular complications is self-evident, but until recently, on account of the similarity of the symptoms, these would have been regarded as those of myocarditis. For example, a child develops a typhoid fever which progresses regularly, and it is known that the patient had a cardiac lesion previously, so that it is not to be wondered at that the cardiovascular symptoms assume an unusual intensity. But the intensity of these phenomena which are in the foreground from the onset of the typhoid in no way correspond to the severity of the nervous or digestive symptoms. There is little asthenia or gastrointestinal disturbance. The influence of opotherapy is practically *nil*, while that of digitalis is somewhat though not very much better. In a case such as this it is entirely logical to conclude that the cardiac process is due to typhoid infection because, excepting the cardiovascular symptoms, there are none of those characteristic of suprarenal insufficiency.

Take another case as an example. At the end of the second week of typhoid fever cardiovascular disturbances appear very suddenly, with tachycardia and arrhythmia. The heart dilates, the blood-pressure falls, but far from being foremost these phenomena remain in the background of the clinical picture, while the nervous and digestive disturbances—asthenia, vomiting, diarrhea—are prominent. Emaciation is rapid, but with opotherapy, which failed in the preceding case, the most serious phenomena rapidly retrogress. The stupor disappears, the temperature drops, urine increases, the digestive disturbances decrease, but are slower in their retrogression. On the other hand, the blood-pressure quickly rises, the heart-beats diminish, the pulse becomes normal, and by the end of the typhoid attack all the cardiovascular symptoms will have disappeared. In such cases the diagnosis which had been made of myocarditis was manifestly a mistake and the causes of the syndrome must be looked for elsewhere.

The proof obtained by opotherapy in favor of suprarenal lesions is considerable, but one must not generalize too much, and because adrenalin works well it is not conclusive proof that the suprarenals are involved. Adrenalin is a marvelous hypertensive, which, when judiciously exhibited, will render great service in typhoid fever and the majority of depressive states. The favorable effects of such medication are not proof positive of a morbid change in the suprarenals and it is well to mistrust this therapeutic criterion although its services are to be resorted to. Before reaching a conclusion, all the clinical proofs must be examined and the action of adrenalin should be taken only in confirmation of a diagnosis already made. Unfortunately, the symptomatology is not always so distinct, and the diagnosis is made more difficult by the prominence of certain symptoms, since suprarenal insufficiency may assume one of three types, namely, the myocarditic, a pseudomeningeal, and a pseudaperitoneal. Other than in the myocarditic syndrome, a confusion must not be made between the cardiovascular type of suprarenal insufficiency and the phenomena of nephritis occurring in typhoid. The study of the blood-pressure acquires in these cases a great importance if it reveals hypertension, and besides edema will soon appear and the liver rapidly increase in size.

The diagnosis of the pseudomeningeal type from that of the true meningeal state in the typhoid of childhood must be gone over, and in these circumstances clinical confusion is possible, so that lumbar puncture should be resorted to; but it must be remembered that in some authentic instances of meningitis the result has been negative. Finally, in cases where the severe vomiting, abdominal pain, and changes in the pulse might lead one to fear a peritoneal complication resulting from intestinal perforation or hemorrhage, an attentive study of the temperatures, examination of the stools and abdomen, and the seat of the pain will offer certain diagnostic data; but for all that the diagnosis is difficult, especially at the onset, on account of the prostration and agreement in the date of appearance of the most usual of the two syndromes. It is a careful study of the evolution of the symptoms and of the manner of their retrogression under opotherapeutic measures that will remove all doubt.

ISOAGGLUTININS IN THE BLOOD OF INFANTS AND CHILDREN.

It is now well over ten years since Jansky first showed that in respect to their isoagglutinin content in the blood all individuals fall into four groups. The investigation and elaboration of this phenomenon has been of the greatest service in the development of blood transfusion as we now know it. It is certain that the greatest dangers attendant upon this operation are those connected with incompatability of the bloods of the donor and the recipient. These facts are so firmly established and the methods of determining blood groups so rapid and reliable that no surgeon is now willing to countenance transfusion without a previous grouping of the donor and the recipient. This is so in the case of adults. Where infants are concerned, opinion has not been quite so certain. Some investigations seemed to show that the new-born were not separated into blood groups and many were of the opinion that young infants could be transfused from their mothers without the necessity of a preliminary grouping.

A careful investigation of this subject has recently been undertaken by Happ, who finds (*Jour. Exper. Med.*, 1920, xxxi, 313) that no matter what the age of the infant it is unwise to transfuse it with its mother's blood without performing the preliminary tests. He found that the group of the corpuscles was established before that of the serum, but that 16.3 per cent. of infants of one month or less out of 49 examined, presented a definite group determination. By the time that the age of one year was reached practically all children showed establishment of the blood group. It is further important to note that in seven cases in which both mother and infant were examined, and where the group of the infant was fixed, in only one instance were both of the same group. Any consideration of these figures will lead to the conclusion that it is *never* safe to proceed with a transfusion without having first made the necessary tests to determine the compatibility of the bloods.

It is remarked that the author employs the nomenclature as introduced by Moss; that is, serum containing no agglutinins is designated as group I and corpuscles that are inagglutinable belong to group IV. It is true that the work of Moss was done independently of that of Jansky, but the latter has a distinct priority and certainly deserves consideration on historical grounds. The existence of the two systems of nomenclature as used by these two authors has introduced an element of confusion into the situation especially apparent in the use of the professional donor. It could be wished that some of the important national societies interested in this subject would decide as to which system should be adopted. At the present time annoying errors are repeatedly being made because professional donors are not aware that it is necessary to state according to what system their grouping has been done.

THE TETANIC TYPE OF UREMIA.

The reality of tetanic uremia has been founded until now upon cases whose demonstrative value has seemed to be insufficient, but one or two cases have been studied at Paris recently which appear to prove that uremia may really simulate tetanus. The instances of tetanic uremia published to date may be conveniently grouped under four heads as follows: (1) The mixed form of nervous uremia, at the same time epileptic and tetanic; (*a*) cases of convulsive uremia of the epileptic type accompanied by some more or less persistent contractures, and (*b*) cases of convulsive uremia of the epileptic type accompanied by a tetanic syndrome simulating tetanus. (2) The purely tetanic form comprising: (*a*) pure cases of localized contractures in subjects having albuminuria or Bright's disease, and (*b*) pure cases of the tetaniform syndrome distinctly characterized, simulating tetanus. It is the latter group of cases which are especially prone to give rise to mistakes in diagnosis.

The general pathogenesis of tetanic uremia probably does not differ in any respect from that of nervous uremia in general—epileptic, meningitic, or delirious. It is evidently due to the retention in the blood and serum, and perhaps the formation in the organism following retention of the elements of the urine, of toxic substances selectively acting on the nervous system. Such is the classical theory which has been generally accepted.

But the *ensemble* of work done on the subject during the past few years, particularly the researches of Widal and his coworkers, give the impression that the initial and major factor of these accidents is retention of urea in the blood—azoturia. Other than this general notion, which seems to be on the point of being completely verified, nothing of a precise nature is known of the mechanism of the accidents and notably the causes which make uremia manifest itself sometimes by delirium, at other times by clonic or tonic convulsions or by somnolence and coma. The fact that these manifestations are very often associated would lead to the supposition that the same toxic principles which act in all the cases provoking distinctly variable reactions, either because of their different quantity and proportions in the organism which they impregnate, or because of a special susceptibility of the organism itself. There is reason to suspect that these toxic substances are capable of acting on the cerebrospinal cells in somewhat the same way as the tetanic toxin of Nicolaier's bacillus. All this is merely hypothesis and somewhat hazy at that, but as the reality of tetanic uremia is still under discussion, it is not astonishing that its pathogenesis has not been advanced more than it has.

The differential diagnosis of pure tetanic uremia, distinctly tetaniform, is especially with that of tetanus, cerebrospinal meningitis, strychnine poisoning, and perhaps hysteria. A positive diagnosis will be principally based upon the coincidence of

the clinical signs of uremia—albuminuria, myosis, polyuria, pollakiuria, symptoms of renal heart, Cheyne-Stokes respiration, and high blood pressure —with more or less generalized persistent contractures; also on the paraclinical researches, such as the dosage of the azotemia, the urea contained in the cerebrospinal fluid, and the cytology of this fluid.

The Pharmacology of Hydrochloric Acid.

The pharmacology of certain drugs is incompletely understood. As a matter of fact the pharmacology of no drug is completely understood, but certain drugs are sometimes prescribed, concerning the functions and action of which a great deal of ignorance prevails. For example, hydrochloric acid is very frequently prescribed, mainly to overcome a deficiency of acid. The best mode of its administration, however is often overlooked and in consequence the digestive action of the drug is futile. Dr. W. A. Bastedo who was the president of the American Gastroenterological Association at its twenty-second annual meeting held at Atlantic City, N. J., June 9 and 10, 1919, made the pharmacology of certain drugs the subject of his presidential address, published in the *American Journal of the Medical Sciences*, January, 1920. He pointed out a fact that is by no means always recognized, namely, that the administration of hydrochloric acid alone is practically useless for the purpose of digestion, and really to judge of its merits as a remedy, it must have all the factors for its action. In other words pepsin must be administered with it. Moreover, the products of the action of pepsin and hydrochloric acid on protein are themselves capable of exerting a strongly stimulating effect on secretion. Speaking of the action of hydrochloric acid in achylia gastrica, Bastedo says that from experiments based on the introduction of hydrochloric acid alone, without its natural congener pepsin, it is evident that with single doses of a strength that can be swallowed, the acid titer of the stomach contents may be distinctly raised even to the normal. The results that might be expected from this are: (1) Successful protein digestion in the stomach when sufficient pepsin is also introduced; (2) Slowing of the emptying time of the stomach by re-establishment of the pyloric closure reflex; (3) Restoration of the normal antiseptic action in the stomach; (4) The proper formation of secretins; (5) Normal liquefaction of the stomach contents by the added fluid. The possible drawbacks to its use are the establishment of pyloric closure in an already slowly emptying stomach, the production of gastric irritation, and the development of a mineral acidosis from its daily use over long periods of time. Conclusions as to the administration of hydrochloric acid may be set down thus: (1) In cases of achylia gastrica, whether or not accompanying pernicious anemia, a deficiency of acid may be partially overcome by hydrochloric acid medication. (2) For digestive purposes hydrochloric acid should always be accompanied by pepsin. (3) In the achylias with diarrhea, acid promises a more noticeable result than in the achylias without diarrhea. (4) When acid produces sourness and stomach irritation its use should not be continued. (5) To avoid acidosis alkalies should be given during the same period, though not at the same time as the acid, the amount required being judged by the effect on the urinary reaction.

Syphilis and Graves' Disease.

Careful students of exophthalmic goiter, which is a condition of interest alike to ophthalmologists, neurologists, internists, surgeons, gynecologists, and endocrinologists, will perhaps be surprised to hear that it is often of syphilitic origin. Certainly the two have usually been kept apart in practice and theory as well, although Levy-Franckel, writing in *La Médecine* for November, 1919, i, 2, assures us that since 1911 evidence of the association of the two diseases has been accumulating. Before that date Pierre Marie had noted the occurrence of syphilis in a number of subjects with Graves' disease. In 1911 the late distinguished Professor Gaucher, in association with the author, announced that sufferers from the latter malady might benefit by antisyphilitic treatment. Sainton and later Schulmann noted that familial and conjugal cases of Graves' disease were sometimes due to the underlying syphilis shared by the subjects. It was probably not an entire coincidence that in these syphilitic goitrous subjects severe specific lesions had existed in the vicinity of the thyroid—mouth, throat, and rhinopharynx. The nearness here is not sufficient to suppose any extension to the thyroid gland, so that the connection is obscure. The gland is usually involved in the second year of the disease, although in some cases tertiary syphilis has preceded the lesion. Save for the possibility of specific thyroiditis in a few cases, the pathology is obscure. Apparently specific thyroiditis has never been known to cause typical Graves' disease, though quite recently the affection has been described in heredosyphilitics. The most striking fact is this, that while in ordinary Graves' disease iodides are contraindicated because of the state of hyperthyroidism, in the luetic variety this drug does good. Another is the general statement that in certain cases of tabes, exophthalmos has been a forerunner.

Malignant Precocious Syphilis.

Syphilographers are aware of a type of this affection in which neither the spirochete examination nor the Wassermann is positive, which presents no secondary phase and is uninfluenced by treatment. It is this type which causes a belief that we are not confronted by syphilis but a new or rare congener. But this type shades into others in which one or more of these negative characteristic are absent; so that there appears no warrant for suspecting that it is anything but syphilis. Other attributes of malignant precocious syphilis are the destructive nature of the lesions, the tendency for relapses to succeed one another rapidly and the curious spontaneous cure which may follow years of hardship for the patient. Every new report of this affection should be scrutinized for the presence or absence of the characteristics of the extreme case. Queyrat and Mouquin have recently reported one

which is mentioned in *La Presse Médicale* for January 31, 1920, xxviii, 9. The affection began with fever and great malaise. Spirochetes were absent and the Wassermann was only partially positive. Unlike some of these cases the disease yielded promptly to arsenobenzol. The authors are inclined to accuse a special strain of spirochete in order to explain so many vagaries. Gougerot said in discussion that these cases of malignant syphilis could be transmitted by subjects with ordinary syphilis; and therefore he could not endorse the special strain hypothesis. Ravaut was surprised to find no evidence of meningeal reaction in the spinal fluid of these patients; for in theory there should be such a reaction, as early syphilis, as a rule, does present one, and in theory the more intense the infection the greater the likelihood of meningeal congestion.

News of the Week.

Scholarships for Physicians.—The Endowment Fund Committee of the New York Post-Graduate Medical School and Hospital has announced that the $100,000 recently contributed by Mrs. Henry R. Rea, in memory of her parents, Mr. and Mrs. Henry W. Oliver of Pittsburgh, will be used to establish twenty scholarships for the benefit of country physicians who are unable to pay for the courses of post-graduate instruction. In awarding the scholarship prizes the Committee will consider the possibilities of public service of each candidate, and the recommendations of the State and County Medical Societies will be considered. The scholarship awards will not be local, but will be distributed over the country.

Social Hygiene Workers Needed.—In connection with the Government compaign for the eradication of social diseases, the Civil Service Commission has announced examinations for the following positions under the Interdepartmental Social Hygiene Board: Director of bureau, division, or section of protective social measures, $3,500 to $4,500 a year; supervisor of protective social measures, $2,800 to $3,600 a year; field agent, protective social measures, $1,800 to $3,000 a year; special assistant agent, protective social measures, $900 to $1,500 a year. Receipt of applications for these positions will close on May 4. The Commission has also announced an examination to be held on May 5 to fill positions of assistant field agent in protective social measures, under the Interdepartmental Social Hygiene Board. The salaries of these positions range from $1,200 to $2,000 a year. In this examination the competitors will be assembled for written tests. Both men and women are eligible. Further information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the local board of civil service examiners at the postoffice or customhouse in any city.

Collaborating Epidemiologists Appointed in Ohio.—One hundred and forty Ohio health commissioners have been appointed assistant collaborating epidemiologists by the United States Public Health Service. These are commissioners who have been appointed in both the municipal and general districts of the State under the Griswold Health Law. With their appointment they also receive the privilege of using franked mail for their morbidity reports, and these reports may be submitted to the State Department of Health in the franked envelopes. As other districts, which have not as yet appointed their commissioner make the choice, each will be given the same privilege as the ones now holding it. The men who have been chosen by the U. S. Public Health Service will receive $1 a year for their work. Franked report cards have been placed in the hands of 8089 Ohio physicians that their reports of communicable diseases may be submitted to the State Department of Health more quickly than formerly.

Children's Bureau in Belgium.—A national children's bureau has been established in Belgium, according to advices received from the Children's Bureau of the U. S. Department of Labor. It is interesting to note that the law establishing this bureau went into effect several months after the child welfare conferences held under the auspices of our own Children's Bureau in the early summer of 1919. Three child welfare experts represented Belgium at that time. The functions of the Belgian bureau are to "encourage and develop the protection of childhood, and especially to further education with regard to rules of child hygiene and to assist in their application, whether in families or in public or private child-caring institutions; to promote the organization of agencies interested in child hygiene, and to assist them by subsidies or otherwise; to assure supervision by the administrative authorities and physicians over the agencies thus protected." The bureau is directed by a board of forty members, called the "Conseil Superieur des Oeuvres de l'Enfance." This board has the decision on all questions relating to the protection of children; it issues orders concerning the functions of subsidized agencies; it takes necessary measures for the protection of children within the limits of the law; and determines the use of funds at the disposal of the bureau.

Bonuses Opposed by Nurses.—The National League for Nursing Education, the National Organization for Public Health Nursing, and the American Nurses' Association, at a joint session held during the recent convention in Atlanta, went on record as opposing the payment of a flat bonus to ex-service men and women, and as favoring the plan for land grants and long-term loans, and for increased payments to those disabled during war service.

Diet Kitchen Association Work.—The New York Diet Kitchen Association, in its annual report recently issued, chronicles the fact that only eighty of the 8,071 babies under its care died during 1919. During the year the association took care of 1,695 children between two and six years of age, 6,870 mothers, and 882 expectant mothers. During this period 733,394 quarts of milk were dispensed. A "war brides" clinic was established for the wives of soldiers returning from overseas. Conferences for children of pre-school age were included among the activities of the organization.

Cincinnati Academy of Medicine Honors Mem-

bers.—At a recent meeting of the Cincinnati Academy of Medicine, Dr. Byron Stanton, Dr. S. C. Ayres, Dr. J. C. McKinzie and Dr. A. P. Mathews were made honorary members. Dr. Stanton, the oldest member of the Academy, has been on the roster for sixty years. The following new members were admitted: Dr. Reed A. Shank, Dr. E. J. Kennedy, Dr. H. A. Haysel, Dr. A. R. Johnson, Dr. V. W. Fischbach, Dr. Ethel Winston and Dr. Salmer Siebler.

Massachusetts Vaccination Bill.—The Somerville Medical Society recently passed resolutions condemning Senator Joseph O. Knox of Somerville for the part he played in the defeat of the vaccination bill in the Massachusetts Senate. The Society went on record as favoring vaccination for all school children.

Health Officers Meet.—The tenth annual convention of the North Carolina Health Officers' Association was held in Charlotte, April 19, under the presidency of Dr. E. F. Long of Lexington.

Medical Society Elections.—The New London (Conn.) Medical Society, at its annual meeting April 1, elected the following officers for the ensuing year: *President*, Dr. Hugh B. Campbell, Norwich; *Vice-President*, Dr. C. I. Ferrin, New London; *Secretary-Treasurer*, Dr. A. C. Freeman, Norwich.

French Congress of Medicine.—The fourteenth *Congrès Français de Médecine* will be held at Brussels May 19 to 22 inclusive, under the presidency of Professor Henrijean. The Secretary General is Professor René Verhoogen.

Bequeaths Body for Scientific Study.—Dr. Joseph Simms, a well-known lecturer and traveler, who died of cerebral hemorrhage in New York City on April 11, 1920, in his eighty-seventh year, bequeathed his body to Dr. Edward A. Spitzka for scientific study. The brain of Dr. Simms, removed eighteen hours after death, weighed 1520 grams (53.58 ounces avoir.) and has been preserved by Dr. Spitzka for the detailed study of its morphologic features in comparison with the brains of other notable men.

Physician to Run for Congress.—Dr. W. N. Price of Richmond, Me., will be a candidate for Congress from the second district when the primaries for the Democratic nomination for representative are held in June.

Insane Asylums Crowded.—According to the annual report of the New York State Hospital Commission for the last fiscal year the thirteen civil State hospitals for the insane, which were built to accommodate 29,344 patients, house 35,579—6,235, or 21 percent. beyond their certified capacity. This overcrowding continues despite the expenditure, last year, of $1,033,380 for new construction, repairs and improvements.

Texas Optometrists to Test Medical Practice Act.—An optometrist of Dallas, Texas, who was recently arrested on a charge of violating the State Medical Practice Act, has announced his intention of making his a test case. It is also the intention of the State Optical Association to make a thorough test of the validity of the State Medical Practice Act in so far as it relates to the practices of non-medical optometrists.

Salvation Army Expenditures.—In a summary of the annual report of the Salvation Army it is stated that the organization erected forty-three provincial and divisional headquarters for fresh-air camps during the year 1919, put up other needed structures for expansion service, and paid off more than $1,000,000 of mortgages. The total operating expenses during the year were $13,257,522.

Physicians Needed in Serbia.—According to Captain O. Holstein, Field Artillery, U. S. A., who has just returned to this country from overseas, and who was in Belgrade a year after the armistice, says there is a shortage of medicine and hospital supplies in Belgrade. There are only 120 physicians to attend to 7,000,000 people in Serbia. In Serbia and Jugoslavia there are 500,000 orphans to be cared for.

Bequest to Phipps Institute.—The family of Henry Phipps recently gave $500,000 to the Henry Phipps Institute of the University of Pennsylvania.

Dr. Otto V. Huffman of Brooklyn has accepted a position on the faculty of the Post-Graduate Medical School and Hospital in the Department of Internal Medicine, and has moved his office to 771 Madison Avenue, New York City.

Dr. Benjamin Jablons has returned to New York City, after an absence of five years, during which time he served with the American Ambulance Hospital of Paris, returning to the United States after the first year of the war to accept the directorship of laboratories of the Saint Francis Hospital of San Francisco, California. On the entry of America into the war, Dr. Jablons returned to France with the American Expeditionary Forces and was attached to the Central Medical Department Laboratory. Previous to his release from military service, Dr. Jablons was connected with the Army Medical School of Washington, where he taught Anaerobic Bacteriology and completed researches begun in France on Wound Bacteriology.

Charitable Bequests.—Under the terms of the will of Mrs. Anna M. Sandham, widow of the late Dr. George A. Sandham, among other bequests the College of the City of New York will receive $30,000 for the maintenance of a chair of philosophy, $7,500 for a medical preparatory fellowship; the Woman's Hospital, New York City, will receive $5,000; the hospital of the Dutch Reformed Church of this city, $5,000; St. Luke's Hospital, for a bed for consumptives, $5,000.

Obituary Notes.— Dr. George W. Seibert died at Lebanon, Pa., on March 30 of complications resulting from injuries following a fall, at the age of 65 years. He was graduated from Jefferson Medical College in the class of 1879.

Dr. Harry Waldo Kimball of Providence, R. I., died of erysipelas, March 28, after a short illness. He was 52 years of age, and was graduated from the Medical School of Maine at Portland in 1891, specializing in dermatology. He was a member of the American Medical Association and of the state and local organizations. He was a member of the visiting staff, dermatological service, of the Rhode Island Hospital, and for two years before his death he had held the rank of Major in the United States Public Health Service.

Dr. W. A. Yeagy died of carcinoma at Dillsburg, delphia on April 6 at the age of 53 years. He was graduated from Jefferson Medical College in the class of 1890.

Dr. Wellington R. Hearing died at Philadelphia April 1 at the age of 42 years. He was graduated from the medical department of Temple University in the class of 1909.

Dr. Elmer E. Gibble died of pneumonia at Philadelphia on April 6 at the age of 53 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1893.

Dr. Elizabeth S. Kingman Horr of Waterford, Me., widow of the late Dr. O. A. Horr, died suddenly April 1 at the age of eighty-seven. She was graduated from the Women's Medical College of New York in 1872, and for many years practised with her husband in Lewiston, Me., returning to her old home in Waterford shortly after his death and her own retirement a number of years ago.

Dr. Leonard St. John of Chicago, one of the founders of Rush Medical College, and for ten years attending surgeon at the County Hospital, died of apoplexy April 2, at the age of 67. He was graduated from McGill University, Faculty of Medicine, Montreal, in 1872. He was a fellow Royal College of Surgeons (1873), a member of the American Medical Association and other national and local organizations, and during his long residence in Chicago had held various important hospital appointments.

Dr. George E. Fulton of Bluffton, Ind., died from influenza-pneumonia April 3 at the age of 64. He was graduated from Miami Medical College, Cincinnati, Ohio, in 1878. Dr. Fulton was in the Indiana House of Representatives in 1889 and 1891.

Dr. Joseph A. D. Jacques of Marlboro, Mass., died of cardiac disease April 5 in his forty-third year. He was graduated from the medical department, Laval University, Quebec, in 1901. He was a member of the Massachusetts Medical Society.

Dr. James T. Searcy of Tuscaloosa, Ala., died April 6 at the age of 80. He was graduated from New York University Medical College in 1867, specializing in neuropsychiatry. For many years he was superintendent of the Alabama Bryce Insane Hospital, and was a frequent contributor to medical literature. He was a member of the American Medical Association.

Dr. Edward Thayer Twitchell of Boston, Mass., died recently at Santa Barbara, Cal., where he had gone to recuperate from the effects of overwork during the influenza epidemic. He was graduated from the Medical School of Harvard University in 1886, specializing in obstetrics. He was a member of the American Medical Association and state and local organizations.

Obituary.

JAMES WRIGHT MARKOE, M.D.,

NEW YORK.

Dr. James Wright Markoe of New York City was shot by an assassin, evidently insane, during the services in St. George's Church, Stuyvesant Square, Sunday morning, April 18, dying shortly after reaching the Lying-In Hospital, to which he was immediately carried. Dr. Markoe, who was a vestryman of the church, was passing the contribution plate during the offertory, and as he approached the man, the lunatic drew a pistol from his pocket and fired, the bullet striking Mr. Markoe in the forehead. The man then ran out into Stuyvesant Park, where he was seized. Dr. George E. Brewer, who helped capture him, received a slight wound in the leg.

Dr. Markoe, who was the son of Dr. Thomas M. Markoe, for a long time professor of surgery in the College of Physicians and Surgeons, was born in New York City in 1882, and was graduated from the College of Physicians and Surgeons in 1885, after which he studied for a time in Munich, specializing in gynecology and obstetrics. Upon his return to New York he became house surgeon to the Sloane Maternity Hospital. He maintained his connection with this institution for many years. In 1890 he became active in the affairs of the Broome Street Dispensary. He was consulting gynecologist to Vassar Brothers' Hospital at Poughkeepsie, N. Y., for a number of years, and was medical director of the Lying-In Hospital from the time of its organization until his retirement in 1917. It was in this institution, which owes its existence largely to him, that most of the work was done on which was based his reputation as an obstetrician. He was a Fellow of the New York Academy of Medicine, the American College of Surgeons, and the American Medical Association, and was a member of various other national, State, and local medical organizations.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, April 2, 1920.

Care of the Soldier.—Care for the physical well-being of the soldier is guaranteed, to a large extent, by the appointment at Aldershot, the big British military station near London, of Major G. E. Cathcart, R. A. M. C., as medical specialist in connection with physical training, feeding and clothing. While it is probable that this appointment is only a tentative measure, it seems likely that it may precede the creation of a soldiers' welfare department of the R. A. M. C. Some need for such a department certainly exists, for although the advice of the medical experts is invariably sought by the physical training and catering staffs of the army, medical men hitherto have had no actual locus standi. During the war the need for a department of this kind was not much felt, as the Medical Corps then contained specialists from London and from all parts of the country, whose advice was always available. Now, however, the army specialist is connected usually with remedial work.

Disabled Officers' Treatment.—In pursuance of the policy of decentralization the British Minister of Pensions has intrusted to the Commissioners of Medical Services in the various regions of the ministry the responsibility of obtaining for disabled officers and nurses the medical or surgical treatment to which they are entitled. A dis-

charged officer or nurse who is claiming retired pay or pension on the ground that he or she is suffering from a disability should also make application to the Commissioner of Medical Services at the Regional office with a view to the necessary treatment being provided. Officers and nurses are advised that in event of making their own arrangements for treatment without the prior approval of the Commissioner of Medical Services of the Ministry of Pensions, it may not be possible to refund to them any of the expenses thereby incurred.

The Problem of Illegitimacy and the State Care of Its Child Population.—It is so obviously a question of the greatest moment to a country that its child population be well cared for, in order that its children may become healthy and well-educated citizens, that it is not a matter for surprise that the State should concern itself with the welfare of the children. It is equally patent that not only has the number of illegitimate children largely increased during the war, but that these should be looked after in the same way as the children born in wedlock are looked after. In Great Britain, from the early Factory Acts up to the last Education Act, the steadily increasing care of the State for its child population can be traced. The problem of illegitimate children is, of course, more insistent than ever before. In 1918, 41,000 illegitimate children were born in England and Wales. Moreover, the number of legitimate births has been steadily decreasing, so that the illegitimates have formed an increasing proportion of the whole. It goes without saying that the fate of these babies is very problematical. At any rate, in this country, their infantile death rate is at least twice that of the legitimate. Again, if one in every five of these infants perishes before it is a year old, the remaining four will in the ordinary course of events, have undergone great risks and some—probably a considerable proportion of the survivors—will have incurred irretrievable injury. It is plain that a high infant death rate signifies a high damage rate. No modern community, and perhaps England in particular, can afford to permit its future workers to grow up enfeebled, puny, and possibly disabled citizens, calculated to become rather a burden than a help to the country in which they were born and brought up. The Government of Great Britain fully recognizes this and realizes its responsibility in the matter and is about to take steps for the relief or betterment of the existing situation. By the instrumentality of Mr. Neville Chamberlain a bill is to be introduced into the House of Commons early in May and which is supported by all the main bodies concerned with the problem. This bill is based upon the principle of increasing and recognizing the responsibility of the father, and failing him, of the State, for the maintenance of the children. Illegitimate children are to be wards of Court and the duty of getting into touch with the father is to be placed upon an official of the Court. The sum payable is to be arranged in accordance with the means of both parents and the real needs of the child. As far as possible the bill will provide for the child to remain with the mother. The bill is a step in the right direction, but is only a small part of the work that must be done if the problem of illegitimacy is to be solved.

The Army Council and the Medical Corps.—In the House of Commons, on March 22, last, in a discussion on the Army Medical Service, Capt. Elliott, a medical M. P. said that the British had lost many thousands of men in the late war because the Army Council had not taken the straightforward advice of the Medical Service. The Medical Corps had made contributions of the greatest value in respect to the treating of the armies in the field. He gave some instances of the indifference exhibited by the Army Council to medical advice. It was impossible to give the young recruit too much to eat. They gave these growing boys 4,000 or more calories a day, and they bolted it up and like Oliver Twist came back for more. The best proof that these recruits did not get enough to eat was the fact that they were willing to spend their own money on food. At the time of the demobilization the physiological experts warned the Army Council that they would have a lot of these young fellows coming back to the camps, and that it would be necessary to increase the rations. But the Army Council took no notice until the Australian troops mutinied and then the Council conceded to force what they had hitherto refused to concede to reason. Another case in point was in regard to the disease known as bilharzia, which attacked the British troops in Egypt. As a result of medical discoveries the troops were rendered practically immune from this scourge, which had existed in Egypt from the time of the Pharaohs. Capt. Elliott strongly urged that the Director General of Medical Services should have a seat on the Army Council.

Typhoid Inoculation.—A very interesting question was asked in the House of Commons the other day, when Mr. Charles Edwards asked the Secretary for War whether between 150,000 and 200,000 uninoculated men served in the British armies in France during the war, whether less than 4,000 of these suffered from typhoid or paratyphoid fever, and whether he attributed the immunity of these uninoculated men to the precautions taken regarding the provision of pure water and food and the measures for the destruction of refuse taken by the Sanitary Services. Mr. Churchill replied that during 1917 there were in France approximately 30,000 men who had not recently, or had never, been inoculated, and during 1918 the number was approximately 70,000. Good sanitation had always had a beneficial effect in checking the spread of the disease. It was also, however, true that the immunity these men enjoyed was due to the fact that there was only a very small proportion of non-inoculated men in each unit.

The Annual Meeting of the British Medical Association at Cambridge.—As mentioned before, the Annual Representative Meeting will commence on Friday, June 25. The session will be continued on Saturday morning, and, if necessary, on the Monday and Tuesday. On the evening of June 29, Sir Clifford Allbutt, after his address as president of the association in the Senate House of Cambridge University will receive distin-

guished foreign guests, and a reception will be given by a local branch of the association in King's College. The sectional scientific meetings will be held in the New Museum on June 30, July 1, and July 2, the mornings from ten to one being devoted to discussions, and the afternoons from two-thirty to laboratory and clinical demonstrations. On the evening of July 1, at 7.30 o'clock, the annual dinner of the Association will be held in the hall of St. John's College, the number at the dinner being limited to 200. Local entertainments, garden parties and those kind of things will be given on several afternoons, and a visit is being arranged to the well-known tuberculous colony at Papworth. July 3, the last day of the meeting, has been set apart for excursions to places of interest in the neighborhood. The various college authorities have offered bedrooms for 1,000 visitors, and to provide them with meals at an inclusive daily charge. There are also a large number of university lodgings in the town, and the local committee will engage as many of these as are needed by visitors.

The Quality of Bread.—The quality of food is of more importance than the quantity, and the need for a properly balanced diet is becoming more and more in evidence and better appreciated by medical men. However, the general public in this country is profoundly ignorant on this matter. For example, nearly all the bread sold in London restaurants, and most people get their meals in restaurants or hotels nowadays, is made from the highly milled variety of flour from which the vitamine content is absent. If whole meal bread or brown bread is asked for, in ninety-five cases out of a hundred neither one nor the other is to be had. The Council of the British Bread and Food Reform League are directing attention to a danger which may arise when bread control is removed. It is pointed out that the competition that will result is apt to lead to the production of articles of very inferior quality unless the Food Adulteration Acts are extended so as to protect meal, flour and bread from deterioration and adulteration. The report of a recent important deputation to members of Parliament draws attention to the fact that ordinary bread is deprived of flesh-forming materials and the substances which form bones and teeth and nourish the brain and nerves, while the vitamines, which are absolutely essential for the maintenance of health, are entirely removed. It may be noticed in this connection that lack of vitamine content does not necessarily characterize a deficiency disease, or rather, lack or absence of the accessory food factors is not the sole deficiency which occurs in certain foods and which, if employed as a regular diet, will bring about a condition of ill-health. Lack of lime salts in a diet will produce certain forms of disease just as surely as lack of the vitamine element, and this fact is beginning to be thoroughly recognized.

Child Poisoned with Illuminating Gas by Its Insane Mother.—Dutiller and Vallée relate the case of an insane woman with persecution delusions who placed a gas tube in the mouth of her two-year-old child and maintained it there for a half hour, long after the child was dead.—*Le Bulletin Médical.*

THE NARCOTIC AND THE REGISTRATION BILLS.

To the Editor of the Medical Record:

Sir: At the hearing on the Cotello Narcotic Drug Bill on April 15 before the Public Health Committee of the New York Legislature, Mr. Kenyon asked if the defeat of his bill for the Annual Registration of Physicians, on the floor of the Assembly on the previous day, was not due to the same form of opposition manifested at the hearing by a few physicians to the Cotello Bill. Both of these bills were endorsed by the Medical Society of the State of New York. In spite of this fact members of the Assembly, Mr. Kenyon said, voted against the bill for Annual Registration of Physicians on the strength of protests received at the last moment from physicians among their constituents.

The Cotello drug bill was frankly endorsed by the State Society to compel the institutional treatment of drug addiction. This measure, if enacted, would compel the physicians of New York State to conform their mode of treatment of these cases to that laid down under this law. Other bills supplementary to this one were the Gibbs bill, giving the right of search and entry to an official of the drug commission to any place where he had reason to believe drugs were kept or patients were treated for drug addiction, and another bill amending the sanitary code of the State permitting local boards of health "to provide suitable places for habitual users of drugs who cannot otherwise be provided for" as well as for those suffering from contagious disease.

It is a surprising fact that a hearing on a bill of such importance to the public and so revolutionary in its effect upon the practice of medicine should practically be unnoticed in the news of the day. Two of the leading morning papers did not refer to the hearing at all, and two others gave only an incomplete report. No mention was anywhere made of the important and unusual fact that the advocates of these drug bills were engaged as public officials either in the public treatment of drug addicts or in the prosecution of those said to be practising in violation of the provisions of the Federal laws relating to drug addiction.

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QUESTIONS AS TO SHAVING OR WEARING A BEARD.

To the Editor of the Medical Record:

Sir: In my medical course I remember hearing a European specialist say in regard to shaving: "Gentlemen, if you interfere with nature, you pay for it." But I am unable to find any scientific investigation of the question. I am seeking, therefore, facts and opinions from physicians, and should be grateful if your readers would kindly answer, as soon as possible, the questions below.

1. What are the principal injuries to the skin that come from shaving?

2. What are the general advantages in growing a beard?

3. I believe that the habit of shaving increases neuralgic and other troubles of the face, and tends to lessen the chances of life. Do you believe this, and if so, will you give me any data in your medical practice and experience that would tend to confirm such a belief?

4. Or do you believe the question of shaving, or wearing a beard, from the medical point of view, is not of sufficient importance to merit serious study?

I should be glad if any who feel disposed to reply to these questions would write as fully as possible, and mention any pertinent facts or opinions not covered by the questions.

ARTHUR MACDONALD.

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WASHINGTON, D. C.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 8, 1920, clxxxii. 15.

1. The Medical Aspect of Dental Irritation. William A. Lurie.
2. Ileostomy for Postoperative Obstruction Following Appendectomy. Edward P. Richardson.
3. The Surgical Treatment of Acute Empyema by Valve Drainage, Provided by Flap of Skin, Fascia, and Muscle, Under Local and Paravertebral Anesthesia. William Reid Morrison.
4. Chest Conditions Resulting from War Wounds and Their Surgical Treatment. B. H. Alton.

1. The Medical Aspect of Dental Irritation.—William A. Lurie brings to mind the fact that the removal or the cure of dental infection or irritation does not always cure the patient. Differences of opinion have arisen between the dentist on the one hand, whose interest in a tooth is mechanical, and the doctor on the other, whose interest is physiological. Does the dentist know the seriousness of the patient's harboring an infection while he is attempting to treat and save the tooth? The writer answers the question in the negative. The recent studies in blood pictures have clearly shown the difference in cases where there is found irritation without infection, infection without a vast incident of irritation or both concomitant. The studies of cases of mouth infection and irritation carried on along the same lines show that the same relation holds true with relation to conditions of the oral cavity as elsewhere in the body. In the greatest number of instances dentists who have not had the experience in this direction but who are expert in the mechanical side of their profession, lose sight of these facts. From the medical aspect of the mouth, relative to infection and irritation, the necessity of a proper masticating apparatus is an essential factor, and the one which links medicine and dentistry. The dentist is interested in maintaining a mechanical means for food mastication, while the physician directs his attention to mastication to see that it is properly performed for the purpose of beginning digestion. The greatest effect of mouth conditions is no doubt primarily felt in the alteration of digestion, through the inefficient mechanical construction of the jaws, and second through enzyme activity. An irritation may cause an increase in salivary secretion to such an extent that when food is introduced there is no response to the additional stimulation. Such lack of digestion is recognized as due to a decrease of ferment concentration. An infection may be the underlying factor in the causing of an acid reaction to the mouth sufficient to inhibit the activity of the saliva when it is poured into the mouth. The effect of an oral infection or irritation is not necessarily only a local one, or on digestion entirely. Toxines, as well as bacteria from an infected site in the mouth, are carried everywhere by the blood stream. The numbers of changes in glandular tissue throughout the body resultant therefrom are the subjects of study by many. The effect of the production of energy under the stress of such irritation or infection is being considered in the study of the function of the ductless glands. In such cases the medical view should govern the decision as to the advisability of saving the tooth. Especial attention is directed to the importance of the mouth of a growing child, and of the association of the acute infectious diseases of childhood and dentition.

New York Medical Journal.

April 10, 1920, cxi, 15.

1. Psychopathies and Neuropathies of Cardiovascular Diseases. Thomas E. Satterthwaite.
2. What Fears and States of Anxiety in a Patient Mean to the Gynecologist. S. Wyllis Bandler.
3. Heart Disease in Adults. Louis I. Dublin.
4. Cardiospasm from the Medical Viewpoint. Edward A. Aronson.
5. Hyperchlorhydria. Robert H. Rose.
6. Upper Abdominal Disease. Moses Behrend.
7. The Interest of the State in the Health of Its Citizens. William A. Groat.
8. Is Endemic Goitre a Water Borne Disease? J. Christopher O'Day.
9. Three Epochs in the History of the Clinical Society of Surgeons of North America. John G. Clark.

1. Psychopathies and Neuropathies of Cardiovascular Diseases.—Thomas E. Satterthwaite presents the results of the study of one hundred histories of cardiovascular patients from his office records, selecting those with fairly complete data, and in the order of their filing. The particular problem before him was, in the first place, to discover the interrelation as to frequency between the arrhythmias and the psychopathic states in cardiovascular diseases as they were noted in his records. He used no special classification. From this study one may safely state: 1. Arrhythmias are not active factors in causing psychopathies. 2. Tachycardias are even less so. 3. The incidence of cardiovascular disease in causing psychopathies in general, and in being contributing causes of death in them is from 32 to 35 per cent. 4. On the other hand senile psychoses may be associated in a similar manner with cardiovascular disease in 77 per cent.; psychoses with cerebral arteriosclerosis in 80 per cent. of the cases. 5. With respect to the incidence of such neuropathies as migraine, anginoid attacks, neuralgias, pareses, or paralyses and tremors, his figures put it at 33 per cent. 6. Most of such neuropathies, however, are either incidental or accidental associates of the cardiac or vascular diseases.

The Journal of the American Medical Association.

April 10, 1920, lxxiv, 15.

1. The Incidence of Acute Rheumatic Fever at Bellevue Hospital. Alexander Lambert.
2. Adequate Preparation for the Practice of Otolaryngology: Discussion of an Old Problem. George E. Shambaugh.
3. A Comparison of Methods for Determining Thyrotoxicosis. Malcolm S. Woodbury.
4. Poisoning by Alcohol "Denatured" with Nitrobenzene. R. W. Scott and P. J. Hanzlik.
5. Fits and Fallacies. Russell G. MacRobert.
6. Epidemic Influenza at the Cook County Hospital. James C. Small and Fred H. Stangl.
7. The Delirious and the Meningoradicular Types of Epidemic Encephalitis. Peter Bassoe.
8. Tubing as a Cause of Reaction to Intravenous Injection. Especially of Arsphenamin: Preliminary Report. John H. Stokes and G. J. Busman.
9. Nonoperative Determination of Patency of Fallopian Tubes in Sterility: Intrauterine Inflation with Oxygen, and Production of an Artificial Pneumoperitoneum: Preliminary Report. I. C. Rubin.
10. Generalized Neurofibromatosis: With Report of a Case. Leland H. Anderson.
11. Oxygen Inflation of the Peritoneal Cavity: A Personal Experience. Armitage Whitman.
12. "Antiplasma." C. C. Bass.

1. The Incidence of Acute Rheumatic Fever at Bellevue Hospital.—Alexander Lambert discusses and gives tabulated records of cases of rheumatism admitted to Bellevue Hospital from 1906 to 1919, inclusive, the study having suggested itself as the result of his observation of a surprising diminution in the number of cases of acute rheumatism noted upon his return to the hospital after two years of absence. The figures were obtained in gathering material for a report on health insurance to see whether or not there had been an actual diminution in the number of cases of acute rheumatic fever admitted to Bellevue Hospital, and to see whether any deductions could be drawn from them regarding the wisdom of including dental hygiene in the preventive measures of social insurance. They are too limited for

any sweeping generalizations. But it would seem that the actual and striking diminution of total admissions for rheumatic fever of the past two years was more than accidental, and that for this the dental hygiene more than any other one factor was responsible. That tonsillectomy has also made its impression is most probable, as the diminution of both total number of admissions in the 20 to 29 year group and the percentage ratio to total number of this group is really most striking, especially since during this period of life the liability to rheumatic infection is especially noticeable. The average number admitted of 20 to 29 years of age during the four year period of 1911 to 1914 was 180, while during the five year period 1915 to 1919 it was 110. The ratio to total admissions has also fallen from 17.8 per cent. for 1911 to 1914 to 15.3 per cent. for 1915 to 1919. The two periods from 20 to 29 are the periods in which the figures show most definitely an average reduction of percentage to total, combined with a definite reduction of total admissions. Have tonsillectomies begun to tell, or has it been oral and dental hygiene? Undoubtedly both, as ten years have not elapsed since tonsillectomy before 15 years of age has become widespread, so that it could not previously have affected the older years of this and other age groups in the community.

11. Oxygen Inflation of the Peritoneal Cavity.—Armitage Whitman describes his personal experience with oxygen inflation of the peritoneal cavity, undertaken for the purpose of demonstrating the effect of posture on the internal organs. The experiment was suggested by the observations of Stein and Stewart on the roentgen examinations of the abdominal organs following inflation of the peritoneal cavity with oxygen as an aid to the diagnosis of obscure abdominal conditions. The injection in the writer's case was made by Dr. W. F. Cunningham. He records the experience not for the purpose of discouraging the employment of the method, the importance of which has been already demonstrated, but because he can find nothing in the literature that might lead one to take into account the sensations of the patient. His conclusions from the experiment follow: 1. The experiment was a failure in regard to the purpose for which it was undertaken. In the erect position, the gas once having risen to the subdiaphragmatic spaces, it was impossible to exert sufficient pressure from below to force the liver up and squeeze the gas out. Contraction of the abdominal muscles from below upward also primarily reduced the space into which the gas could escape. 2. The actual injection of the gas was practically painless, and its presence in the peritoneal cavity was attended by none but mechanical disturbances incident to its physical volume. 3. These mechanical disturbances were of such an unpleasant and disabling nature that the method should not be employed without their due consideration. The patients should be warned of what they might reasonably have to expect, and be prepared to spend from three to four days in bed following the injection. In nervous individuals the consequences might be considerably more disturbing.

The Lancet.

March 20, 1920, cxcviii, 12.

1. A Presidential Address on Hunter, Gaskell, and the Evolution of the Nervous System. Delivered before the Hunterian Society on February 25, 1920. W. Langdon Brown.
2. Heat Hyperpyrexia. W. H. Willcox.
3. Syphilis at a Venereal Clinic: An Analysis of Cases Admitted During Twelve Months. E. P. Skinner.
4. A Note on the Later History of Four Cases of Total Laryngectomy. Sir Charters Symonds.
5. Intravenous Injection of Tartar Emetic in Guineaworm Infections. J. W. S. Macfie.
6. A Case of Abnormal Descent of the Testicle. John A. C. Macewen.
7. Syphilitic Spondylitis: Negative Wassermann Reaction. S. C. Evans.
8. Army Hygiene During the Great War. Sir John Goodwin.

3. Syphilis at a Venereal Clinic.—E. P. Skinner gives an analysis of cases admitted to the clinic of the Royal Hospital, Sheffield, during the period from August 31, 1918, to August 31, 1919, during which time 354 new cases of syphilis were admitted, 329 males and 125 females. He found that primary cases are still in a grave minority of admissions. Women do not seek advice in the primary stage, and steps should be taken to disseminate knowledge of the dangers of venereal disease and the advantages of the clinics among the female population. Continuity of treatment is essential for cure, and discontinuity a possible danger. Only when treatment is commenced before Wassermann reaction has become positive can a cure be definitely promised.

4. A Note on the Later History of Four Cases of Total Laryngectomy.—Sir Charters Symonds reports four cases, three men and one woman, who have lived in comfort and happiness, and who have done useful work, for 8, 12, 15½, and 22 years respectively, after total laryngectomy. These records are of value also in showing the immunity that can be obtained even when the malignant disease is extensive. These people can be understood by those around them by simple lip-movements and the vibration of such an amount of air as can be taken into the mouth and pharynx, while with the speaking tube, which he describes, the patient can be heard in a large room. The immunity in these cases has been largely due, no doubt, to the wide initial removal of structures external to the larynx. The avoidance of preliminary tracheotomy certainly facilitates the operation, and, moreover, diminishes infection. The technique is also a matter of some importance. (The writer may describe this in a later communication.)

British Medical Journal.

March 20, 1920, i, 3090.

1. Observations on the Elements of the Psychoneuroses. Henry Head.
2. The Nature, Prevention, and Treatment of Heat Hyperpyrexia: The Clinical Aspect. W. H. Wilcox. The Physiological Aspect. Leonard Hill.
3. Note on the Dietetic Treatment of Diabetes Mellitus. R. T. Williamson.

2. The Nature, Prevention, and Treatment of Heat Hyperpyrexia.—W. H. Wilcox, in discussing the *clinical aspect*, gives the results of observations made during the summers of 1916, 1917, and 1918, spent in active service in Mesopotamia as Consulting Physician to the Mesopotamian Expeditionary Force. He made a careful study of the clinical manifestations of the different types of disease due to this cause. Heat hyperpyrexia was the most striking and most dangerous form of illness met with, and this was likely at any period to occur as a complication in the milder types of these effects of heat. After discussing the etiological factors—climate, temperature, cumulative effect of heat, humidity of atmosphere, special rays, night temperature, stagnation of air, dwellings, age and race, alcohol, exertion, water, clothing, constipation, etc.—the writer considers briefly the diseases which predispose to heat hyperpyrexia, among which are malaria, sand-fly fever, the enteric group of diseases, typhus fever, and smallpox. From his experience he had no doubt whatever that heat hyperpyrexia is a clinical entity, occurring apart from intercurrent diseases. The clinical history of cases of pure heat hyperpyrexia and the course of the symptoms after the acute stage, which often exhibit prolonged pyrexia and profound toxemia in the absence of any bacteriological infection, strongly indicate that the cause is an autointoxication as the result of the effect of heat on the body tissues. The autointoxication occurring in heat-stroke was found to be associated with the presence of acetone and diacetic acid in the urine in only a small proportion of cases (about 12 per cent.), and in these the reaction was of only moderate intensity. It thus appears that heat hyperpyrexia is not due to an acid intoxication. The presence of indican in excess in the urine in acute cases is of importance and is an evidence of the autointoxication present. It has been shown by Cramer that beta-tetrahydronaphthylamine will cause hyperpyrexia in animals, and it is likely that similar chemical bodies produced as the result of the effects of heat on the tissues in man may have a like effect. No evidence of bacterial infection was obtained in a numerous series of blood cultures in cases of pure heat hyperpyrexia. Undoubtedly suppression of sweating is a most important predisposing cause in many cases, especially those of heat-stroke or sunstroke. In the writer's cases suppression of sweating did not

always precede heat hyperpyrexia, and though it is an important predisposing factor, it cannot be regarded as the primary cause. In the post-mortem examinations made in Mesopotamia edema and general hyperemia of the brain and leptomeninges were observed, and cloudy swelling of the liver, kidneys, and myocardium was found; petechiæ of the skin and mucous membranes were seen in some cases. No definite signs beyond these were observed more than those indicating intercurrent diseases, such as malaria with enlarged spleen, etc. The clinical types of illness caused by exposure to heat are given as: 1. Heat exhaustion (mild type); 2. gastric type; 3. choleraic or gastrointestinal type; 4. heat hyperpyrexia (heat-stroke or sunstroke).

Heat exhaustion required no special treatment beyond rest, keeping cool, and aperient medicine. The gastric type was dangerous and required great care in treatment. Free purgation, great care in protection from heat, large doses of sodium bicarbonate (30 grains every three hours), and rectal injections of cold solutions of the same salt (2 drams to the pint) gave the best results. The diet in all "heat" cases was chiefly lactovegetarian, the fat and protein being reduced as far as possible. The choleraic type required treatment on the lines of cholera cases, including the injection of physiological or hypertonic saline solution subcutaneously, and cardiac stimulants. Protection from heat was most important.

Heat hyperpyrexia demanded the immediate application of measures to reduce the temperature. Convulsions, which occurred very commonly, were treated most satisfactorily by venesection, 10 to 20 oz. of blood being withdrawn. Cardiac failure was treated by digitalin, strychnine, adrenalin, or pituitary extract hypodermatically. Respiratory failure was treated by artificial respiration and oxygen.

Leonard Hill, in discussing the *physiological aspect*, states that heat stroke results from the rise of body temperature to a height incompatible with the maintenance of the equilibrium of the physicochemical reactions in the cell on which life depends. Such rise may result from inability of the heat-regulating mechanism to control the body temperature under the atmospheric conditions, or from exhaustion of this mechanism. Infection, drink, fatigue, by weakening the mechanism, enhance the risk of heat stroke. The various factors involved are discussed.

Schweizerische medizinische Wochenschrift.

February 19, 1920, 1, 8.

Tuberculosis and the Abortive Treatment of Syphilis. Tiéche states that in the latter years of the war both tuberculosis and syphilis increased in frequency. This increase means that more individuals suffer from the associated disease, and the question arises, "Does the abortive treatment of syphilis tend to react unfavorably on tuberculosis?" This naturally leads to the subject of the unfavorable influence of syphilis *per se*, untreated or not, on the companion disease. There is abundant evidence that severe syphilis can light up or aggravate a mild or latent tuberculosis. Infection in well developed tuberculosis does not necessarily aggravate the latter. In fact, there is some experience to the effect that syphilis has been of benefit to tubercle, but to what extent this could have been attributable to the treatment is not certain. The converse is also true, for if today tuberculosis is made worse by syphilis, this aggravation may perhaps be attributed to salvarsan, just as in past years mercury may have been responsible. In view of the different experience the individual can only speak of these matters as he finds them. The author has seen six cases in point in which he was able to follow tuberculous individuals from the time they contracted their chancre. The tuberculosis was in part active and in part latent. In three cases the subjects doubtless were made worse by the neosalvarsan and mercury used by the intravenous route, while two cases of chronic fibroid phthisis were not affected and one glandular tuberculosis was started up anew. Other patients were seen later in the course of syphilis when it was too late to think of abortive treatment. Here intensive antisyphilitic measures appeared to cause exacerbations of tuberculosis in some of the subjects and the author cites two such cases. Here as before chronic fibroid phthisis was not prejudiced. Should one abstain from an abortive or intensive treatment of a tuberculous subject when he contracts syphilis? This is a difficult question, for there are not a few tuberculous who will not suffer from this treatment. Too harsh a ruling might bear unfavorably on mere suspects, for in dispensary treatment one cannot go into refinements of diagnosis. It is in these very suspects, moreover, that some of the worst examples of tuberculosis have followed intensive salvarsan treatment. It is evident that we cannot commit ourselves one way or the other in this problem.

Schweizerische medizinische Wochenschrift.

March 11, 1920, 1, 11.

Encephalomyelitis Epidemica.—Under this name Stahelin describes so-called lethargic encephalitis. As far as known there has been no suggestion of direct transmission. The malady has never been seen during the crest of a grippe pandemic. The disease picture is pleomorphous, so that diagnosis often has become difficult. In the atypical cases a great variety of symptomatology is comprised. A subject with an ataxic syndrome was operated on for cerebellar tumor. Landry's paralysis and other myelitic syndromes have been described. But despite this clinical variability the anatomical lesions in fatal cases appear to be one and the same, and there is no difficulty about the post mortem diagnosis. Several cases are given, one of which appeared soon after eating preserved meat. The symptoms suggested paratyphoid and later after the supervention of diplopia botulism. Of four cases narrated the diagnosis was easy through the presence of the classic triad of fever, somnolence, and diplopia. In a fifth case the diagnosis lay between lethargic encephalitis and apoplexy. By reason of diplopia an eye specialist was consulted, who found myosis and irresponsive pupil, which reacted very slowly to atropine. Complete unconsciousness was followed by death. In other cases the presence of the epidemic led to correct diagnosis. but had the cases been sporadic this diagnosis would at the best have been tentative. An analysis of 17 cases shows that Landry's paralysis and apoplexy may be simulated. By reason of the spinal component the author would introduce the term encephalomyelitis. The undoubted presence of influenza in several cases is placed by the author among the coincidences of disease. Otherwise we must admit identity or at least anatomical correspondence of the two maladies. Or in the absence of a known cause it may be necessary to assume that more than one organism may be able to cause the same clinical affection, and among them the unknown virus of influenza.

Norsk Magazin for Laegevidenskaben.

March, 1920, lxxxi, 3.

Acute Benign Cases of Acanthosis Nigricans.—Bidenkap alludes to the general conception of this condition as one of hyperpigmentation, papillary hypertrophy, and hyperkeratosis. He then describes a case of the benign type not associated with carcinoma. The subject was young, healthy, and vigorous, and without digestive disturbances. The mucosæ were not involved in the pigmentation. Other pigmented affections could be excluded, as arsenicism and Addison's disease. Of a series of 40 cases of acanthosis nigricans on record, one-third were associated with cancer in the abdominal cavity. The author knows of one such case in Norway of this type. The total number of malignant cases known is about 30.

Statistics of Mammary Cancer.—Holst deals with statistics of 81 cases. The axillary glands were normal in 21 and infiltrated in 41, not reckoning the recurrences, which make up the total of 81. The number of cases submitted to radical operation was 63. The number to survive five years without recurrence was 12. Forty developed recurrence within three years. The author's statistics are not cited as a particularly strong argument in support of the operative treatment in all cases of cancer.

Book Reviews.

On Facial Neuralgia and its Treatment. With Especial Reference to the Surgery of the Fifth Nerve and the Gasserian Ganglion. By J. Hutchinson, F. R.C.S., Surgeon to the London Hospital; Examiner in Surgery and the Late Hunterian Professor at the Royal College of Surgeons. New York: William Wood & Company, 1919.

The two hundred and sixteen pages which constitute this volume include the body of the text, an appendix in which a few case reports are given, a bibliography of trigeminal neuralgia and its treatment, and an index. There are thirty-eight illustrations. The author deals chiefly with epileptiform or major neuralgia (tic douloureaux), though one chapter is devoted to a consideration of the other forms, their causes and treatment. The technic of excision of the gasserian ganglion is described and illustrated.

Industrial Medicine and Surgery. By Harry E. Mock, B.S., M.D., F.A.C.S., Assistant Professor of Industrial Medicine and Surgery at Rush Medical College; Attending Surgeon, St. Luke's Hospital; Visiting Surgeon to Washington Boulevard Hospital; Chief Surgeon to Sears, Roebuck & Co.; Fellow Institute of Medicine, Chicago; Lieutenant-Colonel, Medical Corps, U. S. A. With 210 Illustrations. Philadelphia and London: W. B. Saunders Company. 1919.

The ideal of "human conservation and reclamation of all disabled" and methods for the realization thereof are admirably set forth in this volume of 846 pages. The author has considered every phase of the subject, from the rendering of first aid to the Americanization of the foreign employee. Industrial health service, prevention, industrial medicine, industrial surgery, compensation, insurance, medicolegal phases, and reconstruction form the subjects of the six parts into which the text is divided. The bibliography, covering nearly twenty-three pages, gives the literature of the subject since 1916. The index fills twenty-one pages.

The Nose, Paranasal Sinuses, Nasolacrimal Passageways, and Olfactory Organ in Man. A Genetic, Developmental, and Anatomico-Physiological Consideration. By J. Parsons Schaeffer, A.M., M.D., Ph.D., Professor of Anatomy and Director of the Daniel Baugh Institute of Anatomy of the Jefferson Medical College of Philadelphia; Formerly Assistant Professor of Anatomy, Cornell University Medical College and Professor of Anatomy, Yale University Medical School. With 204 Illustrations, of which 18 are printed in color. Philadelphia: P. Blakiston's Son & Co. 1920.

In view of the fact that the study of anatomy has not reached a state of finality and that the anatomical field has not been fully gleaned of its harvest, this volume is a particularly valuable addition to the literature of the subject. The author, as he states in his preface, has aimed to present a more or less comprehensive account of personal studies and observations on the genesis, development, and anatomy of the nose and its related parts, rather than to compile a fairly voluminous literature with its not infrequent diverse conclusions. Whether approached from the embryological, anatomicophysiological, otorhinolaryngological, or other point of view, this clear discussion of the author's researches and findings must prove interesting and valuable. The volume comprises twelve chapters, covering 370 pages, eleven of which are devoted to the index.

Dr. Crawford W. Long. The Distinguished Physician-Pharmacist. By Jos. Jacobs, Phar. D., Atlanta, Ga. 1919.

The full title of this little pamphlet is "Some Personal Recollections and Private Correspondence of Dr. Crawford Williamson Long, Discoverer of Anesthesia with Sulphuric Ether, together with Documentary Proofs of His Priority in this Wonderful Discovery." It is perhaps not generally known that Dr. Long, with his brother and a Dr. Billup, operated a drug store in Athens, Ga., opposite the campus of the local university in 1851, where the biographer was later employed as a apothecaries' apprentice. Dr. Long's office was in the rear of the store, and he practised both medicine and surgery. The recollections of Jacobs do not apparently go back of 1875, and Dr. Long's death took place three years later. While the main facts of his life and activities, including the discovery, are well known, the author is able to add many details from first or second hand information. The purport of the booklet is in part to focus attention upon the fact that Dr. Long was a pharmacist as well as a medical man.

Mind and Its Disorders. A Text-Book for Students and Practitioners of Medicine. By W. H. B. Stoddart, M.D., F.R.C.P., Lecturer on Mental Diseases to St. Thomas' Hospital Medical School; Examiner in Psychology and Mental Disease to the University of London; Honorary Consulting Physician in Mental Disease to the War Office; Honorary Treasurer of the British Psychological Society, and of the British Psycho-Analytic Society; Late Resident Physician and Medical Superintendent of Bethlehem Royal Hospital. Third Edition, with Illustrations. Philadelphia: P. Blakiston's Son & Co. 1919.

The study of the subconscious by psychoanalytic methods had become sufficiently important to justify the author of this volume in adding two chapters bearing on this subject in the second edition. Since that edition appeared, he states in the preface to the present edition, he has fundamentally changed his attitude toward mental disease, having personally investigated very many patients by the psychoanalytic method and thus been convinced of the truth of Freud's doctrines. He now holds that mental disease can be understood by studying the psychology of the unconscious mind of patients, and that the physical manifestations of a functional nervous disorder must be regarded as secondary, not primary, as he taught in the first edition of this work. The classification has been completely remodelled, and new chapters have been introduced on "The Anxiety Neurosis" and "Paraphrenia." Some chapters have been entirely rewritten and others enlarged. The author does not credit the war with having added much to the knowledge of mental disorder; it has stimulated interest in functional nervous diseases, but, so far as he is aware, none of the war cases underwent a deep psychoanalysis. The text is arranged in three parts, devoted, respectively, to normal psychology, the psychology of the insane, and mental diseases, the major portion of the book being devoted to the last.

Leçons de Pathologie Digestive (Quatriéme Série). Par M. Loeper. Professeur agrégé à la Faculté de Médecine de Paris. Médecin de l'Hôpital Tenon. Paris: Masson et cie, 1919.

The subject of these lectures are as follows: precocious pains of digestion; hypergenetic gastritis; pyloritis; toxic gastritis; dyspepsia of commotional origin, etc.; gastric symptoms of biliary origin; sarcoma of the stomach; gastric perforation; duodenal ulcer; bacillary periphrenitis; bacillary dysentery; anemias; cardiac failure; enteroneuritis; persistent celialgia; pain in cancer of the colon; typhlotomy following typhoid fever; premonitory diarrhea in malarial attacks, etc. The motif of these lectures appears to have been the rich military material of the latter years of the war with the more occult causes of indigestion found by the author. The book seems to be a contribution of merit to gastroenterology.

Einige Erfaiirungen über die therapeutische und diagnostische Bedeutung der Milchinjektionen besonders in der Ophthalmologie. Von Gerda Uddgren, Med. Lic. Stockholm: Ivar Haeggströms Bogtryckeri, 1918.

This brochure of 165 cases is devoted largely to a tabulation of cases there being twelve separate tables of diseases of the eye treated by milk injections. This is followed by an analysis of the case material, the biology of milk injection, condensed summaries and a bibliography. The conclusions are not very illuminating. Therapeutic action does not depend on fever induced at times by the injections. In certain cases the disease process is rendered more acute by the latter. Sterile and nonsterile milk are not essentially different in their action. Sterile milk can induce fever.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held January 8, 1920.

DR. CHARLES H. SMITH IN THE CHAIR.

A Case of Complete Heart Block.—Dr. WILLIAM ROSENSON presented this patient, a girl 10 years of age, who first came under his observation at Mount Sinai Hospital two years ago, at which time she had a pulse rate of 44, but was perfectly comfortable, her only complaint being slight pain and distress over the precordium on considerable exertion. Her family history had no bearing on her condition, save for the fact that a sister had mitral regurgitation. The patient's personal history showed that labor had occurred at full term and was tedious and difficult, and that she had been blue for several hours after birth. She had had pneumonia, diphtheria, and whooping cough, but no chorea, acute rheumatism, or pains in the joints. She showed no symptoms of heart trouble until she was seven years of age, when she first complained of pain and distress over the precordium, but there were never any signs or symptoms of decompensation. Physical examination revealed a definite apical impulse in the fifth interspace somewhat outside the mid-clavicular line. Percussion showed the right border of the heart 5 cm. to the right and the apex 9½ cm. to the left of the mid-sternal line. There was a long sawing diastolic murmur, transmitted over the precordium, best heard in the second left interspace. The pulse was always between 40 and 50. The electrocardiograph showed complete heart block. The heart was enlarged both to the right and to the left; the heart function, however, was quite normal. There was absolutely no cyanosis, but slight dyspnea after hopping one hundred and fifty times. The blood and urine were normal. The fluoroscopic examination showed a typical condition which the roentgenologist stated was characteristic of heart block. There was a coincident contraction of the right and left sides of the heart. He thought the murmur was congenital on account of its character and the history of the case. The defect, though impossible to locate definitely, seemed to be a direct communication between the aorta and the pulmonary artery, just above the aortic valves. Dr. Rosenson said he had been able to find only six cases of congenital and twenty cases in all of heart block in childhood described in the literature. Some of the reported cases were due to diphtheria and rheumatism.

A Case of Auricular Fibrillation in a Young Girl.—Dr. ROSENSON presented this patient, a girl 15 years of age. He stated that she gave a history of having had pneumonia twice and frequent attacks of tonsillitis. She gave no history of rheumatic pains or joint involvement. Seven years ago she was in the wards of Mt. Sinai Hospital, suffering from symptoms of decompensation, dyspnea, and palpitation. During the past five years she had attended school regularly, was comfortable all the time, and had never been compelled to take to her bed. About a month ago she had slight pain over the precordium, and considerable dyspnea in walking up stairs and passing into the different class rooms at school. She had an absolutely irregular pulse, the rate being 120. A definite impulse could be seen in the mid-clavicular line. On auscultation a blowing systolic murmur at the apex could be detected, and she was in bed ten days on large doses of digitalis. She had had an irregular pulse only during the past month, though there was evidence that she had had heart disease for ten years. The electrocardiograph showed auricular fibrillation and the *x*-ray showed the heart to be enlarged.

A Specimen of Congenital Heart Malformation.—Dr. WALTER LESTER CARR presented this specimen. He stated that the boy from whom it was taken was 12 years of age, undeveloped and poorly nourished; both skin and mucous membranes were markedly cyanosed. The fingers and toes were clubbed with capillary pulsation. Venous pulsation was seen on both sides of the neck. The chest was not rachitic, but there was a flare in the costal cartilages from the seventh to the tenth ribs on both sides. The heart showed a diffuse heaving, without a distinct apex area. Palpation gave a thrill over the entire precordium. Auscultation revealed an intense systolic murmur with the first sound, heard with great intensity at the second left interspace, and with diminished intensity in the back. The difficulty was to determine the relationship of the murmur, but finally the diagnosis was made that there was a patent foramen and an obstructed pulmonic valve. The heart was hypertrophied. Changes were detected in the lungs. This was confirmed by the *x*-ray, which showed the heart enlarged and the lungs infiltrated. The child had no edema and the urine was negative. The temperature was irregular, owing to the lung condition. The blood showed an increase in the red cells to 6,900,000. The child was allowed around the ward, but gradually grew worse, the tuberculous process in the lung increased, until he had to be kept in bed and finally died on November 30, 1919. In showing a specimen of congenital heart malformation it was well to appreciate that there might be a defect in development that gave congenital heart disease or there might be heart disease, as endocarditis, develop in intrauterine life. This specimen belonged to the type of defective development. Clinically one had to consider (1) the character of the lesion, (2) the prognosis, and (3) the likelihood of intercurrent disease. First, as to the character of the lesion, a patent foramen or an obstructed pulmonary artery might usually be detected without difficulty, but in the malformation shown a decision as to the complete lesion was difficult. Second, the prognosis was always bad, as the child could not develop and grow, since the heart was not able to carry on the circulation. Third, pulmonary tuberculosis was likely to occur.

Drs. CORNWALL and WEISS had performed the autopsy, under the direction of Dr. Larkin of the Strecker Laboratory. Their report showed that the heart was considerably enlarged. The myocardium was beef red in color and presented no evidence of interstitial fibrosis. The valvular arrangements in the heart were of a very peculiar nature. The pulmonic orifice was considerably narrowed. The semilunar cusps of the valve were misplaced, being about an inch and a quarter above their normal level. There were several redundant folds of intimal endothelium between the conus arteriosus of the right ventricle and the true semilunar valves of the pulmonic. These intimal folds were arranged in the form of pseudo valves. The left ventricle was considerably widened and showed three sets of valves, those from the right heart, namely, the tricuspid, and those from the left heart, namely, the mitral and the aortic. The mitral valve was posterior to the tricuspid and somewhat to the left. This arrangement was made possible by the absence of a portion of the intraventricular septum. The foramen ovale was widely open. The aorta presented no anomalies. The ductus Botalli was patent half way across. A probe could be passed half way across from the aortic to the pulmonic artery, but not straight through. The conditions in the heart were pulmonary stenosis; patent foramen ovale; patent intraventricular septum, eccentric hypertrophy of the left heart, and slight concentric hypertrophy of the right heart. The circulation then would permit of a three-fold distribution of the right auricular blood, namely, most of it would enter the left ventricle, and lesser amounts would enter the right ventricle and left auricle. The absence of a marked hypertrophy of the right ventricle in the face of pulmonic obstruction was to be explained, it seemed, on the basis of a great percentage of the blood passing in two directions, in addition to the normal. Incidentally it might be noted that this might account in no small measure for the intense cyanosis observed during life. In addition to the heart defects, the autopsy revealed a diffuse miliary tuberculosis, and amyloidosis of the liver, spleen, and kidneys.

Dr. WILLIAM I. REARDON said there was really nothing to be added to what Dr. Carr had said. In connection with the left ventricle there were three valves, the tricuspid, aortic, and mitral, while with the right ventricle there was only one, the pulmonic valve, which was markedly stenosed. There were two patent areas in the intraventricular septum. The circulatory

feature of interest was that the right ventricle received its blood for the pulmonary circulation by an overflow from the left ventricle through the patencies in the septum. There was an abortive attempt at a patent ductus arteriosus Botalli, a small sac-like depression being present in the pulmonary artery and also in the aorta, but a probe could not be passed through connecting these up. The foramen ovale showed a small patency.

Dr. MURRAY H. BASS read this paper, in which he stated that the development of the electrocardiograph had opened up a vast field for exploration of both normal and pathological conditions of the heart, and by means of this information they were able to group the various cardiac irregularities in a much more scientific manner than formerly, and had brought out the fact that cardiac arrhythmias were really not as rare as had previously been supposed. Dr. Bass reviewed the various types of arrhythmia which were met with in childhood, laying special stress on the prognosis connected with each variety. These types were: (1) Sinus arrhythmia; (2) simple tachycardia; (3) paroxysmal tachycardia; (4) auricular fibrillation; (5) heart block; (6) premature beats. Sinus arrhythmia, he said, was by far the commonest form of juvenile irregularity. This condition rose from changes in the vagus impulse, which resulted in the heart as a whole beating at different rates at different times. Very marked varieties of sinus arrhythmia might perhaps be considered as bordering on the pathological, but this type of irregularity was found in practically all children, so that it was spoken of as a physiological irregularity. It was very important to bear this fact in mind, since many parents had been unduly alarmed by being told that their children were suffering from heart disease when in reality the condition present was only sinus arrhythmia. In diagnosing this condition the child should be asked to take deep breaths, when the irregularity at the pulse would be brought out more clearly. Following this the child should be asked to take some rapid exercise, when the irregularity if due to sinus arrhythmia would diminish or entirely disappear. As a final test, though this was rarely necessary, atropine might be administered, following which the irregularity would disappear owing to the blocking of the vagus impulses. This condition needed no treatment *per se*, though when present in high-strung neurotic children it should be regarded as one of the evidences of nervousness, and the appropriate treatment of the condition instituted. Under no circumstances should exercise be forbidden on account of the heart irregularity alone. Under the head of simple tachycardia were included all those cases of rapid heart in which the pulse tracings or electrocardiogram revealed no abnormality of the heart mechanism except increased frequency of the beat. These cases differed from paroxysmal tachycardia in that the electrocardiogram showed the impulse in the heart to rise at its normal site of origin, whereas in paroxysmal tachycardia the impulse arose elsewhere. Simple tachycardia might result from nervousness, hyperthyroidism, or from conditions in the heart muscle itself making increased demands on the circulation. It was associated with fever and certain disturbances of nutrition, such as scurvy. In rare instances tetany might be the cause of tachycardia. Paroxysmal tachycardia was a condition characterized by sudden attacks of very rapid heart action, in which the electrocardiogram showed that the impulse during the attack failed to arise in the sinus node, but originated in some other portion of the heart tissue. The cause of these attacks was not at all clear. Some of the cases occurred in previously healthy children; others were found in children suffering from rheumatic carditis or diphtheritic myocarditis. Contrary to the condition in adults, the great majority of cases in children occurred in individuals free from valvular disease. It might occur at any age, the youngest reported case being 28 months old. The attack started very suddenly, accompanied by an abnormal sensation in the heart region, occasionally by vomiting and depression. It was quite remarkable to see how comparatively comfortable these children were even when the pulse rate lay between 200 and 300. In addition to the rapid pulse there was excessively rapid pulsation at the wrist. The duration of an attack might vary from a few hours to several weeks. Not enough cases of tachysystole had been carefully observed to permit one to speak with any degree of positiveness as to the prognosis. If the attacks did not occur with great frequency, and if the heart muscle did not seem much affected, the outlook as to life was apparently good, since many of the cases were reported in adults who had survived, though their attacks began in childhood.

Auricular fibrillation was infrequent in childhood, and its characteristics when present in early life did not differ in any way from those found in adults. The reason it was rare in childhood was because it almost never occurred in a heart previously healthy.

Heart block in children, contrary to the condition in adults, was due to the acute rather than to the chronic cardiac diseases. Whereas the common causes in adults were syphilis and arteriosclerosis, in children acute rheumatism, diphtheria, and less often pneumonia were the chief etiological factors, though it might less commonly be due to congenital malformation. Too few examples of heart block had been examined and followed up for one to be able to say much in regard to their prognosis. They undoubtedly must be looked upon as very serious cases, and especially when accompanied by defective cardiac development should call for a very guarded prognosis.

Premature beats were not a very frequent finding in childhood. While in adults they were of no very harmful portent, in childhood they were often an indication of severe damage to the heart muscle. There was considerable difference of opinion as to the prognostic significance of extrasystoles. Personally he could truthfully say that he had never observed extrasystoles in children except in cases in which he could put his finger on a real cause for serious heart damage. Thus he had seen them in the course of diphtheria, and had seen them persist for several years after an acute illness.

In summing up, Dr. Bass said the fact should be emphasized that, contrary to the views entertained five or ten years ago, the cardiac arrhythmias were not confined to adult life. Moreover, practically all the various forms of irregularity were represented in early life. It was also of considerable interest to note that the same clinical conditions might have an entirely different etiology in childhood and in adult life. On the other hand, he did not wish to convey the idea that arrhythmias were commonly encountered during childhood; he believed, however, that they were of frequent enough occurrence to be of considerable clinical importance. Now that most of the larger hospitals were equipped with electrocardiographs, he thought that pediatricians should make an effort to examine all cases of cardiac arrhythmia cardiographically in order that their knowledge of this relatively new and unexplored field might be rapidly increased.

Dr. LOUIS FAUGERES BISHOP said he had had the privilege of following one of these examples of congenital heart trouble for quite a number of years. This patient had had a very slow heart from birth, and her father, being an army surgeon, she had been kept under close observation. At one time her condition underwent a sudden deterioration and Dr. Bishop was consulted. He found that she had a heart rate of about 40. The Mackenzie polygraph (at that time they did not have the electrocardiograph) showed evidence of auricular flutter superimposed on the congenital heart block and that explained why she was not in as good condition as ordinarily. The auricular flutter subsided, and she regained her normal health. She had since married and gone through a confinement safely, and was enjoying a fair degree of health.

Dr. HERMAN SCHWARZ stated that he had followed up the cases of three children who had presented extrasystoles. One was a child, 4 years old, whom he only saw for a few months. The second child was 9 years old when Dr. Schwarz first saw him, four years ago. The third was 7 years old, two years ago. There had never been any acute disease and there was no etiological factor obtainable. These children were not sick, and did not show any signs of cardiac distress. It would seem that extrasystoles, associated with other heart lesions, might mean a diseased ventricular wall. Perhaps this was also the case where there were no

other lesions. However, the same care should be taken at the start in these cases as though they were straightforward valvular disease of the heart.

Dr. CARR spoke particularly of tachycardia. He stated that he had recently seen a nervous boy who was away at boarding school and often took more than ordinary exercise. An *x*-ray showed the heart of normal outline, and after exercise the heart rate was regular and steady. An irregular, rapid heart during the time of development and growth was not at all unusual. It was unfortunate that terms were used that gave the impression that these heart conditions were organic. Physicians were responsible for insisting that rapid and irregular hearts should be cared for as serious lesions, whereas regulated exercise lessened the rapidity and irregular action. He had seen some children and babies with acidosis in whom the action of the heart was rapid. One baby was a year old and had a pulse rate of 190, and a decided acidosis without organic changes.

Dr. WILLIAM ROSENSON expressed the opinion that it was not possible to say anything definite in regard to the prognosis of extrasystoles. In some cases of extrasystole there was serious damage to the heart, while in others there were neither symptoms nor signs of cardiac disease. In two such cases coming under his observation the extrasystoles disappeared from time to time, then again they would appear. The cardiac function was good and sometimes the systolic murmur was heard only over the pulmonic area. In neither case could he say anything in reference to prognosis from the extrasystole alone.

Dr. DEVER S. BYARD stated that his impression was, generally speaking, that extrasystole did not necessarily express a serious cardiac condition, although he had not noted it very frequently in children. He recalled extrasystole in two brothers in immediate convalescence from severe measles. One boy was very ill, his measles being complicated by double otitis media and acute endocarditis. He showed extrasystole on the twelfth day, following the appearance of the rash. The younger boy also had a severe type of measles, with no apparent complication. On the tenth day following the appearance of his rash, he too showed extrasystole. The extrasystole in the boy having the endocarditis persisted nearly four weeks, but in the second case it disappeared after three weeks. Both subjects had some circulatory embarrassment in the first week. Electrocardiograms gave no other evidence of cardiac disease. In the one child the evidences of the endocarditis persisted nearly three months. In the other, after the first week the extrasystole was the only abnormality noted. Both boys were now absolutely free from evidence of cardiac disease. These probably instanced cases presenting extrasystoles in toxemias, in some of which, at least, the symptom need not be regarded as particularly unfavorable.

Dr. ROBERT H. HALSEY called attention to several outstanding facts in the history of the introduction and use of medical instruments. First, the introduction of the clinical thermometer brought out a good deal in reference to the occurrence of temperature which had not been thought of before; but most important, temperature was only a symptom, especially in infectious diseases. When the sphygmomanometer was introduced, trouble began in the effort to know what high and low blood pressure meant. Even now many failed to realize that it was only a symptom. So, too, with the introduction of the electrocardiograph, there were a number of things that were not yet understood, and one of these was the extrasystole. One interpretation was that the extrasystole indicated an irritable state of the heart muscle, and depended upon a condition which might be temporary or progressive and permanent. Other signs must be considered with the extrasystole, and thus together they might indicate slight or serious changes taking place.

Dr. L. T. LE WALD said that during a discussion before the Section on Medicine a few months ago the *x*-ray was referred to as one of the older methods like auscultation, so perhaps he was a little out of date in speaking of the *x*-ray, though the *x*-ray was only twenty-five years old. However, though the electrocardiograph had come largely into use in the diagnosis of heart conditions, the *x*-ray evidence was still of extreme value. He had known such a gross lesion as dextracardia missed by the electrocardiograph examination in the absence of *x*-ray examination. He wished therefore to enter a plea in regard to the interpretation given as to the size of the heart, since a slight alteration in the position of the patient might materially alter the diameters of the heart. He had seen such gross errors with plates taken on the back of the patient, and in children who were ill; that was apt to be the case, as it was easier to take the plate that way. Unless one realized the possibility of gross deformities in the shape of the heart when the plate was taken on the back, one might be led into error. It was a difficult problem to establish a standard for the normal size of the heart at different ages, and particularly was that true in children. The effect of the respiratory phase on the size of the heart was very marked and the difference between a plate taken in the upright and one taken in the prone position was 10 or 15 per cent. There was also difficulty at times in distinguishing between right and left side enlargements. To obviate the possibility of error due to these different positions, one should put markers on the front and back of the chest to make sure that there was no rotation at the time of the exposure. Another very important point, especially applicable to difficult cases in which one was trying to discover minute changes, was the advisability of making a series of shadows at a long distance and then averaging the results. The civil engineer employed this method of taking averages when he was endeavoring to make accurate calculations, and it was certainly wise to use such a method in this work.

Dr. CHARLES HENDEE SMITH said he was interested in the remark that mothers ought to be taught not to worry about these irregular hearts, and also felt that too few doctors realized that these irregularities were not of serious significance. Nurses were perhaps in greatest need of education on this subject. If a child had an irregular heart and stimulants were left about the nurse was sure to give them. Premature systoles, in his experience, were very rare; he remembered seeing only three cases of this condition. He recalled one child, otherwise normal, who from time to time came with fairly frequently extrasystoles. The other cases that he had seen had a moderately severe heart lesion, and had all done perfectly well. It certainly was a rare condition in children whose hearts were damaged and decompensated. He was surprised to hear that Dr. Bass had found it to be considered more serious in children than in adults.

Dr. BASS, in closing, said he was glad his paper had provoked some discussion about extrasystole, because in looking up the subject in the literature he had found so many different opinions expressed. He had not seen a great many cases, and those he had seen seemed to follow serious conditions. The statement about extrasystoles being more serious in children than in adults, Dr. Bass said, was quoted, the statement having been made by Dr. Wilson in an article in the *American Journal of Diseases of Children*, published two or three years ago. From the standpoint Dr. Halsey had taken he must be correct. These cases should be kept under observation and reported on from time to time. Statements made in the literature regarding extrasystole were very vague and misleading. Most of these cases were reported as cases of patent ventricular septum and he had thought that his case might be explained on that basis. The *x*-ray findings were of considerable interest. Cases of patent ventricular septum, when examined by means of the fluoroscope, showed the heart shadow to be circular in outline. The contractions of both the right and left heart borders occurred synchronously, so that the shadow appeared suddenly to diminish in size with each systole. This was probably explained by the fact that there was some rotation of the heart, resulting in the right border being formed by the right ventricle (instead of the auricle) and the left border by the left ventricle.

Dr. BISHOP said that in the girl with heart block shown this evening there were two ventricular beats. The impulse normally came down into both ventricles at the same time. In cases of heart block there was often a double beat of the ventricle, as the impulse started in one ventricle which contracted first.

Dr. SMITH asked whether in paroxysmal tachycardia anybody had tried vagus pressure. He stated that he had seen one elderly person and one adult, who by pressing on the transverse process of the cervical vertebra, could control the paroxysmal tachycardia.

Dr. HERMAN SCHWARZ said that Dr. Koplik had observed a case of paroxysmal tachycardia for many months in the wards of Mount Sinai Hospital, and that pressure on the vagus did not cause any change in the rhythm.

Fluid Injections in Dehydrated Infants.—Dr. STAFFORD MCLEAN read this paper, in which he described animal experiments made during the summer of 1918 for the purpose of securing exact data on the effects of the introduction of fluids in dehydrated infants, and reported on a series of dehydrated infants treated by fluid injections. Experiments were made in rabbits, using 4 and 6 per cent. sodium bicarbonate injections intraperitoneally, and also injections of 6 per cent. dextrose, which led them to the conclusion that similar injections could be given to infants without causing injury or discomfort. For the series of infants thus treated charts were kept in the wards, in conjunction with the ordinary ward records, upon which were recorded the immediate effects of fluids injected; these included weight taken before injection and twenty-four hours later, and records of pulse, temperature, and respiration one-half hour before and one hour after treatment. Only infants showing signs of dehydration were treated, there being 76 infants who received in all 269 injections of fluid. Of these injections 155 were hypodermoclyses, 92 were intraperitoneal, and 22 were sinus injections. The mortality in these 76 cases was 56.5 per cent. The amount of the clyses varied between 90 and 150 c.c., depending upon the size and condition of the child. The following different solutions were used: 6 per cent. dextrose in normal saline, 6 per cent. dextrose in distilled water, normal saline solution, 2 per cent. sodium bicarbonate with 2 per cent. dextrose solution, and 1 per cent. dextrose with 1 per cent. sodium bicarbonate. No bad results had been noted from the intraperitoneal injections except discomfort in a few instances. An analysis of the 76 cases showed that there were 26 cases of acute intestinal intoxication, or 34.2 per cent.; of all other diseases there were 50 cases. The mortality in the intestinal intoxication cases was 76.9 per cent., as contrasted with 52 per cent. in the other diseases. The essayist gave a detailed analysis of various groups in this series of cases, showing the effects of the injections upon weight, temperature, and respiration at different ages, and summarized his results as follows:

"Injection of fluid into the peritoneal cavity in dehydrated infants is a simple method of procedure, and in our hands has had no undesirable effects. The size of the infant is no bar to his ability to utilize the fluids injected. From the results of injections in very small infants, under 3000 grams, we are led to believe that larger infants might utilize larger amounts than have been given the infants in this study. Age has no bearing on an infant's ability to *utilize* injected fluids. The pulse is more frequently affected after sinus and intraperitoneal injections than after hypodermoclyses. The respiratory rate is more frequently affected in peritoneal than in sinus injections and hypodermoclyses. The temperature is more frequently elevated in sinus than in intraperitoneal injections or hypodermoclyses. Weight gains were more frequently noted following intraperitoneal injections than after sinus injections or clyses. Certain infants do not show any improvement until they have had repeated injections of fluid. The shorter the interval between the onset of symptoms and the beginning of treatment the greater is the response."

Dr. HERMAN SCHWARZ expressed the opinion that this was a very important contribution to the study of water balance in infants and children, a question which was gaining more and more importance. and rightly so. Through an understanding of water balance the increased infant mortality might be explained and also the occurrence of acidosis in gastrointestinal and other diseases. It was also important in regard to the fever itself. In new-born infants fever had been thought to be due to lack of food, but the late Dr. Crandall showed that it was due to lack of water and not lack of food. Meyer took three groups of children and gave them a protein milk of high concentration, containing about 1,200 calories per liter. The water intake was very much reduced. The first group lost weight; the second group held its weight, and the third group gained for a little while. The first group, that which lost weight, also regularly showed a rising temperature. This fever could be made to disappear by giving the children water, and they could also be made to gain merely by the addition of water. The nitrogen balance was positive, but the sodium chloride balance was negative. J. O. Balcar's experiments (*Archives of Internal Medicine*, Volume 24, No. 1, p. 116) also showed that if animals were given large doses of sugar, temperature could be produced, but if large doses of water were given in addition, the temperature could be brought down. Many children had increased temperatures during the summer, without anything accountable for them. These temperatures might go up as high as 101° or 101.5° F. and could be made to disappear by absolutely no other procedure than the giving of fluid. The amount of fluid excreted by a child in hot weather was about six times as much as in cool weather. In sick infants, especially those with gastrointestinal conditions, acidosis and the like, it was important above everything else to make sure that the water balance was amply covered with a normal or even more than a normal amount of water, wholly apart from the calories ingested.

Dr. SMITH stated that those who attended the joint meeting of the Pediatric Societies in Philadelphia would remember that at the Children's Hospital they gave fluid by mouth in the long intervals between feeding. They had been trying this at Bellevue Hospital, administering the fluid by means of a catheter and funnel. The fluid was given during the long interval between feedings at night. By this method one could give a good many ounces of fluid in twenty-four hours. It was interesting that in the case of one or two children who were being fed on thick gruel because they did not retain liquid food the water administered in this way stayed down better at night. Giving water by gavage had the advantage that it did not require the complicated apparatus for sterilization as in other complicated methods of administration. A child would often retain water given by gavage when it could not retain it if it was given with the food.

Dr. HAROLD RUCKMAN MIXSELL stated that at the Nursery and Child's Hospital they had combined two methods of giving fluid, giving ten ounces of glucose and normal saline, and they felt the mortality had been reduced by this combination. The combination of glucose and physiological saline solution was used elsewhere, but he felt it ought to be mentioned in connection with this paper.

Dr. L. T. LE WALD mentioned that in connection with the new method of *x*-ray examination after injecting oxygen into the peritoneal cavity for diagnostic purposes the possibility of untoward consequences had been brought up. Dr. McLean's experiments were very valuable as showing that this procedure was devoid of danger. Owing to the fact that the injection of air into the peritoneal cavity was of such great diagnostic value a contribution that went to show that the procedure was devoid of danger was most welcome.

Dr. MCLEAN stated that he was familiar with the work of Dr. Ludwig Meyer to which Dr. Schwarz had referred. In the study just made he had been careful to avoid conclusions. Dr. Mixsell in discussing the paper made some remark about Dr. Marriott's method of treating dehydration; he knew of that work but it was not being done at the Babies' Hospital. In reference to Dr. Le Wald's remarks, it was extremely difficult to puncture the intestine when one tried to do so and thus far he had had no accidents. In a couple of Dr. Blackfan's cases where this method had been used just prior to the infant's death a small hemorrhagic area had been found about the site of the puncture and in other cases under the same conditions some fluid had been found in the peritoneal cavity. Although this method was used successfully in a number of cases by Dr. Blackfan he had stated in his letter that Dr. Howland had brought the method back from London where he had seen it used in one of the hospitals.

Stated Meeting, Held February 12, 1920.

DR. CHARLES H. SMITH IN THE CHAIR.

Encephalitis Lethargica.—Dr. STAFFORD MCLEAN presented this patient, a female child, 3 years of age, admitted to the Babies' Hospital, January 31, 1920. The family and personal history of the case were of no interest. Up to January 27 this child was entirely normal. At that time the mother noticed that the child was drowsy and refused to take food, but was otherwise normal. On the following day the drowsiness increased and she stopped talking and crying. The child's condition remained the same until she was brought to the out-patient department on January 30. The child walked in and the writer remembered seeing the mother and child walk down the street after the clinic. The mother stated that the child had not vomited and had had no fever. The child was admitted to the hospital on January 31 and had been there for the last thirteen days, during which time her condition had changed but little except for increasing drowsiness. There had been some slight improvement. She had had no convulsions. On the day of her admission, which was the fifth day of her disease, she was unable to walk; when placed on her feet she had a tendency to fall backward and to the left. She responded by a slight cry to painful stimuli, but not in the way that a normal child did Physical examination showed a well-developed child with mask-like facies. She was somnolent, and all movements were accompanied by a coarse tremor. There was some catatonia. The child could move the extremities at will, but such movements were accompanied by tremor. The knee jerks were increased. There was no opisthotonos. The child had not spoken since she had been in the hospital, though she cried occasionally. The condition was not tuberculous meningitis, brain tumor, brain abscess, or polioencephalitis. The child was fed by spoon and gavage. The spinal fluid was examined twice, and found negative both times. The von Pirquet was twice negative. The eye grounds were negative. The urine was negative. The white blood corpuscles numbered 10,000, the polymorphonuclears being 66 per cent.

Dr. FRANK J. BEVAN said that when the child first became ill the mask-like expression was more decided than during the past three or four days. The child now cried and had some expression, which was regarded as evidence of improvement. During the first ten days they had used gavage, but during the past four days this had not been necessary, so they felt that there was a tendency toward recovery.

Dr. SMITH said they had had two such cases that recovered, and apparently the children who recovered were just as sick as those who died. They had had three or four cases of encephalitis lethargica at one time. The children presented a picture strikingly like that of tuberculous meningitis.

Dr. MCLEAN said this was the third case they had had. The other cases were one and two months old. The earlier case had been in the hospital six or seven months ago, and he had had a letter from the mother, stating that the child was entirely normal except for a "weakness of the back." In reply to the question as to how he would confirm the diagnosis of encephalitis lethargica, Dr. McLean said it was a very difficult matter to make a diagnosis in these cases, and he had arrived at a diagnosis largely by exclusion. It was not a tuberculous meningitis because the von Pirquet was negative, and the spinal fluid had no tubercle bacilli. It was not a brain abcess because there was no vomiting. The onset was too acute for a brain tumor; if it were an abscess fever would be present and the blood count would be different. The onset did not suggest a polioencephalitis, nor did the spinal fluid findings, and the lethargic state had lasted too long. Hence he had put the case under encephalitis for the lack of a better group. In reply to the question as to how the child was being treated, Dr. McLean said the only thing they were doing was trying to keep up the nutrition.

Dr. ELIAS H. BARTLEY said it was unusual to find a normal spinal fluid in these cases. He had usually found an increased cell count, but it did not correspond to that of tuberculous meningitis. At times it was difficult to make a differential diagnosis between this disease and the cerebral form of poliomyelitis. While it was unusual to find a normal cell count in encephalitis lethargica, he had no criticism of the diagnosis.

Dr. SMITH said some of these cases had an increased cell count, but again some did not. It was interesting to see how many more of these cases there were this year than last. With the severe form of influenza there were very few of these cases, while this year, with the mild form of influenza, they were seeing many more cases of encephalitis lethargica.

Dr. HENRY DWIGHT CHAPIN said he had not seen enough cases of encephalitic lethargica to attempt to make a differentiation between it and tuberculous meningitis.

Dr. MCLEAN said that if the child lived long enough that would decide the diagnosis; if the child lived it did not have tuberculous meningitis.

Dr. CHAPIN said that they could not depend upon the von Pirquet reaction to assist in making the diagnosis, because in tuberculous meningitis one frequently did not get a positive von Pirquet reaction.

Dr. SMITH said he wondered if some of the cases diagnosed tuberculous meningitis in the past might not have been this disease.

Dr. OSCAR M. SCHLOSS said he did not know a definite way of differentiating encephalitis from tuberculous meningitis in the early stages, but that the disease was more chronic than tuberculous meningitis. The cases all ran a long course and often showed some form of paralysis or paresis. Two out of three showed some paresis on one side of the face, not enough to be called a paralysis. The feature that was striking was that they slept all the time; and they went on that way for weeks and months, which was not true of tuberculous meningitis. The spinal fluid changes might be almost the same except that the count was apt to be lower in encephalitis. In some cases, however, there was no increase in the cell count at all.

Dr. BARTLEY said that in the cases of encephalitis lethargica that he had seen there was not the irregularity in respiration and pulse that one saw in tuberculous meningitis, and there were not the pressure symptoms seen in tuberculous meningitis. The cases of encephalitis lethargica went along without change in about the same way, while tuberculous meningitis progressed from day to day. Perhaps it was not always so, but in the cases coming under his observation there were no symptoms of intracranial pressure and no strabismus such as was seen sooner or later in tuberculous meningitis. Paresis might be present in both conditions, so it seemed to him that the significant thing was the pressure symptoms. In tuberculous meningitis the time from the onset of symptoms until death was on an average fourteen days.

Dr. SMITH said it seemed to him that the great difference betwen encephalitis lethargica and tuberculous meningitis was the failure of the former to progress. If one watched a case for three days and there was no change in the condition of the patient, the condition was more likely to be encephalitis lethargica than tuberculous meningitis. A coma lasting ten days was very long in a case of tuberculous meningitis. Dr. Smith stated that he had had seven cases of encephalitis lethargica and they all had catatonia; that feature had been very interesting and striking.

Tuberculous Arthritis.—Dr. FRANK J. BEVAN presented this case, a female child 13 months old, brought to the Babies' Hospital because of swelling of the knee. The swelling was first noticed six weeks before, and had been increasing. During one week before coming under observation the child had had a discharge from the left ear. The family history was interesting in that there were no miscarriages and no exposure to tuberculosis. The feeding history was normal. The child had never been sick before. Six months ago the child began to walk, but gradually became less inclined to try to walk, and after about three weeks would make no attempt to walk. The swelling of the knee had increased and when the knee was handled the child cried out. She had never had night sweats, and had had no vaginal discharge. One week ago the ear broke. This was not preceded by fever. The dis-

charge was very foul. When first seen in the outpatient department of the hospital she gave a positive von Pirquet reaction. The physician who saw the case one week before made a diagnosis of scurvy, and had given the child orange juice. The tonsils and cervical lymph nodes were enlarged. One could barely feel the spleen; the liver was not enlarged; the lungs, heart and abdomen were negative. The left knee was enlarged and the left hip, though not enlarged, was rather tender. There was a typical chronic dactylitis. The case was interesting because the baby was only thirteen months old and showed a typical tuberculous arthritis. They had not yet worked out the bacteriology of the discharge from the ear.

Dr. SCHLOSS said that tuberculous otitis media was not uncommon. He had seen three children under three months of age with tuberculous otitis media in whom a radical mastoid operation was done. Two of these had recovered and were perfectly well; he did not know about the third.

Dr. SMITH stated that he had seen three cases of tuberculous otitis media in one ward in a maternity hospital, and all had developed within three months. They were all submitted to radical mastoid operations.

Myositis Ossificans.—Dr. MINER C. HILL presented this patient, a boy about 12 years of age. He had been nursed for nine months, had had measles, whooping cough, and mumps, and at 2½ years of age swelling on the right side of the neck, which had persisted and become progressively harder. Following this the muscles of the back began to show areas of ossification, and also those of the arms and legs, until at the present time the boy presented many deformities, and presented a striking example of the condition known as myositis ossificans.

Dr. GAYLORD C. GRAVES said that this boy had come to his office about five years ago, having been referred by another physician. At that time no such complete changes were observed as were shown at the present time. There was, however, a very noticeable lesion extending along the posterior surface of the right chest, which resembled periosteitis of the ribs, and although the examiner was not familiar at that time with "myositis ossificans," mention by the boy's mother that a doctor at Bellevue had told her the boy's muscles were turning to bone recalled the term to mind, and led to correct diagnosis. The boy later came to Roosevelt Dispensary, where his history was looked up, and it was found that at Bellevue Hospital a study of the tissue pathologically and also an investigation of the patient's calcium metabolism had been made. *X*-ray pictures taken at Roosevelt Hospital, if compared with those taken at present, would show the progressive course of the disease. The case thus had a very long history, and was interesting because there were on record only 100 to 125 such cases, and also because it emphasized that when one saw this condition a second time he might be observing the same case he had seen before.

Massive Congenital Diaphragmatic Hernia with Dextrocardia.—Dr. H. W. MAYES reported this case, and presented the specimen. The infant, he said, was apparently normal at the time of birth, April 20, 1919. A short time after birth the child became blue, and remained so until the time of death, which resulted apparently from pulmonary edema seven hours after birth. The child was considered a blue baby, but no murmur was detected over the precordium. On opening the chest and abdomen, the left thoracic cavity was found to be filled with the stomach, spleen, pancreas, one-half of the left kidney, part of the duodenum, ileum, and the greater part of the colon. These organs were free in the pleural cavity, with the exception of the kidney. A very small rudimentary left lung, showing division into two lobes, was found in the upper part of the thorax. The heart was completely on the right side. Between the auricles was a small patent foramen ovale. The pulmonary artery was almost as large as the aorta and, lying almost in front of it, was almost continuous with the ductus arteriosus, which was also patent. The right lung was made up of three lobes, and had a large depression filled by the heart. The thymus was normal. The abdominal cavity contained a large liver, which extended down to the brim of the pelvis, a right kidney normal in size and position, one-half of the left kidney, and the sigmoid, which extended in a straight line from the rectum to the opening of the diaphragm. The right side of the diaphragm was normal. The left side showed good muscular tissue, normal attachments anteriorly and laterally, but no attachment on the posterior chest. This left an opening 2 x 5 cm. in size, through which passed the cardiac end of the stomach, a loop of the duodenum, the colon, and the left kidney, making a false diaphragmatic hernia. The kidney was retroperitoneal and formed the posterior boundary of the opening. Dr. Mayes expressed the opinion that the hernia was undoubtedly formed during the early life of the fetus, or they would not have the rudimentary lung on the left side. The dextrocardia was secondary to the hernia. The patent foramen ovale and the ductus arteriosus were due to the fact that the heart was out of its normal position. Dr. Mayes said diaphragmatic hernia was rather common, and true diaphragmatic hernias were more frequent than the false. They occurred more frequently on the left side because the liver was on the right side. Most of the patients died before the correct diagnosis was made. Judging from the cases reported in the literature dextrocardia must have some influence in causing the patency of the foramen ovale and the ductus arteriosus.

A Case of Bacteriemia Treated by Blood Transfusion.—Dr. JESSE F. SAMMIS reported this case. He stated that the patient was an only child, 2½ years old, normally delivered at full term. There was not family history of tuberculosis, the mother and father being well. The mother had had no miscarriages. Up to the time of her present illness the patient had been under the writer's observation at the milk station of Vanderbilt Clinic. The personal history of the child was negative, except for the fact that she had had influenza one year ago, from which she promptly recovered. One week before admission she was said to be feverish and five days before admission compained of pain in the ear. Examination at that time disclosed an acute otitis media of the left each, which was incised and purulent material obtained. Examination at that time showed a well-nourished baby girl who was acutely ill, the left ear discharging, the right ear congested; there was an acute nasopharyngitis; the tonsils were enlarged, swollen, red, and showed many yellow spots; the tonsillar glands were enlarged. The heart was normal. The lungs showed scattered râles. The abdomen was negative. The spleen was not felt. The temperature ranged from 101° to 104° Fahr., until the day of admission to the hospital, at which time it was practically the same as that previously recorded. The child appeared very ill. Cultures from the throat showed the *Streptococcus hemolyticus*. Blood cultures showed many colonies of the same organism. The urine showed albumin and hyaline and granular casts. The blood count showed 23,000 leucocytes and 76 to 90 per cent. polymorphonuclears. Two days later the spleen became palpable, and there were many petechial spots around the ankles and on the abdomen. The child's general condition was considerably worse, the temperature ranging as high as 106° Fahr., with wide intermissions. The child had a general convulsion. A day later the right elbow became red and swollen, and was subsequently incised and pus obtained, which also showed the *Streptococcus hemolyticus*. At this time, the tenth day of her illness, the child was given 150 c.c. of the mother's blood by the citrate method. On the third day she was given 300 c.c., on the twentieth day 125 c.c., and again on the thirty-second day, the mother being the donor each time. Blood cultures taken on the thirteenth day showed only five colonies after forty-eight hours, 2 c.c. of blood being used. Ten days later the same number of colonies were found, and on the thirty-second day three colonies were found; the blood culture became negative for the first time on the forty-eighth day. A vaccine made from the child's organisms was given to the mother, the donor, at intervals of two days for four doses, the number given being 500,000,000 at each dose. On February 3 the agglutinin of the mother's serum against the streptococci isolated from the patient's blood failed to show any clumping in any dilution from 1 to 5 to 1 to 100. In addition to the usual treatment for discharging ears, the throat was sprayed with a

polyvalent streptococcus serum twice a day, and the child placed on a high caloric diet. After the transfusion the child had a reactionary chill, and was invariably listless and very thirsty, and within two hours the temperature usually reached a higher level than just before the transfusion, but gradually declined to a lower level within twelve hours. The temperature reached normal on January 31, and had not been above 100° since then. The pus elbow had completely healed, although there was a slight loss of function. The ears were not discharging, and the appearance of the drum was normal. The tonsils, while still large, looked otherwise normal except for rather large crypts. The child's appetite was excellent, and she had gained two pounds in the last ten days. Her spleen was just palpable, but much smaller than it previously had been. There was slight abdominal distention and constipation, but otherwise the child was normal. Dr. Sammis said that they felt that the repeated transfusions, four in number, were the determining factor in her recovery. When the temperature in the early part of her illness was running very high, and the child losing ground, the advisability of removing the tonsils, the undoubted original focus, was discussed, and it was their intention to remove them if the condition continued to grow more severe, but inasmuch as the child showed slight continuous improvement following the transfusions, this was not done. The number of colonies in the first culture were so numerous that they could not be counted, the second blood culture taken after one transfusion and previous to giving any vaccine to the donor showed a remarkable reduction in the number of colonies, only five colonies to 100 c.c. of blood. The improvement was as marked following the first two transfusions as following the latter two which were given after the doner had been given the vaccines. Inasmuch as the mother's serum did not agglutinate the child's organisms he believed the actual blood was the factor rather than any immunity conveyed in the mother's blood.

Congenital Diaphragmatic Hernia.—Dr. HENRY R. MULLER reported this case, which came under observation at the New York Nursery and Child's Hospital. He stated that the child was a white male, eight months old, who weighed, on admission to the hospital, 11 pounds 6 ounces. The child's weight at birth was 7½ pounds. Vomiting, described as projectile, and taking place immediately after the ingestion of food, had occurred since birth. At the age of six months, and while still on breast feedings, he improved somewhat, and gained 3 pounds 2 ounces in weight; that is, he increased in weight from 11 pounds 3 ounces to 14 pounds 5 ounces. Three weeks before admission to the hospital, at about the age of seven months, he began to vomit all his feedings, even water. Up to this time he had been entirely breast fed, but he was now put on mixed feedings, consisting of three breast and four bottle feedings a day, with irregular additions of zwieback. For a day or two his vomiting stopped, but it recurred, and his condition since then had grown gradually worse. For the past four days the child had been drowsy, and lost during that time 3 pounds 5 ounces in weight. There had been no convulsions, but the child had been coughing and sneezing, and this was followed by vomiting. Physical examination showed a fairly well developed but undernourished child. His eyes were sunken and he appeared acutely ill. His respirations were deep and sighing, and he was semicomatose. The lips were dry and cracked, the tongue coated and the mucous membranes of the mouth dry. There was no evidence of cerebral irritation. Examination of the heart showed the beat in the fourth interspace in the left middle line. The abdomen was scaphoid and symmetrical. The skin wrinkled and inelastic. No tumor mass was palpable, nor were peristaltic waves observed. The liver and spleen were not felt, and there was no fullness in the epigastrium. In the admitting room the child was given three ounces of water, which was taken greedily, but vomited at once with a great gush. The entire mass of water seemed to reach the mouth at one time; the vomiting was not projectile. In the ward the same type of vomiting was observed on attempting to feed the child milk. He could retain only two ounces of albumen water every hour. When an attempt was made to increase the quantity vomiting recurred at once. Intraperitoneal saline injections in large amounts were administered, and glucose solution was given intravenously. The blood examination showed 13,000 leucocytes, of which 52 per cent. were polynuclears. Examination of the spinal fluid and the von Pirquet test were negative. A slight trace of albumin and marked traces of acetone and diacetic acid were present in the urine. On admission the temperature of the child was 99° Fahr. The child died of coma forty-eight hours after admission; the temperature just before death reaching 106° Fahr. Briefly, what was found at autopsy was a diaphragmatic hernial sac, 5 cm. in diameter, situated in the thorax posteriorly, and to the right of the heart. The outer surface was covered with a layer of parietal pleura, and the inner surface was lined with peritoneum. The neck of the sac, corresponding in position with the normal esophageal opening of the diaphragm was circular and 2 cm. in diameter. The muscular layer of the diaphragm could be distinguished up to the neck of the sac, and ended there abruptly. There were no muscle fibers in the wall of the sac, but only connective tissue. This hernial sac contained the entire stomach, doubled up and collapsed, and the omentum. There were no adhesions present. The esophagus, markedly dilated, had its new covering in the upper left-hand corner of the sac, where it emptied into the stomach. The condition then was that of a true congenital diaphragmatic hernia through the esophageal opening. Such hernias were generally considered to be formed late in embryonic development, after the closure of the transverse septum.

Dr. O. M. SCHLOSS said that this case was particularly interesting clinically. The child was seen on account of persistent vomiting, which was the prominent symptom. During the comparatively short period that the child was receiving solid food it gained 3½ pounds. The diagnosis of pyloric stenosis had been considered but was eliminated. As frequently happened in this condition, the diagnosis was not made. The case furnished a strong argument for the use of the fluoroscope in all vomiting babies.

Stated Meeting, Held March 11, 1920.

DR. CHARLES HENDEE SMITH IN THE CHAIR.

Advantages of Boarding-out Care Over Institutional Care.—Dr. MINER C. HILL presented this paper. (See MEDICAL RECORD, page 692.)

Problems of Boarding-out With an Attempted Solution.—Dr. HENRY DWIGHT CHAPIN read this paper. (See MEDICAL RECORD, page 677.)

Boarding-out Department of the New York Nursery and Child's Hospital—Miss EDITH A. HOOPER read this paper by invitation. She said that the New York Nursery and Child's Hospital was one of the first institutions in New York to place children for care in private families, having adopted this method of caring for its dependent children in 1902. The hospital was used only for its proper function, namely, the care of children acutely ill. The aim of the hospital was to replace the motherly care and normal family life of which it was a calamity for the child to be deprived, and to provide such preliminary hospital care as might be necessary for acute illness, correction of physical defects, or indication of a course of treatment to be administered in the home. From 800 to 1,000 of the dependent children of the city of New York passed under the care of the hospital each year. The age of the children ranged from a few days to seven years, the majority at present being between three and four years old. The boarding-out department had therefore the threefold problem of providing wet nurses for the youngest infants, intelligent and experienced foster mothers for the bottle babies, and the comparatively easy task of finding homes for children of from two to seven years of age. The nursing staff of the boarding-out department consisted of a supervisor and five graduate nurses. During the summer months an additional nurse was employed. There were also two Italian interpreters. One of the attending physicians was the consulting director of the department, and to him were referred all the major questions concerning the health of the children in the

boarding homes. These homes were situated within a radius of thirty miles from New York. Of the 220 homes at present in use, only sixty-three were in Manhattan or Brooklyn, while 157 were in the country and suburban districts. The homes were those of respectable middle class families. Many of them were well to do, while none were selected whose object in boarding children was of a commercial nature. The preliminary requirement for a home was a permit from the local board of health. This having been obtained the prospective home was investigated by the nurse in whose district it was located, and a detailed report of the conditions was written. The impression produced by the woman herself was noted, her apparent attitude toward children, her intelligence and experience with babies, her husband's employment and salary, and the number and ages of the members of her family. The names of three references were required, from whom opinions were obtained regarding the character and sobriety of husband and wife, their standing in the community, their financial condition, church affiliation, and desirability as foster parents. The youngest babies were placed with Italian wet nurses whenever possible. These wet nurses were required to present a certificate of health from the physician who attended them during confinement, and a Wassermann test was made and a wet-nursiug permit issued for them by the board of health. It was not usually possible to demand as high a standard in wet nurse homes as was required in others. The nurse and her family must be healthy, the baby must have its own crib, must be bathed and nursed regularly, and must have plenty of fresh air. Wet nurse babies were visited twice a week by the nurse, or oftener if necessary. Homes for bottle babies were hard to secure, most of the women preferring runabouts. Bottle babies were visited once a week; for any radical change in feeding the baby was brought to the hospital for the physician's orders. Nursing and bottle babies under fifteen pounds were weighed each week in the homes on hand scales carried by the nurse. The average gain was a pound a month, although some of the babies gained a pound and a half. The older children were visited every three weeks unless more frequent visits were needed. Any matter of interest was reported. The child's teeth were watched, and the necessary dental care was obtained either from clinics or from a private dentist. Advice was given concerning small ailments, or the foster mother was directed to bring the child to the hospital clinic for medical advice. In case of graver illness of children in boarding houses one of two courses was pursued. The child might be admitted to the hospital, or it might be cared for in the home under the direction of a private physician, and with the supervision of the visiting nurse. Minor illnesses and cases of contagion were usually cared for in the boarding homes. There had been during a period of several years only one death and one complication from any case of contagion cared for in our boarding homes, which contrasted sharply with the death rate of their cases when sent to contagion hospitals. The number of children under supervision during the years 1918 and 1919 was 1,256, the number dying 39, giving a mortality of 3.1 per cent. The hospital provided a plentiful supply of attractive clothes for its children, making every effort to avoid that which was institutional, and found this an aid in securing and retaining homes of the better class. By this method the child received a happiness and personal development which would not be possible in even the best institutions. and was able to take his place in the world without the handicap of an unnatural childhood.

Dr. Smith said he hoped he would be pardoned for speaking at this point in the meeting, but there was one aspect of this problem which had been touched upon only lightly and which he wished to bring out before the discussion rather than after it. This was a matter of temporary care for infants in emergencies. Dr. Smith said he did not wish to uphold the institutional care of infants as opposed to boarding out in the least degree, but he thought there was a place for small, well-conducted temporary shelters to meet sudden emergencies or for cases where the care need to be only very short. The Manhattanville Day Nursery had been conducting an experiment in this kind of care for the last two years. The managers of this institution had believed for a long time that their was an urgent need for emergency care, consequently when their new building was erected, one ward was set aside for day and night care. This ward was especially equipped with glass partitions, forming small cubicles for each bed. This separation of the patients, with careful examination and history of exposure on admission, had seemed to control the contagious disease problem. Whooping cough, chickenpox, scarlet fever, diphtheria, and influenza had all been admitted during the incubation period, however, but in no instance, up to the present time, had there been any development of secondary cases. Day and night care required more highly skilled attendance than the ordinary day nursery staff. It had been found necessary to have a trained nurse for superintendent and a trained nurse in charge of the night baby room, with two or three untrained assistants. These cases required more frequent visits by an attending physician also. In spite of the cost of the extra equipment and the extra cost of maintenance for this work the Manhattanville Day Nursery felt that it was very much worth while. As a matter of fact, the receipts for the care of these twelve to fourteen babies were nearly one and two-thirds' times the receipts for the day care of approximately fifty-five children. While it was not possible to say that the night babies actually paid for their keep, they very much more nearly did so than the nursery children who were supposed to be the main business of the nursery. Babies were taken whose mothers had suddenly become acutely ill or died. In such cases boarding out was very difficult and temporary shelter must be found until the family had a chance to look around and readjust itself. During the mother's absence for confinement or surgical operation, the temporary shelter also was of value and the institutional care was not prolonged long enough to do the child any great harm. It seemed as if there was an obligation imposed upon the day nurseries to take up this work more generally. At present there were thirty-one children on the waiting list for "emergency" care at the Manhattanville Day Nursery, so the need was obvious. The hospitals were not equipped, with few exceptions, to admit well babies. The day nurseries would seem to be the only agencies to properly step in. Great pressure was being brought upon them to take up this work more generally.

Hon. John Kingsbury, Ex-Commissioner of Charities of New York City and at present head of the War Relief in Serbia, expressed sorrow that New York City had not grasped its opportunity to get behind a work like that done at Speedwell, or such work as was being don at the Manhattanville Day Nursery which was a step towards Speedwell. Years ago Dr. Chapin had shown by his work at Speedwell what could be accomplished by boarding children in homes, yet the city went on putting more and more money into institutions. If that money were put into skilled nursing case for children in homes thousands instead of hundreds of children could be saved to-day. He believed, however, that this method of caring for dependent children in homes was coming and that New York would soon wake up to its opportunity. Physicians knew the number of children in institutions and that the death rate was cruelly and murderously high. If one wanted to get some idea of what the death rate had been he need only read the records of Randall's Island before it was used as an institution for the feeble-minded. Forty or fifty years ago Randall's Island was a morgue for little babies, the death rate being 100 per cent. That was decreased when they began to board babies out. After all we had made great progress and should not be discouraged. Mr. Kingsbury then told what was being done for the babies of Serbia. He said that Serbia had lost more in the war and had less to-day than any of our allies. There was a popular illusion that Belgium was the greatest sufferer in the war, but the truth was that Belgium had suffered the least with the exception of the United States in both loss of life and property. Serbia was to-day a country of widowed mothers and children; the babies had mostly died. But Serbia through all her sufferings of a thousand years had still an unconquered soul. Serbia was going to profit by taking the stand that it was better to

die in beauty than to live in shame. But she was not going to die; she was going to live. She had written on her statute books the most progressive child welfare laws. To-day Serbia had elevated the importance of the child to the extent that she had created a special cabinet office and had a national department of health. In this country we had a Bureau of Child Welfare tucked away in one department and a Bureau of Public Health Service in another department. Serbia wanted the experience of America. They were asking for trained nurses and doctors, and were going to ask the experienced men and women of this country for the benefit of their experience. They were going to ask these doctors and nurses to go over and to translate into action the legislation which they had enacted. If this was carried out even to the extent of 50 or 75 per cent. it would place them in the position of leaders in child welfare and public health work. Serbia was translating into action what we had considered as ideal. As he had said on previous occasions the home with the mother in it was a better place for children than the best managed institution in the land, and he was glad to hear that there was a movement toward having these plans carried out. They were going to carry out similar plans on the other side of the water.

Dr. PHILIP VAN INGEN said he did not think many of us realized what Dr. Chapin had been doing for the last eighteen years. The Speedwell Society which, at any rate until within the past few years, was Dr. Chapin, had done a splendid work. Mr. Kingsbury had spoken of the statistics of Randall's Island forty or fifty years ago and stated that we had made great progress. It was true we had. Seven years ago, Dr. Van Ingen said, he had had occasion to look into the mortality of the children under two years of age in New York State. During the period studied there were 28,210 children cared for by eleven institutions and the death rate for children under two years of age was 422 per thousand, or almost one-half. In New York City at the same time in one institution the mortality rate for children under one year of age was 516 per thousand. That was what had been done up to seven years ago. One great trouble was that it required too much red tape to get the children out of the institutions. The child was usually dead before anything could be done, but at last someone was trying to meet the emergency. Austria-Hungary was not a popular country to talk about, but in 1903 they passed a law that every child under fifteen years of age was entitled to care, clothing, food, education, and a home. If a child did not have parents who could give these things it was the job of the state to see that he got them. In 1910 this system was developed to such an extent that no matter what the cause any child brought to one of the seventeen state asylums was admitted. If it was found that the parents could support the child they were compelled to do so and to pay a penalty; if the parents could not support the child the state took care of him. The child was kept in an institution long enough to see that it was physically fit, or not acutely ill, and then placed in one of the colonies of which there were 374 in the country, and in these colonies they had a mortality of 200 per thousand. At a little later date in our State we had a mortality of 422, and in one institution 517 per thousand. Many of these children under state care in Hungary were illegitimate and as was well known the death rate among this class of children was high, so that they had really accomplished something. The one thing that stood in the way of our work in this country was that we did not know what other people were doing. We started a great many excellent things and after they were fairly started we found that other countries had been doing these same things for many years. That applied to child welfare work, maternity centers, etc. As an example of the poor management that had been noted Dr. Van Ingen recalled an instance that occurred when Mr. Kingsbury was commissioner of charities and of which Mr. Kingsbury had told. A woman with six dependent children went to the Department of Charities to get relief. They said they would give her some help so they took away four of her children and gave her four children from an institution to board.

Miss ROGERS of the Henry Street Settlement stated that the Henry Street Settlement had always emphasized home care for children, and, while the nursing service exemplified the care of sick children rather than of dependent children, they would be most enthusiastic over one of Dr. Chapin's institutions in their neighborhood. The visiting nurse had long stood for the educational and social factor in the community, which was a very large factor. The training schools for nurses had contributed so far much more towards enlarging the opportunities for nursing by giving a worthwhile service in pediatrics. They felt that in any nursing service the nurse must have a large understanding of children and in field work she might develop that understanding in a complete way. The nurse had to do much as the social worker did in entering a home; she had to adapt the necessary care of the child to the environment in which she found the child and this was considerable of a problem. One encountered many difficulties, for there were many natural guardians who did not recognize their responsibilities. In meeting and solving these problems much could be done by the visiting doctor and nurse. They could insist upon certain requirements. The Henry street nursing service had shown what could be done in the face of adverse circumstances in the care of the sick child. Pneumonia, gastrointestinal conditions, and many communicable diseases were successfully cared for in the home, as well as much maternity work. Statistics showed that about 90 per cent. of all sickness was cared for in the home. There were 4,683 maternity cases cared for by the Henry Street Settlement with 4,348 living births where the mothers were under prenatal care and supervision; the infant death rate per thousand was 9.8 for nearly 5,000 cases. Among a thousand in whom the care and supervision was only post-natal the mortality was 14.2 per cent., the city death rate for infants under one month of age being 37 per thousand. The miscarriages and abortions under prenatal care were 6.8 per thousand; the number where there was no prenatal care was 35.7 per thousand, and the number of still births under prenatal care only 21 per thousand. Where there was post-natal care only the number of deaths per one thousand births was 34.5. Their figures for feeding cases were much more difficult to give because of the many agencies engaged in this work, but those for pneumonia were more interesting. The number of pneumonia cases cared for in 1916 was almost 4,000 with a mortality of 8.6 per cent. Out of this number 1,564 were Italians with a mortality of 181 or 11.6 per cent.; 1,221 were Hebrew with a motality of 38 or 3.1 per cent., giving an interesting contrast as regards nationalities. They found a marked difference as regarded nationality in studying the feeding cases. One found many cases of rachitis if he went into the Italian districts. In 1916 and 1917 the average death rate from pneumonia in the age group under five years was 8 per cent., while during the influenza epidemic it was 16 per cent., twice the usual rate for pneumonia. The visiting nurse needed to do much more than merely observe the sick when she visited a home. She had to recognize the family group and the social responsibilities. Frequently social conditions underlying the illness and the social condition was a much bigger problem than the actual illness. Frequently these conditions had to be considered in cooperation with affiliated agencies. The dependent child or the one that needed supervisory care they met with every day and they wished they might have larger and better facilities to-day in meeting that need.

Miss THEIS of the State Charities Aid Association told of the work of this organization in placing children in permanent homes. She stated that their experience bore out what Dr. Chapin, Dr. Hill, and Miss Hooper had said as to the better development of children in the home. In regard to the death rate in homes, their children were mostly in free homes and they did not have a death in 1916. In 1918 and 1919 there were six deaths, four from influenza, one from pneumonia, and one due to accident. Various phases of the boarding out problem had been considered but no one had spoken of the child's own viewpoint. The speaker said she had personal oversight of 2,000 chil-

dren placed in temporary boarding homes in preparation for permanent homes. Almost without exception the children wished to remain in the homes. She had asked the staffs of the institutions from which these children were sent how many wished to go back into an institution and they had known of only six children who wished to return. It was most convincing that these children did not want to go back into an institution even though the homes in which they were living were by no means ideal. The Nursery and Child's Hospital furnished them with the largest number of children. One of the advantages of the boarding out system was its elasticity, inasmuch as the size of the organization could be increased or decreased as the need required.

Miss ARNOLD of the Babies' Welfare Association said that speaking for all the social workers she could say that they were looking for the day when the Speedwell idea would be generally adopted. The agencies doing that work had long waiting lists of children who should receive that care. There was also a demand among parents for boarding homes for children. They had had 1990 parents seeking homes for children for whom they wished to pay. There were 2,000 homes licensed by the Board of Health. A duplicate list of these homes was given to the Babies' Welfare Association so that they could know where they could find homes that would provide care for their children. Through the Bureau of Child Hygiene they also received lists of homes. In boarding out children they demanded of the woman who took the child that she should take it to a milk station. They then telephoned to the milk station and had them see that the baby was duly enrolled. There was at present more of a demand for foster homes than there were homes, especially for young babies, and they had offered special inducements in order to find homes for a limited number of babies, and they could not find homes at even $10 a week. There was a wonderful field for this kind of work. Where mothers had died the fathers were very anxious that their children should have home care. The Babies' Welfare Association had 156 homes about which it had special data for parents. She thought that Mr. Kingsbury would be interested to know that a large majority of their 1990 babies came from the Department of Charities.

Dr. SIDNEY V. HAAS said he wished to say a word in favor of institutions, though of course everyone familiar with this question knew that even in a poor home a baby was better off than in the average or perhaps in any institution, and no one deserved greater credit for trying to force this fact on the public than Dr. Chapin. But after eighteen years of effort the results showed housing for only a small group of children. All who had spoken had mentioned only a few thousand boarding homes. Mr. Kingsbury, several years ago, said there were several hundred thousand children requiring such homes. What were they going to do with the children in the interval until a boarding house system was built up and sufficient homes secured? There was at least one institution in the city the statistics of which were quite different from those they had heard this evening. This was the Home for Hebrew Infants; there they had had a death rate between 1915 and 1919 of from 3 to 7 per cent. They had the death rate of 7 per cent. in 1917, when they had an epidemic of measles. The year of the influenza epidemic they had a 6 per cent. death rate. In normal years the death rate was about 3 per cent., and they housed about 400 children under five years of age. These children did not look white and marantic. As a matter of fact, they compared favorably with children in private homes. They often received children in deplorable condition and after having them for a time showed just such results as Dr. Chapin had shown they were getting at Speedwell. Some of these cases were received from boarding houses. This did not mean that in boarding the children out they were not doing good work: it only showed the difficulties of the problem and what a great field under present conditions would have to be covered. If it could be undertaken by the Government it might be made possible. It might also be of interest to know the cost of caring for these children in the Hebrew Orphan Asylum. The cost of caring for the infants was $7.30 per capita per week, about what Dr. Chapin's babies cost. In 1918 the cost was $8.12 per week, which was less than Dr. Chapin's estimate for that year. It might also be of interest to know that since May, 1916, they had been using the Shick test except in a small group which was used as a control—no case of diphtheria occurred except in this group. Diphtheria was practically eliminated from this institution. While they were attempting to obtain proper homes and to build up a practical Speedwell system, institutions could be improved and by the adoption of the cubicle system the children could be kept free from contagious diseases. Many of the children at the Home for Hebrew Infants were the ruddiest, finest youngsters, so he thought that, while they were waiting for Dr. Chapin's system to develop, they should not lose sight of the many things that could be done by improving institutions.

Dr. SMITH said that Dr. Haas did not mean that the institution was superior to the home, but that it should be improved and helped until the children could be boarded out.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

STANDARD EDUCATIONAL TESTS. Arranged and Standardized by M. E. HAGGERTY, Professor of Educational Psychology at the University of Minnesota. Published by the World Book Company, Yonkers-on-Hudson, New York.

THE SURGICAL CLINICS OF CHICAGO. February, 1920. 231 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

LES BLESSURES DU FOIE ET DES VOIES BILIAIRES. By P. SOUBEYRAN. 209 pages. Published by Felix Alcan, Paris.

MORTALITY STATISTICS, 1918. 92 pages. Published by Government Printing Office, Washington, D. C.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Dr. ELBERT W. ROCKWOOD, Ph.D. 316 pages with illustrations. Published by F. A. Davis Co., Philadelphia, Pa.

LABORATORY MANUAL OF PHARMACOLOGY. By Dr. A. D. BUSH, B.Sc. 251 pages with illustrations. Published by F. A. Davis Co., Philadelphia, Pa.

UBER DIE SYMPTOMATOLOGIE UND THERAPIE DER MAGEN UND DUODENALGESCHWÜRE. By Dr. EUGEN ROSENTHAL. 72 pages with 81 illustrations. Published by S. Karger, Berlin, Germany.

DIE WURMFORTSATZENTZÜNDUNG. By Dr. A. RHEINDORF. 244 pages with 52 illustrations. Published by S. Karger, Berlin, Germany.

ANLEITUNG ZUR FUNKTIONSPRÜFUNG DES OHRES. By Dr. A. SONNTAG und Dr. H. J. WOLFF. 76 pages with 23 illustrations. Published by S. Karger, Berlin, Germany.

PRINCIPLES AND PRACTICE OF PHYSICAL DIAGNOSIS. By Dr. JOHN C. DACOSTA, Jr. 602 pages with illustrations. Published by W. B. Saunders Co., Philadelphia, Pa.

DISEASES OF INFANTS AND CHILDREN. By Dr. J. P. CROZER GRIFFITH. Volume 1, 885 pages with 436 illustrations; Volume 2, 657 pages with 436 illustrations. Published by W. B. Saunders Co., Philadelphia, Pa.

COLLECTED REPRINTS FROM THE GEORGE WILLIAMS HOOPER FOUNDATION FOR MEDICAL RESEARCH. 176 pages. Published by the Department of Research Medicine of the University of California Medical School, San Francisco.

HENRY MILLS HURD. By THOMAS STEPHEN CULLEN. 135 pages. Published by the Johns Hopkins Press, Baltimore, Md.

SPECIAL TABLES OF MORTALITY FROM INFLUENZA AND PNEUMONIA. 181 pages. Published by the Washington Government Printing Office.

PRINCIPLES AND PRACTICE OF INFANT FEEDING. By JULIUS H. HESS, M.D. 343 pages. Illustrated. Published by F. A. Davis Co., Philadelphia, Pa.

Miscellany.

Death of Professor Lepine.—Raphael Lepine was born at Lyon, in 1840, was interne during 1860-4 in the Lyon hospitals and then, still unsatisfied, continued his internate in the Paris hospitals, Clemenceau being a fellow-interne. Among his teachers he learned most from Charcot, who gave him his scientific bent of mind. Unlike most of his colleagues, he went to Germany for study, and between 1867-70 was a pupil of both Virchow and Ludwig. He became on his return prosector for Brown-Séquard until the outbreak of the war, through which he served with credit. This concluded he became Germain See's chief of clinic and a professor agrégé of the faculty of the University of Paris. From this time on he was a figure of prominence in medical Paris, but in 1898 returned to his home town of Lyon as executive of the combined hospitals of that metropolis and president of the Council of Hygiene for the Rhone department. Here he remained until his retirement in 1914. He was an unusual combination of clinician and pure scientist, as shown by his writings. These dealt with the histology of the brain (he discovered the perivascular spaces of the nervous centers); with the anatomy and physiology of the vasomotor nerves, he being the discoverer of certain vasomotor fibers and centers; with clinical neurology, being the first to describe cerebral pseudobulbar paralysis, with internal medicine, as seen in his early work on caseous pneumonia and renal diseases, with therapeutics—he wrote many papers on drug action, etc., etc. His master work is his volume on diabetes, which did not appear until 1909. This was the product of twenty years of research, and he continued this line of activity, his work on blood sugar being actually in press at the present time. Biography has few parallels of this 80-year-old man seeing an important volume through the press. With Charcot and Vulpian he founded the *Revue de Médecine* and with Charcot the *Archives de Médecine Experimentale.*

Death of Nissl. — This distinguished Bavarian histologist, neurologist and psychiatrist, recently deceased, receives a memorial notice in *Hygiea* for December 31, 1919, lxxxi, 24. He was born in 1860, in Bavaria, and was originally intended for the priesthood. He was graduated at Munich in 1884, and won a prize for his work on the pathological changes in the nerve cells of the cortex, when only 24 years of age. His teachers were Gudden and Ganzer. With Golgi and Ramon y Cajal he divides the credit for most of the earlier technical advances in the histology of the cortex. After the death of Gudden he became associated with Alzheimer and combined histological studies with animal experiment. The epoch-making work of the clinician Kraepelin was made possible by the labors of Nissl and Alzheimer and both of the latter associated themselves with Kraepelin's clinic at Heidelberg, which he took over in 1895. Here Nissl remained as associate until 1914, when Kraepelin was called to Munich, whereupon Nissl became chief of the psychiatric clinic at Heidelberg. However, he soon followed Kraepelin to Munich, where he became head of the anatomical department of the clinic. His death occurred in August, 1919.

History of Gynecology and Obstetrics in Strasbourg.—Professor Schickele, who was Fehling's assistant in the German University of Strasbourg when the war broke out, succeeds Fehling as the holder of the chair of obstetrics and gynecology of the new French University. Recently he delivered a lecture on the above subject, which appears in *La Presse Médicale* for January 24, 1920, xxviii, 7. In 1513 was published the pioneer volume on midwifery at the Alsatian capital, Roesslin being the author. This went through many editions and translations. In 1728 was founded the first school for midwives, with Fried as its first professor. In 1737 medical students were already being instructed in obstetrics in the university by means of the mannikin and observation of actual labor. Students were allowed to confine women themselves under supervision. Thirty beds were available for teaching. Strasbourg became famous as the place where both doctors and midwives were trained for obstetrical work. Several extant theses by Fried's pupils have no little practical value. Strasbourg preceded Paris by a full century in the introduction of a complete obstetrical clinic as part of the university course (Fried was never a member of the university faculty). The first actual professor of obstetrics in the whole of France, Flamant by name, was appointed at Strasbourg in 1798. His chair had no connection with the school for midwives. The latter, despite able directors, yielded little by little to the regular obstetrical clinic of the faculty, the material for teaching being diverted to the latter. In 1847 the two schools were consolidated as part of the university for the first time and placed under Professor Stoltz. The latter was a tower of strength in the old French University, and was in the van of all progress. As far back as 1857 Levy, a student, wrote under Stoltz's inspiration his thesis on the infectious nature of puerperal fever. Other students found organisms in the blood of septic women which may have been the vibrios seen later by Pasteur. Stoltz was succeeded by the equally eminent Koeberle, one of the earliest of the aseptic surgeons and gynecologists. After the Franco-German war nearly the entire medical faculty of Strasbourg moved to Nancy. The first incumbent in the new German University was Freund, whose services to gynecology are too recent and well known to require detailed enumeration—he was specially interested in the radical operation for cancer of the uterus. This account terminates with the end of Freund's service in 1901 and the work done by Fehling and his assistants, including the author, is not mentioned.

Bathing Habit Acquired in Montenegrin Town.—When the Americans came to Podgoritza they found that city of 10,000 inhabitants innocent of public bathing facilities. Many native doctors believed that the frequent use of soap and water was harmful, and had succeeded in instilling into the minds of the people a decided fear of bathing. The Red Cross doctors and nurses went on the theory that bathing, like caviar, was an acquired taste, and in order to popularize it they made it a condition precedent to being placed on the free provision list. The taste once acquired under this compulsion, its popularity gradually increased, and the Montenegrins have now learned to like the bath.

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Original Articles.

INTESTINAL PATHOLOGY IN THE FUNCTIONAL PSYCHOSES;

PRELIMINARY REPORT OF SURGICAL FINDINGS, PROCEDURES AND RESULTS.*

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(From the Surgical Clinic of the New Jersey State Hospital at Trenton.)

THE fact that there are over four hundred thousand men and women chronically insane in the hospitals of the United States and that in Massachusetts the ratio of insane to the general population is one to two hundred and fifty prompts the question, "What is being done for the insane?" The answer is certainly appalling to one who has made even the most superficial examination of the existing conditions. The ratio of recovery to the admissions is exceedingly low; thus in Massachusetts, for the whole State, it is only 6.9 per cent.,[1] and if the cases designated as "improved" are included the ratio is only 24 per cent. If this is true of so highly developed a State, which has led to a great extent in civic betterment for years, and where therefore the established methods of therapy are undoubtedly at their best, what must be the situation in the rest of the country! Is it in part due to the segregation of the insane in great institutions, invariably located in the most inaccessible regions and as far as possible from medical centers and points of contact with progressive medicine, or to the quiescent acceptance of the old traditional ideas that the insane are stigmatized and that therefore they do not require or are not entitled to the ordinary modern medical attention given to the people at large?

Whatever the cause or causes, there has been undoubtedly an entire lack of cooperation between the progressive medical men and those entrusted with the care of the insane. And even locating expensive psychiatric clinics in connection with prominent medical schools, as for example the Psychopathic Clinic in Boston, has not materially assisted in overcoming this condition. While the study of psychiatry has been stimulated, this lack of cooperation so necessary between the various branches of medicine has militated to prevent the best results.

A great opportunity for synthesizing psychiatry with scientific medicine was lost during the war, when an ideal condition existed in that the psychiatric wards were included in the scheme of the base hospitals, and every facility for the interchange of ideas between the highly coordinated departments was offered. This opportunity was brought about by the very meritorious work of the National Committee of Mental Hygiene, for without their appreciation of the importance which psychiatry would assume in the war even this would have been neglected. But unfortunately the existing facilities were not made use of except to a very small extent, and aside from acquainting the many medical men with the importance of the problems of mental diseases no constructive work resulted.

Nevertheless, while admitting that psychiatry has lagged behind some other branches of medicine, especially surgery, we would call attention to the fact that a good many chapters in internal medicine had to be written before psychiatry could emerge from that obscurity as a science to which it was condemned because of a lack of the proper methods. Only in recent years have modern methods become available. We refer especially to the recognition of the theory of focal infections, largely through clinical pathological laboratory research. While it may be said that this doctrine has not been generally accepted, at the same time it has already furnished an entirely different viewpoint in the etiology of some of the more obscure disease processes and opened up an entirely new field of investigation. This has been especially true in the study of the etiology of the psychoses, as has been shown in previous publication from the New Jersey State Hospital at Trenton.

Indications of Intestinal Infection.—As a result of eradicating focal or chronic infections in the group of patients usually placed in the functional psychoses, we have been able to restore 270 patients out of a total of 410 admitted during the year ending July 1, 1919, and they were discharged during that year. By re-examining the remaining 130, we were able to find local foci which had been overlooked and by January, 1920, this number had been reduced to 100. In other words 75 per cent. of this group, or 310, when the local foci of infection found in the teeth, tonsils, stomach, and cervix were eliminated, were able to be discharged and returned to their respective homes. The remaining 25 per

*Read before the Northwestern Medical Society, New York City, February, 1920.

cent. apparently did not react to the treatment mentioned and remained unimproved.

The object of the investigation, of which this is a preliminary report, was to search further for possible sources of infection, mainly in the lower intestinal tract. This group suggested terminal ileac and colonic trouble because of frequent "bilious attacks" during youth; habitual constipation, sometimes alternating with diarrhea; intermittent attacks of abdominal pain and not infrequently a history given by the mother of intestinal disturbances beginning in early infancy. A thorough physical examination revealed the sallow face, indented tongue, narrow costal angle, and the usual costo-umbilical measurements of a chronic intestinal invalid, frequently hyperontomorphic in type. In addition to these characteristics there was found usually unilateral tenderness and rigidity of at least plus two over the right lower quadrant of the abdomen. In over 90 per cent. of the cases this condition was confined to the right side. Frequently the abdomen was doughy, the abdominal muscles lax and without tone, and in over one-half of the cases examined Coombes' sign of "snow crepitation" over the cecum was present. In these cases there was also found the usual splashing and evidence of cecal dilatation.

In the patients who were capable of cooperating, radiographic studies confirmed the physical findings. The interpretation of the *x*-ray plates was based upon the functional rather than the morphological findings. Cecal and ascending colonic delays of from three to seven days have been the rule. The radiographic studies determined whether the pathological condition was on the right or left side, or, as was occasionally the case, on both sides. The routine use of the barium enema, followed by a twenty-four hour plate to determine the degree of retention, has been found to be most important. It is notable that a very small percentage of cases examined have shown ileosphincteric leakage.

The above described examinations justified an exploratory laparotomy in these cases and the pathological findings justified surgical intervention. As the literature in this field is particularly sparce our first investigations were made upon the most chronic and hopeless patients in the hospital, in which, owing to the known degree of deterioration in the mental field and a corresponding degeneration of the cerebral cortex,[8] no marked curative effects were to be expected. The intestinal surgical pathology, both as to the degree and extent of the lesions revealed in these patients, more than justified our expectations. After studying twelve such chronic consecutive cases, and without a single failure to find a great variety of intestinal lesions, we were convinced that it would be conservative surgery to explore the abdomens in the more recent cases which had not responded to the routine treatment, teeth, tonsils, etc., outlined above.

Therefore, as rapidly as possible all such patients capable of cooperating were *x*-rayed and otherwise studied from the standpoint of the abdominal surgeon. The *x*-ray and surgical technique adopted was the same as that used at the St. Bartholomew's Hospital for Diseases of the Alimentary Canal, New York.

At the completion of the twelfth consecutive case of the more recent type, we were greatly encouraged to find that without a single exception they were just as prolific in furnishing pathology as had been the twelve chronic cases. From our experience with these twenty-four cases we were convinced that all patients who showed any tendency towards chronicity, or who did not improve under the routine treatment directed toward the removal of infection in the teeth, tonsils, stomach and cervix, were cases which should have a thorough investigation of the lower intestinal tract with a view to surgical intervention. These cases must be subjected to the most thorough and minute physical and laboratory examinations, similar to those employed in the best general and special hospitals. And a surprisingly valuable surgical history of abdominal trouble can often be obtained by patient questioning. If not from the patient, relatives can often furnish it. This is of the utmost value and should never be overlooked. Fortunately the State Hospital at Trenton possessed the necessary *x*-ray equipment and laboratory facilities, as well as the necessary operating room and staff, to undertake this investigation.

The results of the preliminary work have been so gratifying that the staff was eager to assume the additional work imposed by the new requirements. The result of examining all new patients from the standpoint of modern medicine has been the transformation of a State Hospital, exercising the usual custodial care, into a modern institution devoted to diagnosis and surgical and medical therapy. As such it is on a par with the best modernly equipped and conducted general hospitals and in addition its surgical clinic has developed along advanced lines in intestinal pathology and bacteriology necessitating pioneer resarch work in these important fields.

This investigation has not been limited to the gross surgical pathology, but has been accompanied by elaborate laboratory researches including both bacteriological and histological studies. Indeed we are convinced that important as are the usual gross and microscopical studies, there is no collaborating department in medicine as important to the progress of intestinal surgery as bacteriology. So close is the affiliation of these two branches of medicine that surgical bacteriology has become to us the most important part of surgical pathology. It teaches what we are dealing with. We need information from the living more than from the dead. (See Fig. 1.)

The finding of various strains of the streptococcus group and colon bacilli in cultures from the enlarged mesenteric glands in the colon region, or in other parts of the intestinal tract, were important in linking up lesions of the colon with the psychoses and the proven presence of these bacteria in the walls of the intestine gave further evidence of the rôle played by infection in producing the toxic phenomena described under many forms of mental disease.

Our work has further demonstrated that we are dealing with an infection of the wall and tissues of the intestinal tract and explains the fact that treatment directed towards the lumen or intestinal cavity has not been effective in clearing up this type of infection. (See Fig. 1.) The futility of the thera-

peutic efforts to cure the chronic intestinal invalid by cleaning out the intestinal tract or by changing the intestinal flora is demonstrated. For the bacteria have entered the tissues and they cannot as yet be successsfully eradicated without radical

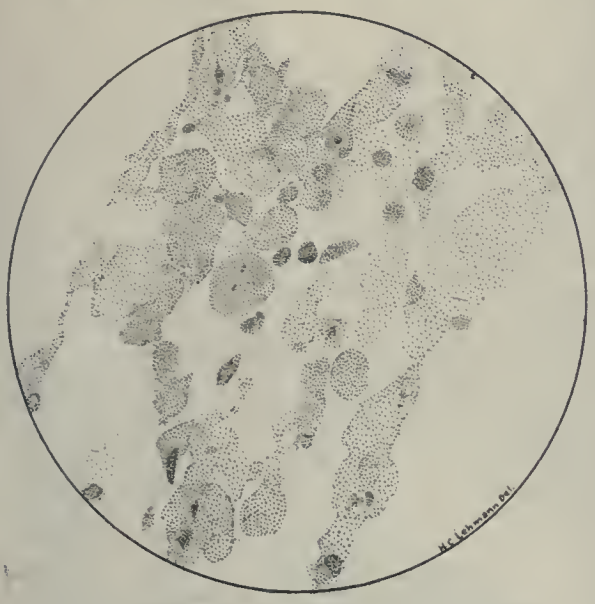

Fig. 1.—Bacteria in the tissue of the stomach wall.

surgical measures to remove this infected area. When the infected area of intestine is too extenive for surgical removal then we have had to depend upon serum or vaccine therapy. But without the knowledge gained from the exploratory laparotomy in these cases we should have been at a loss to formulate any method of procedure based upon the now known pathology. In several cases (notably I. S.), it could been seen by actual observation at a secondary operation nearly three months later that the antistreptoccic serum had had a most definite effect upon the mesenteric glands which were found to be enlarged at the first operation, and at that time gave positive cultures of streptococcus and *B. coli.* When they were examined at the secondary operation the glands had become much smaller in size, showed evidence of recessive changes, and were sterile when cultured. Judging from the extent of these enlarged glands throughout the whole intestinal tract, we would be justified in concluding that here the infection involved both large and small bowel. In such cases, and we have seen many, it would be futile to remove the right colon as it was only a part of the involvement. Its resection would have had very little if any effect upon the infection of the upper tract. When the colon is very markedly involved and the upper tract also we are justified on the theory of attrition in removing the right colon and then adopting measures which will improve the other infected areas. In the case cited above the improvement in the patient was synchronous with the disappearance of the infection and she was able to return home where she has been for the last eight months, and this after a residence, prior to operation, of a year in the hospital.

Surgical Pathology.—From the variety of lesions found in our series (Figs. 1-5), it has very definitely demonstrated that no one surgical procedure is adequate to cope with the situation. That is to say that the method to be adopted in an individual case must be determined frequently after the abdomen is opened, as each case presents its own problem. Therefore it is impossible to recommend any definite procedure as the operation of choice. As in general abdominal surgical practice, it is here equally impossible to determine the exact nature of the lesion from the preoperative studies, and a thorough biopsy with a careful examination of every organ in the abdomen is most essential. Preliminary studies can be made sufficiently accurately to determine that a given case is surgical and that another is not. But today no one can go much further than this. Every abdominal operation therefore is exploratory as regards the character of the lesions to be found, but positive as regards the presence of pathology which today can be remedied or helped by surgery alone.

We recognize the fact that a great deal of surgery has been done among the insane, but the reason that it has not been productive of results has been that its aim was in the wrong direction. Five years ago we published a paper citing two cases of insanity due to absorption of bacteria and their products from diseased cecum and colon, concluding as follows: "One characteristic result of

Fig. 2.—Case of paranoia with extensive pathological changes in the interior of the cecum. There is ileocecal sphincteric insufficiency, as shown in the enlarged view of the sphincter, below the main figure.

this toxemia is mental depression, which may even go so far as to result in mania."[4] Thus Robert T. Morris[5] in an article published in August, 1918, pays his respects to the Freudian conception of mental disease, and discusses in a very logical

manner the relation of physical conditions to the psychoses, and shows a surprising familiarity with the problem of the treatment of the psychoses. He says, "Surgery aimed directly at the cure of the psychoses and the psychoneuroses will be a failure

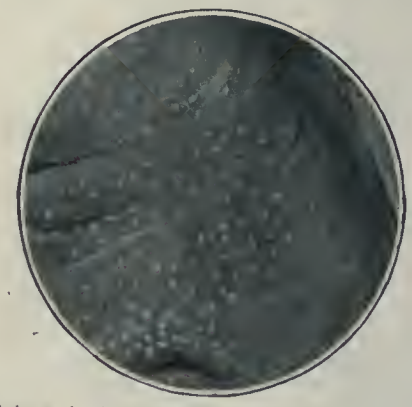

Fig. 3.—Enlarged view of a portion of Fig. 2, showing the area of minute ulceration.

because so many factors are involved, but surgery which removes peripheral irritations and focal infections among the insane and among the psychoneurotics will have many spectacular recoveries from the insanities to its credit." One can but admire the vision of this surgeon who persisted in spite of the prevailing opinion of the psychiatrists.

Surgery directed towards the correction of "abnormal position" and the "relief of pressure" is absolutely futile. For example the raising of a so-called fishhook, ptosed stomach by slinging it in the omentum or otherwise, or the replacement of displaced uterus is destined to fail because its premises are altogether wrong. Such work is done without recognizing that on one hand the position of the organ is normal to the hyperontomorphic type and is harmless unless infected, and on the other hand that a retrodisplaced uterus in a flat-backed woman is its normal position and is equally harmless unless infected from the cervix.[7, 8] We are convinced therefore that the only surgical procedures which are justified in the therapy of the psychoses are those directed strictly against infection. Obviously if the bowel wall and its mesentery are infected, except this be localized in a relatively small segment in the terminal portion of the alimentary canal or in the stomach, surgical procedures at present are futile because of the impossibility of resecting the oral portion of the small bowel. We are of the opinion that if the mesentery of the jejunum is involved, and this is the only discoverable pathology, vaccines or sera are the only hope for the patient. This conclusion was reached after we had irrigated the small bowel from end to end over periods of many weeks and with Dakin's and other solutions. Moreover this supports the statement already made that the treatment of the lumen of the tube is of little avail because it does not reach the infection of the wall. It also gives support to the belief that certain areas of minute ulceration (see Fig. 3), found by careful examination of the mucosa of excised segments may be the portals of entry of bacteria and their products from the inner surface of the body to the body cavity proper. Of course, infection may occur without such portals of entry.

We wish to emphasize the fact that in all our cases laparotomy has not been undertaken until the removal of all other discoverable foci, especially those in the teeth, tonsils, cervix, stomach, and duodenum. We would further emphasize the fact that these abdominal procedures are based upon very definite researches in the surgical and bacteriological laboratories extending over a period of many years. Experimental studies made by the authors at the surgical research laboratories of Columbia University, the Mayo Clinic, New York University, and also at the Rockefeller Institute and Cornell University, formed the frame work upon which these further studies have been based.[10, 11, 12]

The following pathological conditions have been observed in one hundred laparotomies in 93 patients.

Cecocolonic delay of from four to seven days duration has been the most common finding. This condition was found to be due to several causes, the most frequent of which was obstructive constriction the result of pericolic membranitis. In this condition the colon in the region of the hepatic flexure was found to present the typical "elbow deformity" already described by us. Usually the constriction was the result of bands of connective tissue of more or less density which in many intances were congenital in origin, due to failure of fusion and other developmental defects. They were certainly materially altered in character owing to long continued infection from the wall of the colon. In fact these developmental defects may be their inhibitory action predispose these areas of the colon

Fig. 4.—Roentgenogram showing the result of resection of the ascending colon.

to infection. And the frequent presence of stellate scars in the membrane in the vicinity of the known areas of infection, notably the appendix, proves the presence and effect of continued infection. Frequently added to the congenital defects are found

the recent bands of adhesions; organized products of inflammatory exudate.

In this connection we wish to call attention to the importance of the periodic intestinal obstructions due to rotation of a dilated cecum which has a common mesentery with the ileum, through an arc of a hundred and eighty degrees or more, pivoting upon its constricted attachment at the hepatic flexure. We are convinced by our long researches on intestinal obstruction as well as by the researches of others, notably Whipple[6] who has isolated a toxic protose which he considers the lethal agent in obstruction, that in addition to the bacterial infections there are present autogenous toxins due to the obstruction itself and originating probably in the intestinal epithelium. The cecum and the ascending colon are the portions which are the most frequently involved. Usually these parts are very much enlarged and occasionally a typical mega cecum is found. The dilatation is probably due to a dual cause. First chronic infection of the tissues which we have proven to be present (see Fig. 1), and second, long-continued muscular

Fig. 5.—Typical distribution of the glands about the ileocolic and ascending colic vessels.

efforts to overcome the localized obstructions referred to.

In a very small proportion of cases there is ileocecal sphincteric insufficiency, a condition recently brought into prominence as a cause of gastrointestinal invalidism. In our series this has always been associated with extensive changes of the colon and we regard it simply as one of the manifestations of a diseased colon and one of the objective symptoms useful in diagnosing the primary pathological condition. (See Figs. 2 and 3.) In every case where this has been found it has been necessary to resect the ascending colon because of other lesions in this region. (Fig. 4.)

That sphincteric insufficiency is not productive of disease is shown by the fact, first that no damage is done by the leakage which sometimes follows a lateral anastomosis, after ileocolonic resections, and second by the fact that infections never travel through an open tube, but always through the lymphatics or blood vessels; renal infection never reaches the kidney through the ureter, or pyosalpinx through the uterine lumen.[7, 8, 9]

A chronic infected appendix alone may be the only focus of infection in the intestinal tract, but it is usually found associated with other lesions. In 29 patients a chronic appendix was removed and in 10 cases no other lesion was found. Of this number 7 have apparently recovered as a result of the operation. Five of them were classed as mild manic types with frequent remissions, but usually unable to leave the hospital in the intervals. They could be classed as the chronic forms of manic depressive insanity. Two cases were classed as dementia præcox.

In the remainder of the cases of our series appendicitis has been usually associated with chol ecystitis and ovarian and tubal infection.

Involvement of the descending colon and sigmoid has been relatively rare, but it has occurred in 6 cases in our series. The usual findings have been a redundant obstructing sigmoid. It was so long in these cases that it could be brought up to the sternal notch at the time of operation or before operation upon a long sigmoidoscope. This condition is usually indicated in the x-ray plates, especially the enema, and these mega sigmoids are frequently diseased, often presenting areas of segmental infection with extensive mesenteric adenitis.

One of our cases presented an unusual condition in that there was a dense band of adhesions extending from the left adnexa to the left parietal wall, being attached to and constricting the pelvic colon at about its center. After sigmoidectomy the constricted area was found to be the seat of typical segmental infection, described by us in previous reports. In addition, this case presented an exceedingly short descending colon and the splenic flexure was on a level with the hepatic flexure. As suggested by the x-ray, this area was the seat of partial obstruction which at operation was found to be caused by a very extensive pericolic membrane. At a previous operation on this patient the pylorus was found to be nearly occluded and the gross condition of the tissue justified a pylorectomy, which was done. A microscopic study of the pylorus tissue showed vast numbers of bacteria which had penetrated beyond the epithelium. (See Fig. 1.)

The stomach in this series has shown the usual freedom from gross pathological lesions although the patients had complained of "stomach trouble." In two cases (the one mentioned above) gastroenterostomy was necessary, in one because of the pyloric obstruction and the other because of a duodenal ulcer.

Cholecystitis has occurred in ten cases, in all of which but one calculi were present, and cholecystectomy was done. We consider this procedure preferable to cholecystostomy because of the proven presence of extensive infection in all our cases of cholelithiasis.

By far the most interesting gross pathological findings in our series has been the occurrence of extensive enlargement of the mesenteric glands. (Fig. 5.) While this has not been a constant finding, however, it has been present in most of the cases of this series and certainly occurs much more frequently than in general surgical practice. We have observed that these enlarged glands occur in two large groups; namely at the ileocecal region and at the beginning of the jejunum, the former

region being more frequently involved than the latter and the one fortunately lending itself to surgical intervention. In some cases the glands are involved throughout the mesentery of the entire tract. The enlargement of the mesenteric glands is of pathological significance in that they are almost all found to be infected either with colon bacilli or streptococci and in most cases both. They are indicative of bacterial seepage through the epithelium of the gut and we have come to look upon them as indicators of the region of focal infection. When of the segmental type and suitably located; *i. e.*, in the region of the cecum and colon, the infected tract can be removed surgically. However, when the distribution of these enlarged glands is diffuse, involving the entire tract, the removal of the infection cannot be accomplished by surgery but vaccines and serums must be given to produce results.

The study of the mucosa of the excised portions of the colon usually reveals distinct gross changes varying from minute pin point areas of infection to small irregular ulcerations. Frequently hemorrhagic areas of varying size and shape are seen. Microscopic examination shows extensive changes in the epithelial and muscular coats.

Results.—While this paper is intended primarily to show the frequency of pathological conditions in the abdomens of the insane, it may not be out of place, without making any definite claims for the methods outlined, to state the results of the work on the mental condition of the patients upon whom we have operated. The procedures followed in this investigation fall into two large groups.

The first group required developmental reconstruction of the colon resection of the terminal ileum cecum, ascending colon and part of the transverse colon, and in a few cases resection of the descending colon and sigmoid. The accompanying table will show the number of cases and the mental types involved, and the condition after operation.

APPENDECTOMY, WITH OOPHORECTOMY AND CHOLECYSTECTOMY.

Mental Disease.		Re-covered.	Much Im-proved.	Im-proved.	Not Im-proved.	Died.
Manic-depressive..	13	5	5	1	2	
Dementia Præcox	14	2	2	2	8	
Paresis	1	0	1	0	0	
Unclassified	1	0	0	1	0	
Totals	29	7	8	4	10	

DEVELOPMENTAL RECONSTRUCTION OF THE COLON.

Mental Disease		Recovered.	Much Improved.	Improved.	Not Improved.	Died.	Recent.
Manic-depressive	15	5	2	0	1	5	5
Dementia Præcox	26	5	2	2	2	9	6
Retarded	7	3	2	1	0	0	1
Paranoid Cond.....	2	0	0	0	0	0	2
Totals	50	10	6	3	3	14	14

The second group, because of a limited involvement as indicated by the character of the glandular involvement and the lack of other evidence, required no resection, simple appendectomy being considered sufficient. In a certain proportion of these cases cholecystectomy and oophorectomy were necessary. The total number of cases in which developmental reconstruction was performed was 50. Of this number 10 recovered sufficiently to leave the hospital. Of this group 2 were classed as manic-depressive insanity, acute psychoses, and 5 were classed as dementia præcox.

While the mental diagnosis is not important we have given these diagnoses, but it would be just as well as for the purposes of this paper to classify them as acute and chronic psychoses. In the chronic group 26 cases have undergone developmental recontructions, and of this number 5 have recovered. A rather small percentage, but not to be wondered at when the type of cases and the duration of the psychoses is to be considered. Nine of this group died and it is interesting to note the cause of death, as it has a direct bearing on the whole question of etiology. The most definite finding at autopsy in these cases was a chronic myocarditis, a condition which led to impaired capillary circulation and a failure to repair at the anastomosis. Moreover, the infected portion of the gut often extended beyond the point of anastomosis and the infected area failed to unite. The total mortality for the whole group was 14 or 28 per cent. We have recently reported a series of reconstructions of the colon in general surgical practice showing a mortality of 7.7 per cent. As the technique used and the operators were the same this discrepancy indicates a much lower vitality among the insane and points to a higher degree of infection among them. Six cases showed considerable improvement, though not enough to be discharged.

The results in the second group, which includes the appendectomies, oophorectomies, and cholecystectomies, were as follows: Twenty-nine cases were operated upon which included 13 cases of manic-depressive types and 14 dementia præcox cases. Five of the former recovered and two of the latter and eight of the latter were not benefitted. It is significant to note that there has been no mortality in this group in contrast to the group of reconstructions. The number of cases in which the operation of the first group (reconstruction) which were not benefited is 3 or 7 per cent., and those not benefited in the second group were 10 or 34 per cent. This shows that the infection is probably not limited to the appendix, or that the damage to the cortex was of such a severe nature that removal of the infection had no influence on the mental condition.

The results of this work among the insane, while not to be considered startling, are at least encouraging and indicate the necessity for the early recognition of these pathological conditions in the abdomen. In all probability, if these conditions were recognized and relieved years before, many of these cases would never have been committed to a hospital for the insane. Whatever the final outcome, this preliminary work shows that the insane are replete with intraabdominal pathology and this must constitute the strongest possible plea for the institution of modern diagnosis and treatment among them.

We acknowledge our indebtedness to the medical staff of the hospital and the laboratory assistants for invaluable cooperation and help.

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THE MAXILLOFACIAL SERVICE AT A. R. C. M. H. NO. 1, A. E. F., FRANCE.

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ALMOST every physician in America has heard or read something about the American Ambulance at

FIG. 1.—"They came to us in the early days direct from the field." Pvt. K.—High-explosive shell-wound of face, fracture of mandible, "two-thirds of the upper and nearly all of the lower lip missing."

Paris. Its title while we were there was "A. R. C. M. H. No. 1."

If your thoughts turn back to the early days of the war in 1914, you will remember how the cry came over here, that thousands were dying for lack of medical attention in practically all of the warring armies. And you will remember that in almost all parts of this country, members of the medical and

FIG. 2.—"Elastic traction we made use of in a variety of ways." The same patient seen in Fig. 1; after his plastic operation; to allow early removal of sutures and so avoid unsightly scars.

nursing professions formed many and various units, which offered their services to the several powers.

Before any of these entered the field, the Ameri-

FIG. 3.—Same patient as pictured in Figs. 1 and 2, showing how he looked when he left us.

can Colony in Paris, aided by a group of philanthropic individuals in the Eastern United States, wishing to do something worth while for the relief

of human suffering and in particular for invaded France, organized and equipped the institution known as the American Ambulance and decided to locate the same as near Paris as possible.

Neuilly-on-the-Seine, just outside the western

Fig. 4.—"The first indications were to relieve pain to place bone fragments in as nearly normal position as possible and hold them there—to provide for drainage." Randles—Sixth Marines. "The right lower half of the face is blown away. The right lower jaw is much comminuted—all the right upper and lower teeth to lateral incisor are missing." The fragments were fastened to each other with wire and suspended to a wire held in place by being fixed to the remaining sound upper teeth.

gate—Porte Maillot—of Paris, was chosen as the site for their hospital and the promoters of the project were so fortunate as to obtain for their purpose the "Lycée Pasteur," a high school then in course of construction. With slight alterations, this building was fitted up as a hospital, with bed accommodation for about six hundred patients.

It was at first thought feasible to have a staff composed of several small units or services, furnished by various hospitals or schools in the United States. This was found not to work out well, and finally it was decided to have the University of Pennsylvania assume full responsibility, and Dr. James P. Hutchinson of Philadelphia became surgeon-in-chief.

From the beginning the institution had boasted a Maxillofacial service, and long before we entered the war many of us had become more or less familiar with the fact. The character of the work then done was of the highest type, as a visit presently to the Army Medical Museum at Washington will prove. The dental part of the work was taken care of by Doctors George B. Hayes and William Davenport, both of Paris, who were founders of the hospital. And Dr. Hayes was still in charge when the hospital was taken over by the Army and remained director of his department until the place was closed in February, 1919.

Shortly after the entry of the United States into a state of war with Germany, the directors of the hospital offered their institution to our Government and soon afterward it was taken over by the Red Cross for the Army and became known as American Red Cross Military Hospital No. 1. Its capacity was increased to 1,500 and later to 2,400 beds, and Dr. James P. Hutchinson (now Colonel Hutchinson) became commanding officer.

Just what kind of "Cross" in military hospitals it was, I cannot make quite clear, but you will understand me when I say that the former staff remained, having all accepted commissions and that the nurses either remained as "voluntary aids" or became Red Cross nurses. Of course other officers and nurses came later, but those formed the nucleus.

The hospital was indeed singularly well equipped. I do not remember having had to ask twice for anything necessary to the comfort of the patient. For this all credit is due to those noble American women who first to last devoted themselves heart, soul, and body, purse and purpose to the great work, lived with us and worked with us—and they and the others had been doing it for four years when we came! Without them, "the Ambulance would not have been." I refer particularly to Mrs. Vanderbilt and Mrs. Munro.

Four of the members of the oral and plastic unit of Major Blair, myself in the number, were detailed on our arrival at Blois in April, 1918, to duty in Paris for observation of methods there and were stationed at "No. 1." At that time the hospital had a staff competent and sufficient for its needs, the Maxillofacial service being under the care of Maj. Charles A. Powers of Denver, who was later forced to return to the United States on account of illness.

About the end of May, however, the attacks at Compiègne and Cantigny caused a rush at the hospital, and the "C. O." sent for us and put us to

Fig. 5.—Same patient as pictured in Fig. 4, showing how he looked when he left; no bone graft was needed but there is much new bone in the jaw, firm consolidation.

work. Captain Lankford (later Major Lankford) of Baltimore became the ranking officer in the dental department, although Dr. Hayes remained as director. The equipment of this department was rather better than that of any first-class dental

school that I have ever seen. The mechanical department was under the direction of Mr. Moore, who had been there with Doctors Hayes and Davenport since the beginning, and one can form some idea of its importance from the fact that army

FIG. 6.—"A loop of thread passed through the tongue rendered tracheotomy unnecessary." Louis B.—Total loss of chin, bone loss from right third to left second molar.

men were sent here for instruction in the making of appliances for use in maxillofacial reconstruction. Here as elsewhere in the hospital were to be found all of the modern apparatus that one could find anywhere for convenience in carrying on the work.

Our patients were mostly Americans, but a large number of French were also treated. Both came to us in the early days direct from the field or from hospitals nearer to the front, practically

FIG. 7.—"Shrinkage was prevented by hooks and elastic traction." The same patient seen in Fig. 6. The projector is fastened to the splint on upper teeth made and applied for me by Captain Lankford, D.C. (See *Dental Cosmos*, Sept., 1919.)

all coming within four days after the injury; later, as the front receded, the time between their being wounded and their admittance was longer, but hardly ever more than ten days.

The injuries to the face and jaws varied from the most trivial to the gravest, as varied also the complicating injuries.

The ward for face-and-jaw cases was on the top floor and contained fifty-five beds. It was occasionally necessary to overflow this into a general

FIG. 8.—I think that seldom is there "total loss of soft parts." The same patient seen in Figs. 6 and 7 as he looked when he left us.

surgical ward on either side, and we always had a few of the less severe cases in the various wards throughout the house.

Patients on admission were sent to the O. R., where such treatment was given as seemed indicated. Only rarely was one admitted who seemed in danger of immediate death—not more than half a dozen in all. When this did happen the case was always (except in one instance) "suffocating phlegmon," or acute sepsis, due to the attempt of some one farther up the line to secure healing by first intention without making ample provision for drainage. The trouble was rectified by removal of sutures, and cleaning out and packing recesses.

In cases with large losses of substance, whether bony or soft parts, the first indications were to relieve pain, to place the fragments of bone in as nearly as possible their normal positions, to hold them there, to prevent as far as possible shrinkage of soft parts, and to make provision for drainage. We never found it necessary to do a tracheotomy. A loop of silkworm gut passed through the tongue was the only measure ever needed to prevent the tongue from dropping back after loss of the chin. The shrinkage of soft parts was laregly prevented by the use of hooks and elastic, care being taken that *too much* elastic traction should never be used. This principle we made use of to a great extent and Fig. 5 illustrates a method we resorted to, in order to prevent shrinkage of the flaps after a "total loss of arch of mandible and overlying soft parts." I am convinced that very seldom is there "total loss of overlying soft parts." Rather do I believe that the remaining soft parts are allowed so to shrink, while the wound is healing, that it comes to look as though the soft parts too had been blown away.

The device shown in Figs. 5 and 8 was made for me by Major Arthur Lankford, D. C., of Baltimore, and has been described by him in the *Dental Cosmos* for September, 1919. The method and the device are, so far as I know, original.

Fig. 9.—Elastic traction to pull forward posterior portion of body of jaw after cutting the ascending ramus on level with upper border of body, in order to bridge a loss of substance in left canobicuspid region. I was not strong enough to pull it forward at operation so closed the defect in soft parts and attached wire to bone and elastic to wire; got firm union.

Many wounds of the upper face were closed after excision—and in face wounds I never excised more

Fig. 10.—"The plastic operations for repair were undertaken when healing was complete." Pvt. K.—306th Inf.—Shell-wound of face. The anterior wall of antrum is missing.

than a very thin layer—usually with a few strands of silk worm gut or a strip of rubber for drainage. They healed kindly. If, however, there were already signs of infection in the wound, no closure was done; if suturing had been done all sutures were removed and the wound was explored, cleaned out, and either packed lightly with iodoform gauze or "Carrel-Dakinized."

Wounds involving the floor of the mouth or the

Fig. 11.—Shows same patient pictured in Fig. 10, after both bone and fat transplant; the operation wound has just healed.

lower part of the pharynx, we always packed lightly with iodoform gauze, preferring to take the chance of having the patient get well with a fistula rather than that of having him die of sepsis or secondary hemorrhage.

At each patient's bedside was a small table on which stood a short wide-mouthed bottle and an ordinary ½ oz. glass syringe. All wounds involving the mucous membrane of mouth or pharynx were syringed every hour by day and every two hours by night, during the acute stage. We tried potassium permanganate, 1-2000; normal saline, 5 per cent. salt solution, and Dakin's solution. Of all, I liked the Dakin best and its use during the first days became routine. I never saw it irritate a mouth or throat in less than six days. After five days we alternated between Dakin and potassium permanganate, 1-2000, and after the third week we used the Dakin less and the potassium permanganate more frequently. When patients became able to thus care for themselves, the onus of doing so was placed on them. There never was any stench in our jaw ward; when a mouth case is allowed to become foul smelling the "oral surgeon" needs more general training.

Of complications we had quite a few. Pneumonia was responsible for four of our six deaths. Two of these patients had been gassed and two had complicating gunshot (or shell) wound of the lung and all had fractured jaws—in fact every case of fractured jaw complicated with penetrating or perforating chest wound or "gas bronchitis" died. Secondary hemorrhage occurred three times, once the inferior dental, once the facial, and once the external carotid. In this last case death followed ligation of the common carotid. Our other death was due to meningitis—a small piece of shell in the corpus callosum.

Three patients showed polyarthritis and tenosynovitis; in one three joints suppurated and had to be opened—streptococcus infection. All recovered without loss of function, under the Willems treatment. Erysipelas appeared four times, the first case

Fig. 12.—"Plastic work—bone and fat grafts were done, etc." Pvt. V.—28th Inf.—The lower margin of the orbit and a portion of bone in front of antrum are missing. There is a marked ectropion.

had recrudescences and was isolated more than a month; the others got well in less than six days. (I had about eight severe cases of erysipelas including

Fig. 13.—Shows the same patient seen in Fig. 12, after free bone and fat grafts had healed in place.

the last three mentioned, all of which I treated with increasing daily doses of antistreptococcic serum, none of whom had recrudescence.)

Acute phlegmon (staphylococcus) of the side of face and neck developed once—a consequence of misguided effort, an attempt made to drain an acute abscess through non-inflamed tissue—mea culpa. This was the only case in which an infection of face or neck spread after coming into our service.

The fractured jaw was immobilized as soon as

Fig. 14.—"If there were signs of infection and suturing had been done all sutures were removed, etc." Pvt. P.—Shell passed in through the wound seen, carried away 3 to 5 cm. of the jaw and ploughing across in front of the epiglottis under the tongue, comminuted the other side of the jaw. This wound had been closed almost entirely by drawing the superficial structures together. We nearly lost him through secondary hemorrhage the day after he came in.

possible after coming in. Sometimes it was necessary to wire the teeth for a few days, as owing to stress of work it was impossible to apply splints immediately. Only once I think was a patient evacuated without fixation, and this one was evacuated by the evacuating officer through mistake, very shortly after he was admitted. The permanent splint was of the gutter type. When all teeth were loosened or missing and the jaw was much fragmented, recourse was had to wiring of fragments to each other and suspending from the teeth in the upper jaw with some sort of support from below held up by means of a head gear. We did not "immediately establish dependent drainage in all fractures of the jaw." But if signs of infection at the fractured site appeared, drainage was then at once established. Teeth involved were not "always at once removed" but it was our aim never to leave an involved tooth in place longer than three weeks unless union was taking place. The same was true with regard to fragments of bone; even when quite loose they were allowed to remain for three weeks at least; of course, abscesses were not allowed to form around either teeth or fragments—irrigation and drainage combated that. There was not a case in our service that failed to unite without operative intervention except in patients who had suffered a total loss of more than 1 cm. in length of the bony substance; and several where at first there was apparent total

loss of more than 2 cm. in length have to-day solid jaws and good occlusion without any kind of operative procedure.

Generally speaking we used the closed bite splint, but in certain bilateral fractures in the anterior

Fig. 15.—"Our splints were of the simplest type." Pvt. L.—American treated in an allied hospital for some two or three months. The case is one of fracture of mandible with loss of substance from molar region to molar region. In addition to the external apparatus there is a very complicated arrangement inside which almost fills the mouth. The picture shows the condition on entering our service.

half of the body of the jaw the open bite was used. When the fracture was unilateral (or mesial) and solid teeth were present on both sides of the fracture, a gutter capped the teeth of the entire jaw and after a few days' closure, the patient was allowed to use the jaw. All patients as the mouth was opened were made to chew gum of which, thanks to kind friends, we usually had an abundance. No case of uncomplicated fracture developed trismus.

When the upper jaw was fractured and the antrum or nasal chamber was involved the rhinologist was at once placed in charge of his aspect of the case, and it is due to the skill and treatment of Captain Tucker, M. C., that not a single case of empyema of the antrum occurred. The irrigation of the nose and antra or other sinuses was not done with Dakin's solution—we used Dobell's solution instead. The splints were again the gutter cap to all of the teeth after reduction. Only in two or three cases was it necessary to use any kind of head-gear support. In fact one case of craniofacial separation—one could see the landscape through a hole transverse just below the level of his orbits—got well without any splint at all and has very good occlusion. Some received a week or more after the injury were difficult of reduction, but our dental colleagues with traction and pulsion were, except in two cases, able to accomplish it without any open operations.

The plastic operations for repair of soft-part defects were in the main undertaken just as soon as healing of the wound had occurred. We never noticed that infection was "stirred up" by this procedure. We tried some early plastic repair while wounds were still unhealed, but the results were not at all gratifying. In only one case was a general anesthetic used. I prefer novocaine and adrenalin with morphine and atropine, scopolamine, or hyoscine preliminary. Even bone graft, free or pedicled, cartilage grafts, as well as fat graft and epithelial inlay, were all done with local anesthesia. I do not believe that local anesthesia *per se* favors infection any more than does the presence of onlookers.

Of course excision of wounds, incision of inflamed areas, removal of foreign bodies, etc., in fact, all operations except the plastic operations were performed under general anesthesia, ether, "Rausch" gas and oxygen, gas and ether, ethyl chloride, and De Page's mixture were all used and for short operations in this work, as in general work, I used ethyl chloride by preference.

In all I should estimate that something over three hundred cases passed through our service from April, 1918, to February, 1919. We received the wounded of our allies as well as our own and always had a large percentage of French soldiers. Our service became the "center" for the Paris area about the end of September or the first of October, and the more serious cases from the other hospitals in this area were sent to us.

Any success that our service may have attained was largely due to the hearty and painstaking collaboration of our colleagues of the Dental Department and to the untiring attention lavished on our

Fig. 16.—Shows the same patient pictured in Fig. 15. one week later. His fragments are firmly held in normal relation to each other and to the upper jaw. His jaws are not fastened together. No dressings were used, but no scales or crusts were allowed to form.

patients by our nurses and our volunteer aids, while the interest and desire to help on the part of everybody surely encouraged and stimulated us to our very best efforts.

University Club Building.

HOME VS. HOSPITAL CARE OF CASES OF INFLUENZA.

By L. EMMETT HOLT, M.D.,

NEW YORK.

THE prevailing tendency of the times, and we believe a wise one, is toward the larger and larger use of hospitals in all surgical conditions. This is most desirable because in few homes, except those of the wealthy and sometimes not even there, is it possible at the present time to secure the conditions which are essential to good surgical results.

Many have urged the greatly increased use of hospitals for acute medical cases as well, and some look forward to the time when most of the cases of serious illness will be treated in hospitals, except perhaps in homes where the services of one or sometimes two trained nurses can be afforded for a single patient. But at present and for a long time to come most sick people must be treated in their homes. Even if it were desirable, it is simply impossible for any city or community to provide enough hospital beds to supply the need. It has been estimated that fully 90 per cent. of sick people are treated in their homes as against 10 per cent. treated in hospitals.

The possibility of taking proper care of very sick patients with only part time service of a trained nurse is not yet generally appreciated either by the medical profession or the public. With the present shortage of nurses and the expense involved in the full time of one or possibly of two nurses, the service of the part-time visiting nurse would seem now the best solution of the problem rather than to seek to provide for them in hospitals.

The advantages of hospital treatment are many and obvious. More accurate diagnosis is possible. As physicians and nurses are constantly within call, emergencies which arise may be more promptly and more capably met. Furthermore, in certain diseases, as in cerebrospinal meningitis and some forms of acute pneumonia, the special treatment required is difficult or impossible of application in most homes.

But there are disadvantages in hospital treatment as well and these also must be considered. Not only is this true if the patients are young children, but of adult patients. When many sick patients are brought together in even our best equipped hospitals conditions are created which are prejudicial to the patient's chances of recovery. This is particularly true of respiratory infections and our common communicable diseases such as influenza, measles, scarlet fever, and diphtheria. The frequency and the severity of complications and the mortality of all these diseases is increased just in proportion to the crowding together of patients. Witness the mortality of measles when epidemic in foundling asylums or large institutions for children. This was emphasized again by the experience in the army camps. Here measles proved to be one of the most difficult medical problems encountered, on account of its severity and frequent complications.

Epidemic influenza is another disease in which precisely similar conditions obtain. In this also the frequency and the severity of complications and the high mortality from this disease as everywhere reported appears to have been directly in proportion as many patients were brought together.

The statistics of the epidemic of influenza in the fall of 1918 which have been published have been largely those of civil and army hospitals. The mortality in camp hospitals and on army transports was something awful. It is difficult to obtain from private practice of any physician a sufficient number of cases which would furnish figures by which a comparison might be made between cases treated in their homes and those treated in the general hospitals.

The statistics of the Visiting Nurse Service of the Henry Street Settlement furnish some very interesting data which bear upon this question. As a member of the Board of Directors of that Institution these statistics were at my request turned over to me for study and analysis, and I have found them most illuminating. They make one pause who would advocate sending cases of influenza or all cases of pneumonia to hospitals for treatment, even though the home surroundings are far from good.

The homes in which the cases visited by the nurses occurred were very few of them among the well-to-do; as a whole they represent perhaps the better class of the tenement population, including, however, a very considerable number of the very poor. Small apartments and crowded tenements were the environment of these patients with very few exceptions.

During the epidemic which occurred in October and November of 1918 the Henry Street Settlement had on duty 162 nurses. The calls for the visiting nurse usually came from physicians or from members of the family. All of the patients treated, however, were under the care of physicians.

Daily visits were made to all acute cases and to some of those most seriously ill two visits were made by the nurses. Moreover, during the height of the epidemic, night visiting nursing service was introduced from five different stations in the city. In a small number of cases a special nurse attended the patient. This intensive care was given to the pregnant women. The medical treatment differed widely, as the cases were under the care of many different physicians.

The total number of influenza and pneumonia cases visited and reported upon during the epidemic was 10,365. There are excluded from the analysis in this report 1625 cases for the following reasons:

Recovered before the nurse arrived	628
Mild cases, not requiring subsequent visits	450
Removed to hospital before the nurse's visit	125
Died before the nurse arrived	85
Not treated as a special nurse was on the case	328
Total	1625

The mortality of the remaining 8740 cases is shown in the following table:

TABLE A.

Type of Case.	Number Treated.	Deaths.	Per Cent. Mortality.
Influenza	6243	115	1.6
Pneumonia	2497	485	19.4
Total	8740	600	6.9

In the following table is given the classification by ages of the influenza and pneumonia cases respectively with the mortality:

Table B.

Age.	Influenza			Pneumonia			The Two Combined		
	No. Cases.	Deaths.	Per Cent. Mortality.	No. Cases.	Deaths.	Per Cent. Mortality.	No. Cases.	Deaths.	Per Cent. Mortality.
0– 5 years.....	1648	23	1.40	669	105	16.0	2317	128	5.5
6–15 years.....	1822	8	0.40	401	34	8.5	2223	42	1.9
16–20 years.....	327	5	0.15	129	38	30.0	456	43	9.4
21–30 years.....	1150	44	3.60	729	168	21.0	1879	212	11.3
31–40 years.....	756	18	2.40	356	89	25.0	1112	107	9.6
41–60 years.....	437	11	2.20	183	42	23.0	670	53	8.0
Over 60 years....	53	6	11.50	30	9	30.0	83	15	18.0
Totals.....	6243	115	1.60	2497	485	19.4	8740	600	6.9

It has been a general observation that the cases of influenza which occurred at the beginning of the epidemic were not so severe, but that the disease increased in severity for the first week or two and then slowly diminished. It is interesting, therefore, to observe in this group of patients how the mortality was affected by the period of the epidemic in which the cases occurred. In the following table there is given the mortality for the different weeks of the epidemic of both influenza and pneumonia cases. The week in which the case is grouped is that in which the first visit was made.

Table C.

	Influenza.			Pneumonia.		
	Cases.	Deaths.	Per Cent. Mortality.	Cases.	Deaths.	Per Cent Mortality.
1st week...	262	2	0.76	101	22	21.8
2d week...	765	18	2.30	243	78	32.1
3d week...	1142	15	1.30	388	109	28.1
4th week..	2177	60	2.80	783	154	19.7
5th week..	872	16	1.80	371	73	19.7
6th week..	518	3	0.58	263	28	10.7
7th week..	293	.....	.....	184	9	4.9
8th week..	214	1	0.47	164	12	7.4
	6243	115	1.60	2497	485	19.4

In Table D are given the deaths from influenza and pneumonia combined, together with the percentage mortality at different periods of the epidemic:

Table D.

	Cases.	Deaths.	Per Cent. Mortality.
1st week.....	363	24	6.6
2d week.....	1008	96	9.5
3d week.....	1530	124	8.1
4th week.....	2960	214	7.2
5th week.....	1243	89	7.2
6th week.....	781	31	4.0
7th week.....	477	9	1.9
8th week.....	378	13	3.4
	8740	600	6.9

From this it would appear that the highest mortality was in the second and third weeks of the epidemic and that the mortality gradually diminished during the last weeks.

Statistics have been published from many institutions showing the very high mortality which occurred among pregnant women. I have seen none given which referred to any except those which occurred in institutions. In Table E are given the figures regarding the pregnant women in this series of cases observed:

Table E.

	No. Cases.	Recovered.	Died.
Total pregnant cases.....	154	133	21
Pregnancy not interrupted.....	94	79	15
Abortions and miscarriages.....	13	7	6
Premature labor (eight months).....	1	1	....
Full-term labors.....	46	46	....

The statistics which are presented in the foregoing tables, while they are not large compared with those reported from army camps and from some of our largest hospitals, fully bear out the general impression that cases of simple influenza and influenzal pneumonia are best treated in their homes or when separated as much as possible. They also indicate that the frequency and the severity of all complications are much increased just in proportion as patients are crowded together.

Since this report is from the records of nurses and not a report from physicians in attendance, very many points of accurate classification in the data are not given in this report. Yet a sufficient detail is given to warrant the conclusions which we have drawn above.

It is unfortunate that most of our medical statistics have been drawn largely or almost exclusively from cases treated in institutions; and it is of course difficult for any one physician in an epidemic to care for a sufficiently large number of cases for his observations to be of great statistical value. It is for this reason that these figures have been presented, as the opportunities for observation were in many respects somewhat unique.

While it may be urged that only the more severe types of the disease are sent to a hospital and that the mortality figures of such institutions do not represent fairly the actual mortality from the disease, it may with equal truthfulness be said regarding the statistics which are here presented that they also represent only the more severe forms of influenza; for at the very outset of this report it has been stated that no less than 1087 cases, or about 10 per cent. of those to which the nurses were called, have for this reason been excluded from the analysis of this report. Such cases had either progressed so far toward recovery or were of such a mild character that a second visit by the nurse was considered unnecessary. The demand for the services of the nurses during the epidemic was so great that only those cases which actually required the nurse's attendance were visited, the others being left to the care of members of the family.

14 West Fifty-fifth Street.

THE CONTROL OF CANCER.

AN APPEAL TO THE PRACTITIONER.

By F. T. VAN BEUREN, JR., M.D.,

New York.

In the first place, may I remind you of what is now very generally accepted: that there has been an enormous increase in the mortality from cancer, during the past fifty years, practically all over the world; and that, last year, cancer killed more than 61,000 people of these United States in the registration area alone, and over 9700 in New York State.

It is idle, of course, to speculate upon how much of the increase in the cancer death-rate is real and how much is due to better final diagnosis. It is statically valuable, to be sure, but it is of little use to the dead man to know what he died of. We must learn to know what is threatening his life, long before he even begins to die, if we are to be of aid to him.

We do not want to make the correct diagnosis final, we want to make it early. That this is the real crux of the whole matter cannot be denied whether you adhere to Bloodgood's Gospel of the "precancerous" condition or profess merely the more conservative belief that every cancer is, in its early stage, a purely local condition, and, in that early stage, susceptible of cure by complete removal.

The latter is, without question, accepted as true by all the foremost exponents of modern medicine. And this early removal is, like all the other procedures of modern medicine and surgery, strictly speaking, a preventive measure. For, by way of example, we have to admit that the most perfect development and application of aseptic surgical technique does not heal a wound. It merely prevents the infection that would delay its repair.

And so, if you like to play with words, early removal does not cure the cancer; it cures the patient. But to effect the cure, the removal must be early and the diagnosis earlier still. This necessity for earlier diagnosis is splendidly illustrated by the researches of the commission on cancer of the Medical Society of the State of Pennsylvania, who, in 1910 and 1912, tabulated the record of 400 cases of cancer and found that the patients who had superficial growths came to operation (on an average) 14 months after noticing the first sign of the disease.

They found also that about half the cases, superficial and deep alike, had had some form of chronic irritation or "precancerous" condition such as ulcers, uterine tears, etc. "So that," the report continues, "one-half of the cases that apply to Pennsylvania surgeons need not ever have had a cancer if they had known the significance of this precancerous condition and had it remedied before cancer developed."

More important still for us, however, their tables showed that, in the cases of superficial cancer, the patient's physician had known of the condition present for an average of *one year* before the patient came to operation; and, in the case of deep seated cancer, the patient's physician had known of the condition for an average of *over* 13 *months!*

Now, when you consider that, in many cases of cancer, death follows within 36 months after the first symptom noticed by the patient, I think we can agree that we ought to allow somewhat less than one-third of the remainder of their lives for making a diagnosis.

Gibson, Professor of Surgery at Cornell, read a very suggestive paper, not long ago, in which he analyzed the condition and course of 110 cases of cancer cared for at the New York Hospital from February, 1913, to April, 1915. Basing his classification upon the conviction that the majority of cancers are for some time purely localized, and at that time curable, he stated that, on account of the advanced condition of the disease, only 11 could be promised a reasonable expectancy of cure, 6 were doubtful, and 93 (84.5 per cent of the whole) offered no probability of cure whatever!

In the last 28 consecutive cases, where special efforts were made to obtain details of the opinion or advice received by these patients from the first doctor consulted, the evidence showed conclusively (he says) that at least 50 per cent of them had received no advice or treatment based on recognition (or even suspicion) of their condition! As examples of this fact he cites a number of cases, stating the improper treatment that they had received. "The deplorable percentage of hopeless cases," says Gibson, "coupled with the investigation of the kind of advice given many of these unfortunates justifies me, I believe, in accusing our profession as responsible for a large proportion, perhaps the majority of lost opportunities successfully to treat probably curable conditions."

This is the judgment pronounced upon the medical profession by one of its leaders in New York City; and Kelly and Neal of Johns Hopkins, Chauta and Wertheim of Vienna, Taussig of St. Louis, Novak and Bloodgood and others corroborate the sort of evidence upon which it is based.

This is a very broad indictment and I am not sure that all of you will agree that it is a just one. But at any rate, it raises at once the useful question, "What are you going to do about it?" Why! we are going to do this— we are going to instruct ourselves in the best methods of early diagnosis of cancer and we are going to teach our patients to come to us early for diagnosis. And we are going to try to require absolute proof of the innocence of each individual case of suspected malignancy before we adjudge it not guilty.

I say suspected malignancy because it is just this type that we must concentrate our energies upon. Any second year student will cry "cancer" if you show him an extensive callous ulcer of the lower lip, a foul sloughing tumor of the breast, or a stony hard abdominal mass in the stomach region. It is not these terminal stages that must engage our more mature attention. It is the superficial erosion of the lips or tongue, the slight induration in the breast, the doubtfully enlarging skin blemish, the resistant anal fissure, the history of vague but persistent gastric or intestinal indigestion, or obstinate constipation, or the possibility of blood tinge in the vomitus, urine, stools, or vaginal discharge. For they are among those early, indistinct symptoms of cancer that are useful alike to the patient and to his physician, if only heed be given their warning. That is the point, to heed their warning. We must not wait for cancer to try and justify its pitiless fatality by claiming that we disregarded the danger signals.

Now, it is not at all the purpose of this paper to destroy your interest by a complete, accurate, and exhausting account of every possible early symptom of any possible cancer anywhere in the human body.

But it is my intention and my deep desire to implant upon your minds, as it has been implanted in my own, a rapid-growing ineradicable variety of suspicion; so that never again can any man,

who reads this, look upon an ulceration, a mole, or wart; or palpate an indurated area, or tumor mass; or listen to a history of indigestion, or constipation, or of irregular discharge, or bleeding, without having the idea of cancer present itself to his consciousness, and remain there until he has proved, as speedily as possible, and without peradventure of doubt, that no such menace is either present or impending. But, to give ourselves and our patients such assurance, we *must* listen and we *must* feel and we *must* look. For the warning still holds good to-day, that was given over a hundred years ago to his students by one of the foremost bedside teachers of his time: "More mistakes are made gentlemen," he told them seriously, "many more, by not seeing than by not knowing!"

It is in our physical examination, then; in the patient and thorough collection of evidence, that we medical men fail, rather than in our deduction from the evidence when gathered.

In this regard, says Novak, "every medical man owes it to himself and even more to his patients to learn all he possibly can, through reading, attendance at meetings, and otherwise, concerning a disease which is at once so deadly and so frequent as cancer."

Gibson, in the paper I mentioned above, says it is necessary to revolutionize the old methods of diagnosis, and adds: "The practical application of these revolutionary principles will be threefold: (1) Recognition and cure of precancerous conditions. (2) Throwing overboard all classical diagnostic formulæ, *e. g.* cancer of stomach recognized by great emaciation, pyloric obstruction, palpable tumor, and cachexia. These are terminal symptoms and consequently useless. (3) The recognition that many conditions cannot be diagnosticated in the curable stage (with any frequency) save by unusual methods. These procedures, such as exploratory laparotomy, should hereafter be classed not as extraordinary, but as legitimate measure of anticipation!"

Let these expressions and suggestions stand then, as a summary of our mistakes and of how we may learn to avoid their repetition.

But perhaps too little has been heard, in all this, about the culpability and stupidity of the patients who frequently fail to give the physician an opportunity to make an early diagnosis of cancer. Well, personally, I cannot blame them much! For myself, I have a deep sympathy in their reluctance to hear such a doom pronounced as was formerly thought inevitable.

And yet, one may object, "you would sanction, nay! advise, insist even, on counselling our patients to subject themselves to that same fear of death that comes with the suspicion of cancer?"

Why! not at all, that is just what I would not do. I would teach them there was no need to fear, *if treated early.* For "in the early recognition and treatment of cancer lies the hope of cure." That is the motto for the American Society for the Control of Cancer; and it is that which must be instilled into the mind of every patient, of every doctor, who intends to help in lowering not only cancer mortality but cancer morbidity as well.

Tell them that cancer is a curable disease; that it is even within limits, a preventable disease; and that it is fatal only if neglected. Tell them that if they will only come to you on the first suspicion of anything which might be cancer they can almost certainly be cured. Tell them it is not surgery that is dangerous (only about 1 per cent of cancer cases die from operation) but delayed surgery. And then tell them what are those conditions that may properly be termed the danger signals of cancer.

Here is the essence of what the American Society for the Control of Cancer tells them:

1. Do not neglect the treatment of persistent ulcers, sores, cracks upon the lips, cheeks, tongue, or any other part of the body.

2. Have removed any wart, mole, or birthmark just as soon as it shows any evidence of growing larger.

3. Have removed any such growth, in any case, if its situation renders it liable to continued irritation.

4. Do not neglect the treatment of chronic indigestion.

5. Secure early treatment for irritating discharges from the uterus (womb) or vagina, and have any injuries due to childbirth promptly repaired.

6. Have any broken or decayed teeth repaired or extracted.

7. Consult a competent physician or surgeon twice a year for possible symptoms of cancer.

8. Insist on getting a thorough examination when you go to a doctor for advice as to a possible cancer.

9. Consult a competent surgeon for any chronic indigestion, vomiting of blood or bleeding from the rectum, or blood noticed in the movements of the bowels. These are things which must not be neglected.

Such are the practical details that it has been agreed upon the public ought to know, in order to help us to help them. And, in your work of educating your patients, you will find the American Society for the Control of Cancer ready and anxious to help.

And now, having examined the subject; having admitted our mistakes and having outlined the means of overcoming them, and a method of persuading our patients to help us, it is fair to ask, "but will it be worth while?" Well, I am in the peculiarly fortunate position of being able to offer you the proof of the pudding before you even begin, figuratively speaking, to eat it. I said in the beginning that the death rate from cancer had increased all over the world with very few exceptions; and it is one of the exceptions that I must refer to now.

Some thirty years ago the statistics showed that cancer mortality had increased, in a part of Northeastern Germany, about 100 per cent. during the preceding 12 years. An educational campaign similar to ours was instituted and, 10 years ago, a definite reduction in the cancer mortality became observable. In the six years prior to the war the reduction had reached a point 15 per cent. below their highest mortality figures.

Not very much of a decrease, you say; no, not if

measured in units, perhaps; but as an example of what can be done; as proof of a once very doubtful theory, the aspect of that little decrease is immense. It looms enormous as a signboard pointing to the tremendous future of our work in this country.

Finally let me repeat: We do not know how to make early diagnosis of cancer? Then we must learn to! Our patients do not come to us early? Then we must teach them to do so. These are moral obligations as well as professional and lie at present most heavily upon us all.

And in this connection, there is a paragraph from a Health Bulletin sent by the Postal Life Insurance Co. to its industrial policy holders. I cannot forbear to quote it; for, though it is addressed to laymen, its admonition is far from valueless to the practising physician. It says, "While awaiting the oft-heralded but as yet elusive 'cancer cure,' give the surgeon a chance to cut the cancer death rate in half. He can do it."

Look upon the surgeon, then, as your assistant, if you will, in this great work of controlling cancer. But above all, remember to look upon any lesion that may be, or may possibly become cancer itself, only with the deepest and most critical and most obstinate suspicion.

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POLYCYSTIC KIDNEY OF ATYPICAL CHARACTER.*

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In Braasch's "Clinical Data of Polycystic Kidney," read before the Association of Genito-Urinary Surgeons,in 1916, he presented the clinical findings of forty-one cases, which had had exploratory operations in the Mayo Clinic. Of these twenty-six were diagnosed as such before operation.

*Reported to the New York Obstetrical Society January 13, 1920.

Of the symptoms associated with the presence of such kidney degenerations he accentuates *pain*, *hematuria*, and evidence of *renal insufficiency* together with *increased blood pressure*.

Pain over the diseased kidney varies greatly and is dependent in part on the presence or absence of infection, due to the lack of complete drainage from the distorted kidney pelvis. It is also influenced by the extent and degree of cystic change in the kidney, resulting in a greater or less pressure on the intervening kidney structure.

Hematuria, he states, occurred in 40 per cent. of the cases and varied in duration from that of an occasional occurrence of a few days to that of several months' continued bloody urine. He explains the occurrence of hemorrhage as due to a rupture of capillaries within the cyst cavities and the subsequent emptying of the contents of such hemorrhagic cysts in the pelvis of the kidney.

Renal Insufficiency.—The involvement of one or both kidneys at the time that the patient comes under the care of the physician will determine the degree of retention toxemia of the patient. While the condition is regarded as practically an interstitial nephritis, usually advanced more in one kidney than the other. Braasch, however, points out that in most instances the first evidence of renal disturbance and occasionally the only evidence extending over a period of several years is nausea and vomiting. He states that only these symptoms were present in six out of nine cases, which showed other evidences of renal insufficiency.

Attendant cardiac disease is rare and then only as an end result. None had edema of the extremities.

The case coming under my care and reported here is as follows:

Mrs. E. W., colored, age 24 and married, was admitted to the hospital December 6. She has one child 2½ years old, and has had two miscarriages each two months advanced: one in June, 1918, and January, 1919. No previous illness.

She has some pelvic pain at the time of menstruation, also a uterine discharge, apparently referable to the previous miscarriages.

Her chief complaint, however, is pain over the left lower quadrant. This has existed for the past year and has become worse during the last six months, and especially on physical exertion.

The patient is habitually constipated. She gives no history of prolonged gastrointestinal disturbance.

She has had recurring painful urination for the past six months and states she had bloody urine six months ago, which continued for a week.

Examination.—Pelvic: A minor laceration of the cervix and perineum; uterus forward. A mild degree of endocervicitis. Both fornices are free and the adnexa cannot be felt.

Abdominal: Tenderness on deep pressure over the left lower quadrant. An abnormal tumor is felt in the upper left quadrant. This extends downward to the level of the umbilicus and well toward the median line.

The surface of this tumor is smooth and lies closely against the anterior abdominal wall. Its upper border cannot be felt on account of its extending under the ribs. Its lower border is sharply defined and the examining fingers can be easily pushed under the shelving edge of the mass. The impression is that the surface and edge of the tumor felt is that of an enlarged spleen. Heart sounds negative with exception of snappy aortic second sound. Blood pressure—systolic 145, diastolic 90. Lungs and liver negative.

Laboratory and Pathological: Cervical smears—no gonococci. Wassermann—negative. Blood—4,480,000 reds, 7,200 whites; hemoglobin, 95 per cent.; poly-

nuclear, 68 per cent.; lymphocytes, 28 per cent.; eosinophiles, 4 per cent; morphology (normal); no plasmodia under a 30 minute search.

Urine: Marked trace of albumin; pus in clumps, hyaline casts, masses of epithelial cells.

Renal insufficiency: Blood urea—40 mg. per 100 c.c. blood on the 11th and 42 mg. per 100 c.c. blood four days later.

Phthaleine test, intramuscular, 70 per cent. for first two hours on the 13th and 66 per cent. four days later.

The *urological examination* by Dr. Bugbee, urologist to the hospital, is as follows: "Urethra, trigone, and sphincter congested. Bas-fond, fundus, and ureteral orifies normal."

Ureters: Catheter in right ureter passes 30 cm. In the left passes 25 cm. Urine from the right, flow is free, clear and pale; from the left not so free, clear and pale. Phthalein intravenously began to show in right ureter at 3 minutes; in the left ureter at 5½ minutes.

The Pylograph: X-ray with catheters in situ injected with thorium: Right, small kidney pelvis with narrow major calices—practically normal; left, broad kidney pelvis with marked separation of middle and lower calices. The major calices are all very broad with ill defined minor calices. The picture may be that of an old infection or a beginning polycystic kidney.

Phthaleine intravenously: Right kidney for first 30 minutes, 20 per cent.; left kidney, 15 per cent.

Chemical and microscopic: Right—pale yellow, clear, acid, slightly bloody. Albumin. Urea 2.8 per cent. *Microscopic:* No casts, isolated and grouped red cells. Occasional isolated leucocytes; no crystals; no bacteria. Left—Pale yellow, clear, acid, slightly bloody. Albumin. Urea, 1.6 per cent. *Microscopic:* Occasional small hyaline granular and epithelial casts isolated red cells, occasional isolated and grouped leucocytes; no crystals; occasional bacteria of colon type."

The *x*-ray picture of the tumor after the abdominal cavity was distended with oxygen, brought out in clear outline the size and location of the kidney tumor with overlying spleen, which had been pushed up by the kidney mass underneath. I append the pylograph showing the broad irregular left kidney pelvis; also the *x*-ray of the kidney and spleen in the presence of abdominal oxygen distention.

As will be seen by the detailed report of the study of this renal tumor no definite knowledge could be obtained as to its character. The mobility of the mass precluded the likelihood of an old inflammatory process. The appearance of the pelvis and the major calices was not typical of a cystic kidney.

The kidney function as a whole (both kidneys) was not impaired, in fact, it was increased, ranging between 65 to 70 per cent. for the first two hours. This is in line with cases spoken of by Braasch in which the kidney function for five out of eleven cases ranged from 40 to 70 per cent. There was a small variation in the activity of the two kidneys, the right excreting the intravenous phthaline solution in three minutes and showing a 20 per cent. excretion in 30 minutes; while the left began to show the solution in 5½ minutes and gave a 15 per cent. excretion in the same time.

An exploratory operation was necessary to differentiate between a possible hypernephroma and a polycystic kidney. The kidney being exposed through a free lumbar incision it could be easily palpated. The cortex was thickly studded with numerous underlying cysts of about 2 c.c. capacity. Over the greater curvature many of these had fused into a larger cyst of about 40 to 50 c.c. capacity.

The character of the tumor having been established and on account of the slight impairment of its functioning power, it was considered inadvisable to proceed any further with the operation.

148 West Seventy-seventh Street.

Myoclonic Form of Epidemic Encephalitis.—Sicard and Kudelski describe a case of epidemic encephalitis with predominance of diaphragmo-abdominal myoclonus. It is characterized by pains and myoclonus most marked in the region of the diaphragm and abdomen. Lethargy is completely absent as are likewise ocular disturbances.—*Gazette des Hôpitaux.*

PROLONGED FEVER OF UNDETERMINED ORIGIN IN CHILDREN: REPORT OF CASES.

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PEDIATRICS as a specialty has come into its own only in late years. Most children, however, are still being treated by the general practitioner or "family doctor." It is, therefore, within the realm of the general practitioner to discuss some morbid conditions which, while not peculiar to children, are relatively more common in children than they are in adults.

Nearly every physician of experience may possibly recall some instance when he was called upon to treat an infant or child who had fever, when he failed to discover the cause of the rise in the temperature, even after careful, repeated, and painstaking examination. Not a few of these cases develop no diagnostic symptoms or signs while under observation and the trained specialist and laboratory man are not able to solve the problem for us. The layman relative of the patient may or may not be satisfied with a ready-made diagnosis, such as grippe, congestion of lungs, stomach trouble, or the old malaria; but we cannot be satisfied with such diagnosis if we want to be honest with ourselves.

My experience with the cases I am reporting was such that I am prompted to make this report with the hope of stimulating further study along the lines of the causes of fever in children. Some of these cases herein reported were seen by some of our best consultants and no definite diagnosis was made.

Case I.—B. B., female child, 1 year old. Family history negative.

Previous History.—Normal birth, breast-fed up to seven months, mixed feeding up to tenth month. Weaned at ten months, put on a formula of top milk, Walker Gordon preparation. Did well up to present illness.

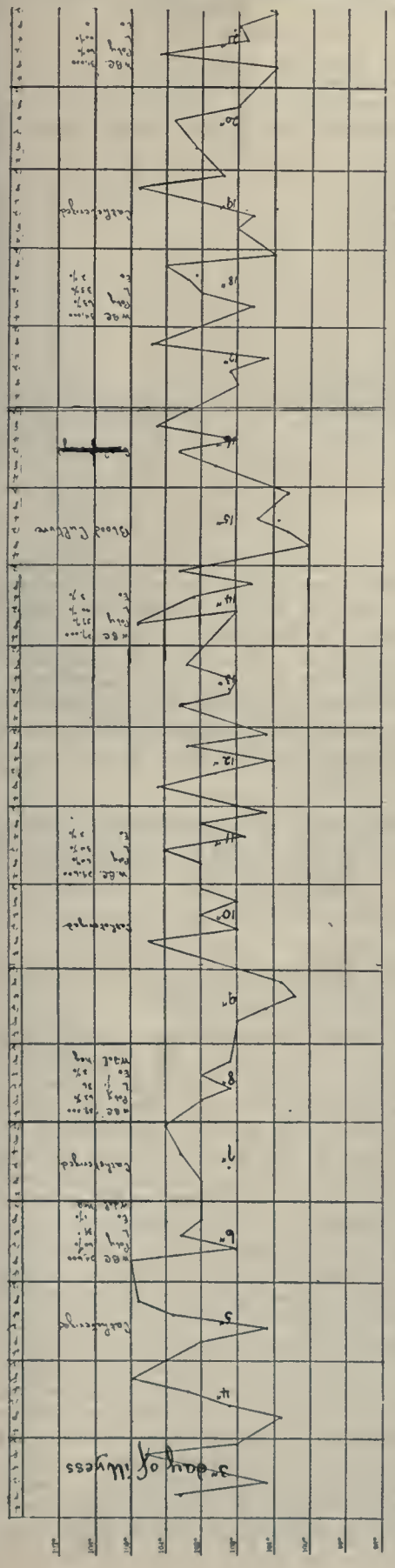
Present Illness.—Became ill suddenly with temperature of 102°, vomited twice at onset, was treated for influenza for two days before I saw her. On examination, I found a fairly well nourished child, not perceptibly prostrated, temperature 103.5°, fairly rapid pulse, respiration about 30, slight rigidity of neck, acid breath, skin and glands negative, as were the mucous membranes; no catarrhal symptoms. The rest of the examination was entirely negative except for a palpable liver, evidently not tender, urine negative, only a faint reaction to acetone.

In view of the acid breath, acetone in urine, palpable liver, and absence of other signs, I felt justified in making a diagnosis of acidosis. The subsequent clinical course, however, made me question my original diagnosis. While the acidosis responded to the alkaline treatment, the irregular remittent temperature continued for over a month and the liver remained rather large, at times almost reaching down to the umbilicus.

The course of the fever in this case is interesting. It would remit several times during the twenty-four hours, was often highest in the morning and after sleep. The child perspired rather freely. During this period the child never vomited again, had no diarrhea, passed considerable flatus, took its food, consisting of milk and cereals, with relish, never looked very sick, was playful at times, and slept fairly well.

The child was examined repeatedly by several specialists. No one was able to find anything to account for the temperature. They were all willing to assume an acidosis at the onset. The urine was examined fre-

quently and found normal. The ears were examined on several occasions and nothing abnormal could be seen. Several blood examinations were made and showed a high leucocytis throughout, 24,000 to 31,000 whites and 60 to 65 polymorphonuclears. A blood culture on the fifteenth day of the illness was negative. The Widal, which was taken on a number of occasions, was negative and a urine culture was negative.



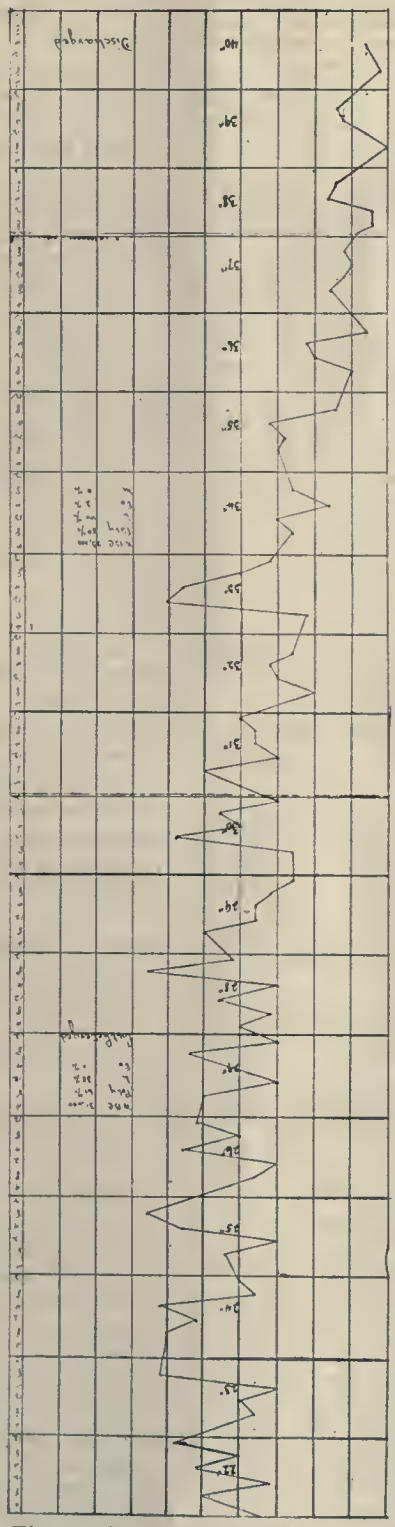


CHART 1.—Case I.

After about thirty-two days of fever the temperature came down by lysis, reaching normal about the thirty-fifth day. The liver continued large.

This child subsequently developed diminished breathing over the right lower lobe and also pus in the urine. This occurred some months later. A complete history and physical findings will be the subject of another communication.

CASE II.—Male child, 2½ years old, second child in family. Family history negative.

Previous History.—The child had measles eight months before onset of present illness.

Present Illness.—Became ill August 14, 1917, with fever, no vomiting. I saw him at night, temperature 105.5°, had twitching of extremities and left side of face, slightly rigid neck and exaggerated reflexes. Rest of examination entirely negative. On the child being given a mustard pack and high bicarbonate enema, the temperature came down to 102° and stayed there the entire following day. The temperature rose again to 105° the third day and was up every day between 104° and 105° for the following seventeen days.

During the whole febrile period the child gave no evidence of pain, did not vomit, had normal stool except at the onset, had no cough, was fairly prostrated at times and restless at other times. He had slight congestion of the throat and left ear drum for a few days and a palpable liver was noted on about the tenth day, which remained palpable throughout the illness. He also had a few suspicious areas on the chest, increased voice and slight dulness on about the twelfth day, which disappeared the following day.

The urine contained a faint trace of albumin at the onset and cleared up about the sixth day under alkalies. The blood showed a moderate leucocytosis 15,000 to 19,000 whites and 60 to 70 polymorphonuclears. The Widal was negative, one stool culture was negative both for typhoid and paratyphoid. Throat cultures were negative. The cerebrospinal fluid taken on the ninth day of illness came under slight pressure, otherwise negative.

CASE III.—Baby girl 7 months old; was a forceps case. Family history negative. Previous history negative; is receiving mixed feeding.

Present Illness.—Became ill December 9, 1917, with fever and vomiting. The temperature at the onset was 104.5° and remained thereabouts for fifteen days, having only slight remissions in the early afternoon. The physical examination was negative except for some distention of the abdomen and palpable spleen, which, however, is not uncommon in infants. In this case a diagnosis of influenza was made and for several days I strongly suspected the possibility of a pneumonia. Nothing developed, however, and the child remained ill for about two weeks, when

the temperature came down by crisis and remained normal.

The blood here too showed a leucocytosis 17,000 to 21,000 on three occasions. Polymorphynuclears ranged between 56 and 60. The urine obtained by catheterization was negative on several examinations.

Comment.—The possibilities in these cases are numerous. Some of those that were considered and eliminated are

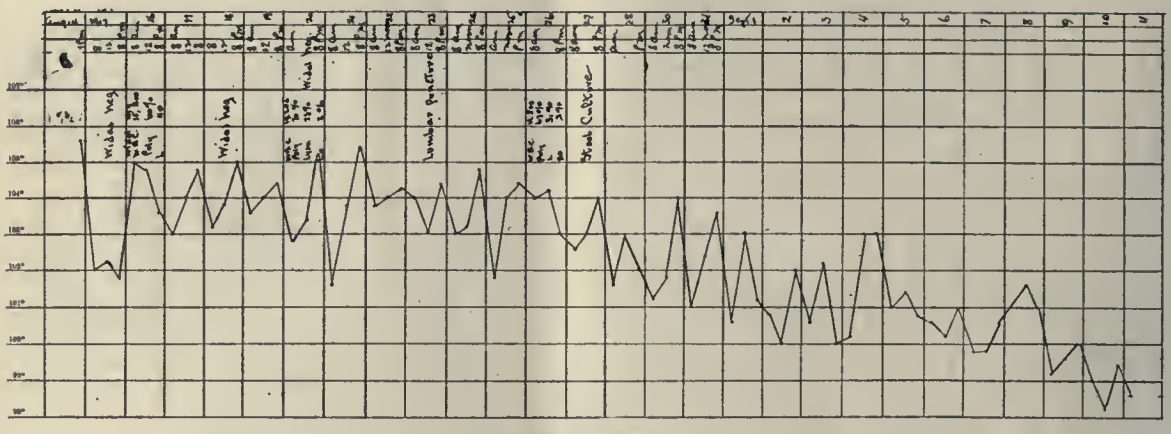


CHART 2.—Case II.

1. Typhoid Fever. The leukocytosis, the absence of rash, the negative widal, and the negative culture of the stool in Case II, rule it out.

2. Influenza. The leukocytosis and absence of catarrhal or respiratory symptoms or signs, are against this disease.

Pneumonia.—Is one justified in making a diagnosis of pneumonia on the temperature alone? In none of these cases were there any definite signs in the lungs. Unfortunately, all these cases were treated in their own homes and no *x*-rays were taken.

Pyelitis.—Negative urinary findings are against this. The temperature in Case I strongly suggested it, but no pus was ever found.

Sinusitis.—No nasal discharge, no throat involvement. It is possible, though, that with the more thorough examination, including *x*-ray of sinuses in chil-

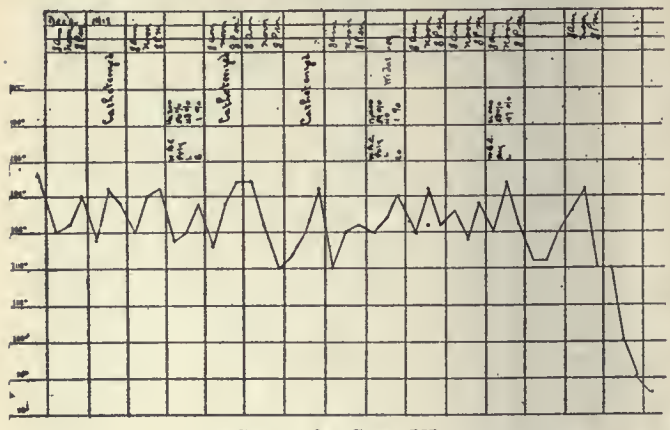


CHART 3.—Case III.

dren, some of these fevers may be cleared up.

Pneumococcus-peritonitis.—Was considered, especially in Case I. But there was no tenderness, no masses, no rigidity, no diarrhea or constipation.

Intestinal infection, which was the diagnosis made by one of the consultants in Case I, is not convincing. There was no gastric or persistent intestinal symptoms or signs, and the leucocytosis would speak against it also.

Septicemia.—This cannot be ruled out. Yet there was no discoverable portal of entry and at least one blood culture was negative.

It would appear that many febrile attacks in children cannot be properly classified as belonging to any clinical entity. It is possible that some of these are due to the ordinary bacteria which gain entrance into the body, and perhaps the blood stream, in an unrecognizable manner, without giving any local manifestations. Again, some yet unknown microorganism may be the causative factor.

It seems unscientific to call these attacks grippe, intestinal trouble, malaria, or even central pneumonia because we do not know what else to call them. We ought to be a little more critical and careful in our diagnosis and should not accept mere phrases. Perhaps with the help of the newer laboratory methods we may eventually clear up these unclassified infections and be able to form a better conception of these often puzzling cases.

1220 GRAND CONCOURSE.

DOES COMMUNITY RESPONSIBILITY END WHEN SANATORIUM TREATMENT HAS BEEN GIVEN?*

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THE question which forms the subject of this talk is a pertinent one and one which should engage our serious attention. It presents a problem, a solution of which public welfare workers have all sought but without satisfactory results. Therefore in attempting to answer that question I feel like the proverbial high school graduate, who in his commencement day thesis solves some problem of political economy which the trained statesmen of the country have tried in vain to solve. However, I have some very definite ideas as to what we *can* do and will present these ideas as briefly as possible. The answer to the question forming the title of this talk is obviously *no*. Our responsibility most certainly does *not* end when we discharge the patient from the sanatorium. In our public institutions, where it is our aim to help the greatest possible number, patients are not retained under treatment so long as they are in private sanatoria and when discharged from the public institution the case is usually merely "improved," lesion "quiescent."

*Read before General Session, Miss. Valley Tuberculosis Conference, Des Moines, Iowa, Sept. 23, 1919.

Therefore there is still much to be done for this patient and in the past we have not been doing our duty by these patients. When they are discharged from the sanatorium they are just being started on the way to complete and lasting arrest of their diseases. They are rather in the position of one just graduated, they are just out of a training school in which they have been taught how to live to secure and retain a complete arrest of the disease. The sanatorium is, or ought to be, the great training school for the tuberculous, and if it is not it has failed in one of its most important functions. Major Watterson has just told us that 52 per cent. of the so-called "arrested" cases discharged from sanatoria "break down" again, often much worse than when they first fell victims to this disease. This indicates to my mind that there has been something wrong with our "follow up," not with the sanatorium, though the sanatorium has been blamed for this condition of affairs and many have wondered if sanatoria are worthwhile. Without proper "follow up" they are hardly worth while; with this proper supervision after discharge from treatment I am quite sure any doubt as to the place and value of the sanatorium in the tuberculosis program will be quickly dispelled. What then is our further duty to the patient after we have given him sanatorium treatment and returned him to his home? During his stay at the sanatorium he has been taught, or at least, should have been taught, how to live to secure and retain arrest of the disease. When he is returned to his home the source from which he was sent to the sanatorium should be notified and a public health nurse or other similar officer should visit the home and see to it his home conditions are not inimical to this end. She should see that the home is not overcrowded, particularly as regards sleeping quarters, that there are provisions for open air sleeping or its equivalent, that cleanliness prevails, that the home is equipped with proper plumbing, that it is properly lighted (not artificially in day time), and properly ventilated. She should assure herself that the patient will get proper rest and recreation, as indicated in the individual case, and proper quantity and quality of food, well prepared. The family should be taught the need for the changed manner of living on the part of the former sanatorium patient so that they will not make it impossible for the patient so to live, as is so often the case. In our community among the foreign element which predominates the Captain John Smith principle of "he who does not work shall not eat" seems to prevail. The members of the patient's family do not see the need for better food, rest, etc., and by their attitude cause the patient to give up the mode of life outlined for him. The patient should have it impressed upon him that he is *not* cured and that he can be only by strict adherence to the prescribed régime for a long period, likely several years. He should be taught that chest pains, loss of weight, ease of fatigue, a repeated rise of temperature to 99° or above, increased pulse rate and, more important, an unstable pulse, loss of appetite, digestive disturbances, etc., are danger signals which should bring him to "The Clinic" routinely, first every month, then every two months, every three months, and finally as he "carries on" without ill effect only twice a year. This in order to detect evidences of renewed activity early. His work should be chosen for him with his physical condition in mind, and if it is not thought advisable for him to return to his former occupation he should be trained for other work, which he can do. It should be seen to that the conditions under which he works are ideal, if in shop or factory that it is properly ventilated, supplied with an abundance of properly diffused daylight, with proper sanitary plumbing, etc. It should be seen to that his hours on duty are not too long, that he gets proper noonday nourishment and a sufficient amount of time off for rest and recreation. The general sanitary condition of his place of work should be the best possible. The ideal arrangement is, of course, the industrial and agricultural colonies now being advocated where patients are under direct supervision, their families under similar supervision, colonies with increasing amounts of work and lessening of the closeness of the supervision, the patient "graduating" from one to another as he proves his ability to do the work without ill effect. Such colonies, now being planned, will, I feel sure, soon be a reality and will help greatly to solve this important problem. In the meantime we must do the best we can with the means at our disposal. Personally I try to give discharged patients work at the sanatorium for a time before they return to their former industrial or agricultural pursuits and so I am enabled to keep them under supervision, see how much work they can do and above all "harden them up" before sending them out to compete with healthy workers. There is the big reason for the supposed failure of the sanatorium. Patients are placed at rest, fed up until they are fat and flabby and in this condition returned to active life without any preliminary "hardening" process. The natural result has been a "break down" under the strain. It is our duty to get them ready for work before we return them to their industrial or agricultural pursuits. "Healthwin," the St. Joseph County Tuberculosis Sanatorium, at South Bend, Ind., has recently started to provide or cause to be provided for discharged patients this proper "follow up" care. "Sunnyside," the Marion County (Indiana) Sanatorium, near Indianapolis, has for some time been rendering similar service. Replies to an inquiry sent out to many tuberculosis associations and sanatoria by Miss Gaskill, the director of Out-Patient and Social Service at "Sunnyside," indicate, however, that with but few exceptions such service is being rendered in a most indifferent manner or not at all, more frequently the latter. Only one institution in Wisconsin is doing any such work at present; the Chicago Tuberculosis Institute reports having just recently inaugurated such service in connection with Edward Sanatorium; Minnesota reports "no definite follow up work being done"; Cincinnati reports the system to be inadequate, and so on. But I shall not take up your time to analyze these reports. Suffice it is to say sufficient and efficient "follow up" work is not being done and without this our sanatoria will fall short of rendering their best service.

Summing up, then, we must educate the patient and his family in the need for proper living, see that the patient's housing and working conditions

are proper and that he is properly nourished, keep in touch with him by examinations at the clinics, and so on. This work is of importance in the conduct of a tuberculosis sanatorium—

1. "To the patient because of the close personal relationship established in his home by the nurse."

2. "To the family by advising other members of the family to be examined and encouraging them in carrying out a routine of personal hygiene."

3. "To the community by spreading knowledge of general hygiene."

4. "To the institution by establishing a better understanding of the service rendered by such an institution."

There is still much to be done for the patient after he is discharged from the sanatorium, it is the duty of the community to make it possible to render this further service to the patient and it is our duty to show the need for this work and secure the support of the community in carrying out this plan without which sanatoria will not give us the greatest possible returns and money expended for their maintenance will not be spent to best advantage. The responsibility of the community in the matter of care of the tuberculous does *not* end when sanatorium treatment has been given.

I am indebted to Miss Gaskill, Director of Out-Patient and Social Service at "Sunnyside," the Marion County (Indiana) Sanatorium, for data used in the preparation of this paper.

Medicolegal Notes.

Only Expert Testimony of Weight as to Proper Performance of Surgical Operation.—In an action for malpractice for negligently permitting the broken ends of the bone to overlap and remain in that condition in treating the fracture of the femur of the plaintiff's right leg about three inches above the knee, the plaintiff testified that the defendant used a bed slat as a splint, bound to the leg with strips of bed sheeting and adhesive plaster, with a weight consisting of a flatiron fastened to the leg by cords and adhesive plaster and hung over the end of the bed. The only expert testimony offered by the plaintiff was that of a physician who had lived in that community for fifty years and who qualified as a skilled physician and surgeon. He testified to the method he employed in reducing a fracture, that various kinds of splints were used, wooden splints that can be molded to the part, various kinds of fiber splints, pasteboard, and plaster parts and other forms; that these have to be changed repeatedly, depending upon indications. His direct examination showed nothing from which a jury would be justified in finding that the method adopted by the defendant was not proper. Nonexpert witnesses, it was held, can testify as to external appearances and manifest conditions observable by any one, but whether a surgical operation has been performed with a reasonable degree of skill, knowledge and care, and whether the patient was thereafter skilfully and properly treated are questions of science, to be established by the testimony of witnesses of special skill and experience, and not by testimony of those who are without special learning and skill as to such operations and practice. Here the only expert called to testify on behalf of the plaintiff was the one physician, who neither criticised nor condemned the methods employed by the defendant in the treatment of the plaintiff's injury. It is true that the physician is bound to possess and exercise that degree of skill which is ordinarily possessed by physicians in practice, but where his errors are those of judgment only, if he keeps within recognized and approved methods, he will not be liable for their consequences. Negligence of a physician or surgeon cannot be presumed from the mere failure to obtain the best results from an operation or treatment, and where, as in this case, there is no proof of a want of skill or care on the part of the defendant, it is held error to set aside a judgment in his favor and grant a new trial. In regard to its holding as to nonexpert evidence, the court said that "a moment's reflection upon the circumstances and emergencies under which physicians are frequently called upon to act will demonstrate some of the disastrous results that would follow if the law permitted them to be mulcted in damages upon testimony as to the character of their professional services given by nonexpert witnesses. If such were the law, physicians and surgeons might as well be held to guarantee a successful cure or a successful operation in each instance." The court quoted from the opinion of the Supreme Court of Minnesota in Staloch v. Holm, 100 Minn. 276, 283, 111 N. W 264, 267, as follows: "Physicians and surgeons deal with progressive inductive science. On two historic occasions the greatest surgeons in our country met in conference to decide whether or not they should operate upon the person of a President of the United States. Their conclusion was the final human judgment. They were not responsible in law, either human or divine, for the ultimate decree of nature. The same tragedy is enacted in a less conspicuous way every day in every part of the country. The same principles of justice apply. Shall it be held that in such cases, where there is a fundamental difference between physicians as to what conclusion their science applied to knowable facts would lead to, then what they with their knowledge, training, and experience are unable to decide, and what, in the nature of human limitations, is not susceptible of certain determination, shall be autocratically adjudged by twelve men in a box, or by one man on the bench, or by a larger number in an appellate court, none of whom are likely to have the fitness or capacity to deal with more than the elements of the controversy? All the court can properly do if an action for negligence should be brought in such a case would be to direct a verdict for the physician."—Paulich v. Nipple, Kansas Supreme Court, 180 Pac. 771.

Medical Expert's Answer as to Permanence of Injury.—In an action for an injury to a woman caused by a collision at a crossing between the defendant's interurban car and a buggy in which the plaintiff was riding, a motion was held properly refused to strike out the words "it might" from the answer of a medical witness to a question as to whether the injury would permanently affect the plaintiff's nervous system. The basis of the motion was that the answer was speculative. It is held that an expert may answer such a question. One not specially learned cannot know, or intelligently answer, as to such a matter. One specially learned cannot, in many cases, be positive, and can only express a general conclusion in indefinite terms. The doctor was the one to know how definite the answer could truthfully be made. Such an answer by one so skillful is not speculative.—Terre Haute, I. & E. Traction Co. v. Stevenson, Indiana Supreme Court, 123 N. E. 785.

Authority of Health Officers to Make Regulations.—The New York Appellate Division holds that neither under the charter of the city of Rochester or the health ordinance enacted thereunder, nor under chapter 559 of the Laws of 1913 adopting the Public Health Law providing for a public health council, or the Sanitary Code enacted thereunder, can the health officer and commissioner of public safety of the city of Rochester prescribe general regulations, such as that an applicant for a license to sell milk must submit to a blood test for the purpose of determining whether or not he had ever had typhoid fever or was a carrier of typhoid germs. The court says that the scheme of all this legislation is evidently to require the concerted action and judgment of more than one individual as a prerequisite to general regulatory measures, leaving in the commissioner and the health officer a discretion only in the manner of applying in detail those general regulations. The commissioner and the health officer are administrative officials. They have no power to legislate, though they may determine facts and conditions which make applicable the general regulations, and may even prescribe regulations for carrying into effect the general enactments of the appropriate legislative bodies.—People v. Hamilton, 177 N. Y. Supp. 222.

MEDICAL RECORD.

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THE SYMPTOMS AND DIFFERENTIAL DIAGNOSIS OF EPIGASTRIC HERNIA AND GASTRIC ULCER.

PAINLESS epigastric hernia is probably a more frequent condition than is generally suspected, but among the symptoms to which this type of rupture may give rise are pain and vomiting. Unquestionably, in corpulent subjects, it may be difficult to detect an epigastric hernia, but if the subject is placed in the Trendelenburg position and made to cough the lesion can usually be discovered. The preponderant symptom in both epigastric hernia and gastric ulcer is pain. A hernia will occasionally provoke very sharp pain confined to the epigastric region or it may give rise to a dragging sensation or to one of weight, occurring when certain movements are made. The pain does not always remain confined to the epigastrium as it can assume the girdle type, being frequently mistaken for intercostal neuralgia, and although the pain may not be provoked by certain positions of the patient, it is at least increased by them.

The pain of gastric ulcer offers some distinctive characters and varies greatly in intensity according to the case. In some patients a feeling of weight and dragging only is complained of, but on close questioning the pain in ulcer will be found to be most frequently to the right of the median line, though sometimes to the left. The pain extends to the right toward the back or the arm, the dorsal point of pain in this process being between the shoulder blades. The pain provoked in epigastric hernia by movement occurs at any time of the day; not so with gastric ulcer, which is directly related to the state of repletion of the stomach, although a full stomach will sometimes cause pain in cases of gastric hernia from traction on the omental contents of the sac. But pain occurring at the same hour each day should lead to the search for other symptoms of ulcer, either gastric or duodenal.

The second very important and frequent symptom of both processes is vomiting. In epigastric hernia it may be so severe as to compromise the patient's health. The vomitus is bilious, mucous, and influenced by certain positions assumed by the patient. The vomiting occurs soon after eating but never when the patient is lying down. Vomiting in ulcer occurs at times corresponding to periods of gastric intolerance, so that feeding becomes impossible, and is accompanied by painful paroxysms. Relief from the pain takes place when vomiting occurs. In other cases the vomitus assumes the nature of that found in gastric retention, the ulcer having produced a certain degree of stenosis. In this case it is more copious and less frequent. Some cases have been reported in which an epigastric hernia has given rise to hematemesis, but this is uncommon and should lead one to suspect a gastric lesion. The stomach is rarely involved in the hernia so that direct trauma of the gastric wall resulting in hemorrhage is out of the question. Circulatory disturbances due to thromboses of the omental vessels, the omentum being caught in the sac, will give rise to unimportant hemorrhage, if any at all. Palpitation of the epigastric region will give certain indications, especially if the pain complained of is superficial or deep seated. If hernia is the cause, the maximum pain will be found on pressure over the hernial ring or near it, while if a gastric ulcer is the cause only deep palpating will give rise to pain, usually to the right of the median line. The recti muscles will also be rigid.

Besides these subjective symptoms the patient will invariably present functional digestive disturbances. The gastric chemism shows that there is often a hyperchlorhydria alone associated with gastric hypersecretion. Some maintain that this is a reflex hyperchlorhydria, the starting point of the excitation being seated in the hernia and by the anastomosis of the intercostal nerves with the splanchnics stimulating the glandular system of the gastric mucosa—a plausible theory which may explain many cases of simple hyperchlorhydria. It is probable that this condition alone cannot give rise to the symptoms complained of by the patient and many cases of Reichmann's disease are known to have had prepyloric ulcers, so that gastric chemism can hardly give a precise diagnostic indication. More important is the search for blood in the stools, which should never be neglected. Some observers maintain that radioscopy is more useful than radiography in making a diagnosis of gastric ulcer, but this is probably a matter of temperament on the observer's part.

INTERNAL SECRETIONS AND VITAMINES.

PROGRESS is being made in the study of the manner in which the body is developed, which means that knowledge of the endocrine glands and internal secretions is advancing. Up to the present time their functions in the adult have been chiefly considered, the defective, perverted or excessive action of the thyroid gland, the defective action of the adrenalin glands, disease of the pituitary gland, and a long list of disorders owing to the disturbance of the due coordination of these glands. Important and instructive as these studies are, they sink into relative insignificance when compared to discoveries

relating to the functions of the ductless glands in development. For example, it has long been a matter of common knowledge that cretinism, distinguished by dwarfish idiocy, is the result of thyroid failure in childhood, and other discoveries in the same direction are in the making. The endocrine glands and the proper coordination of these glands, frequently termed the "endocrine balance," are essential to the development, seeing that they are in a manner of speaking the directors. Minute specks of glandular tissue must be carefully studied from this aspect. It is not enough to observe closely those glands which have no ducts and apparently do not secrete or rather secrete only internally.

The better known glands, with ducts and secretions, may also produce internal secretions. Of great importance from the age of puberty onwards are the internal secretions of both sexes of the glands of reproduction. These are essentially internal secretions, but they influence development to such an extent that the boy cannot become a man nor the girl a woman without their pervasive and dominating influence. Every one of these internal secretions is a marvel of chemical complexity, and there is no need for wonder that the "endocrine balance" is disturbed so frequently.

These discoveries appear so wonderful that the question may be asked whether we are ever likely to have any means of control over biochemical reactions of such intricacy. Recent discoveries regarding vitamines or accessory food factors are commencing to point out the way. Researches with regard to beriberi and rickets have shown us that two of the vitamine groups are necessary for development. Is there then any relation between these and internal secretions? Dr. Gowland Hopkins has suggested that we may not only have to deal with two distinct and independent factors of growth, internal or endogenous, and external or dietetic respectively, but that rather the action of the external or dietetic factors, the vitamines, is to simulate or activate the internal or endogenous ones. Briefly, according to this theory, the vitamines act by stimulating the endocrine glands and regulating the endocrine balance.

All this offers a fruitful and splendid field for research, and it may be said is quite in line with the trend of medicine of to-day—preventive. Because if we can find how to influence the development of the young we shall be able to prevent the occurrence of many diseases.

In the future it is probable—nay, it appears almost certain, that physiology and pathology must be taught on a different basis. In the future the study of development and the prevention of the factors which turn it into a wrong direction or arrest it may be considered fundamental in the teaching of physiology and pathology.

CARE OF THE INSANE IN SYRIA.

FROM the twentieth report (for 1918 and 1919) of Lebanon Hospital for the Insane at Asfuriyeh, near Beyrout, Syria, it is interesting to note that while all other institutions were closed during the war, this one for the care of the insane, those whom the Moslems look upon as afflicted by the hand of God, remained open during the entire time. This was made possible, according to the director, Dr. Watson Smith, because of the peculiar nature of the work. For while the Moslems will do nothing themselves for the insane, they will not interfere with the work of others in behalf of these unfortunates. The Turks shut down every other foreign institution, but did not interfere with this one; in fact they showed a particular liking for it, and when, soon after Turkey entered the war, they heard that the hospital was having difficulty in obtaining wheat, Djemel Pasha, governor of Syria, one of the Turks active in the war, sent a hundred sacks of flour. In time, however, through the exigencies of war, particularly trying in that part of the world, the difficulties of obtaining food were so great that actual starvation threatened the inmates of the hospital, while thousands of the civil population were dying for lack of food.

When, in the midst of this tragic situation, the British troups came to Beyrout, tired and worn from rapid military operations, and invading troops at that, they did not take long, according to Dr. Smith, to provide their motor wagons to bring wheat to the starving. The Germans, on the other hand, although actually on the ground and in control for months, and seeing the frightful misery about, could not spare their motor wagons to carry wheat, although they were constantly running to Beyrout to transport silk, passengers, or anything for profit. On one occasion, we are told, when camel or rail transport were quite impossible the hospital was obliged to pay to the German military authorities the sum of one hundred and sixteen Turkish pounds for the transport of two tons of wheat from Rayak in motor wagons which were going to Beyrout empty in any case. When the Germans and Turks were escaping from Beyrout on the advance of the British troups, the Turks gave what supplies they had (it was impossible to transport them) to the poor about, while the Germans threw their supplies into the sea.

In the face of such difficulties this worthy institution kept its doors open for the reception and care of a most pathetic element of the Syrian population. One can but hope and believe, after reading this report, that the appeal for funds with which to make this institution an up-to-date hospital for the care of the insane will be generously met.

PULMONARY MANIFESTATIONS OF MALARIA.

THE question as to whether a pure malarial infection can produce the symptoms and physical signs of bronchitis, pulmonary congestion, and consolidation is a vexed one. Some authorities say yes and others dispute the point. In the *Quarterly Journal of Medicine* for October, 1919, Dr. A. W. Falcolner records his experiences in this direction in Macedonia during 1917 and refers to the work

carried out by Anderson and himself in 1916. He classifies the pulmonary manifestations which he observed into the following groups: (1) Bronchitic. (2) Pleuropulmonary congestion with more or less definite evidence of consolidation. (3) Massive collapse of the lung. (4) Concurrent malaria and pneumonia. (5) Pneumonia occurring in chronic malaria without evidence of active malaria. (6) Pleurisy, either dry or with serous or hemorrhagic effusion. Of these he found the bronchitic type the most frequent and states that its most characteristic feature is the way in which the stethoscopic signs vary within a few hours and flit from one position of the lung to the other. The aggravation of symptoms during pyrexia is noted and the sputum generally profuse, is fairly characteristic. The physical signs disappear with remarkable rapidity when quinine is exhibited in adequate amount. This, together with the character of the physical signs, points to the condition being the direct result of the malarial process. Pleuropulmonary congestion with evidence of consolidation is not uncommon. The physical signs are those of pneumonia but general symptoms of pneumonia are lacking or very slight. The physical signs vary with great rapidity. There is no leucocytosis and the condition is amenable to quinine. Concurrent malaria and pneumonia are not rare and the pneumococcus has often been recovered from the blood in such cases. Once the lung symptoms are definite, quinine treatment does not influence the condition. Dry pleurisy is not common, and wet pleurisy is rare. The conclusions that Falcolner reaches are that, although malaria is frequently complicated by pneumococcal infection, numerous cases occur in which there are notable changes in the lungs without any evidence of superadded infection. These may present the physical signs of bronchitis, pulmonary congestion with more or less definite evidence of consolidation, or massive collapse of the lung. In many cases the symptoms at first are almost entirely pulmonary and the malaria infection may be entirely overlooked. Its recognition at the earliest possible moment is important, as untreated with quinine there is a great liability for the lung to become secondarily infected, with the development of true inflammatory changes.

Mobilization of Fractures of the Mandible.

One of the surgical lessons of the war, learned largely through the labors and teaching of Professor Willems of Belgium and Mr. Dowden and others of England, is the undesirability of immobilization in the treatment of broken bones, not only gunshot fractures but those occurring in civil life as well. Mr. William Guy, writing in the *Edinburgh Medical Journal*, March, 1920, applies this principle of mobilization to the treatment of fractures of the mandible. He is of the opinion that there is no fracture on which there has descended with greater malignity what his friend Mr. Dowden has called "the curse of immobilization." Guy quotes from Lucas Championnière's classic "Traitement des Fractures par le Massage" in support of the view that prolonged immobilization is usually contraindicated in the treatment of fracture of the mandible. Guy argues that the aim of treatment should be the re-establishment of function at the earliest possible moment. It is of importance that the fracture should at the termination of treatment be united; it is of still greater importance that the patient should have a lower jaw which is movable, which, in short, he can use. Immobilization in treatment in many instances defeats the attainment of this result. The advocates of immobilization contend that this is necessary to prevent displacement of the fragments by muscular action, and to ignore the action of the muscles as a distorting agent is regarded by many surgeons as a horrible heresy. Guy declares that if this be so, he is another horrible heretic, as he prefers to believe that the main thing is to encourage and assist the patient to correct displacement. In this the muscles directed by the will are the effective factors, and the correct position once obtained is, provided movement has been permitted from the first, generally maintained without assistance. The writer describes at some length the technique of the methods for treating different kinds of fractures of the mandible. He even goes so far as to believe with his mentor, Lucas Championnière, that the dictum that movement is necessary for the successful treatment of fractures is even more applicable to compound than to simple fractures, and acting on these principles he has treated over four hundred fractures of the mandible caused by gunshot wounds of every degree of severity. In the result he is confirmed in his conviction that "le mouvement c'est la vie."

Retrospect of Influenza.

Hergueta makes some original contributions to the history of influenza in Spain. He mentions the outbreaks in 1889 and 1898, both of which began in November. At first cases were simple, but after the sixth week the disease began to be severe. Figures are given of the mortality of grippe from November, 1914, to January, 1920, by years. During the first year the deaths totaled 2,499; during the last year 4,789. The epidemics abated in January in both 1889 and 1919, which appears to show the influence of weather conditions on the severe type of disease. The author whose study appears in *El Siglo Medico* for March 20, 1920, lxvii, 3458, states that the progress of epidemic influenza is always from North to South and from East to West. Of ninety-two epidemics the vast majority ran from November to January. The disease is a universal depressant of function and of resistance to infection. Great virulence in the germ attack may be seen in the robust, while weakening of the resistance to disease is seen in the lighting up of tuberculosis and other diseases. In those carried off in the first day or two, we may often see a special predisposition. The author cites several such patients in whom the sympathetic nervous system was compromised—false angina pectoris, etc.—who quickly succumbed. He is unable to offer any explanation as to why this should be so.

The Pilomotor Reflex.

According to Thomas in *La Médecine* for February, 1920, i, 5, gooseflesh is an index of the state of the sympathetic nervous system. The phenom-

enon may be produced locally or at a distance by irritating the skin. Some parts of the skin are more reflexogenic than others and this may vary in different subjects. Psycho-affective states may elicit the phenomenon. The reflex may become exhausted by frequent repetition of the stimulus. Reflexes may be unilateral if the excitation is unilateral. Under the head of pilomotor reflex the author would include the scrotal and nipple reflexes. In eliciting this reflex one has one of two objects. First, to test the centripetal paths and, second, to test the centrifugal paths of the arc. The author has tested the reflex in many serious wounds of the medulla. He found that the pilomotor centers of the superior extremities were seated in the fourth and seventh dorsal segments, while those for the lower extremities were seated in the ninth and twelfth dorsal segments, and the first and perhaps the second lumbar segments. Persistent gooseflesh without efficient cause indicates a heightened pilomotor tonus. In eliciting the reflex one may use a number of stimuli, as pinching the neck or the trapezius muscle or the application of cold to the thorax or abdomen. Many facts have been collated about the reflex, but as yet they do not seem to have been formulated and the author does not commit himself to the laying down of laws of action.

News of the Week.

Officers of the American Medical Association.

(By Telegraph to the Medical Record.)

At the meeting of the House of Delegates on Thursday afternoon, the following officers were elected:

President, Hubert Work, Pueblo, Colo.;

First Vice-President, Isadore Dyer, New Orleans, La.;

Secretary, Alexander R. Craig, Chicago, Ill.;

Treasurer, William Allen Pusey, Chicago, Ill.;

Speaker of the House of Delegates, Dwight H. Murray, Syracuse, N. Y.;

Vice-Speaker of the House of Delegates, Frederick Cook Warnshuis, Grand Rapids, Mich.;

Trustees, Charles H. Richardson, Washington, D. C.; Wilbur T. Sarles, Sparta, Wis.; Walter T. Williamson, Portland, Ore.;

Member of the Judicial Council, Ira Carleton Chase, Ft. Worth, Texas, for the term of five years;

Member of the Council on Health and Public Instruction, Milton Board, Louisville, Ky., for the term of five years;

Member of the Council on Medical Education and Hospitals, Ray Lyman Wilbur, Stanford University, California, for the term of five years;

Member of the Council on Scientific Assembly, J. Shelton Horsley, Richmond, Va., for five years; Franklin P. Gengenbach, Denver, Colo., for four years; John Edward Lane, New Haven, Conn., for one year.

The next annual session, in 1921, will be held in Boston.

Jacobi Memorial Meeting.—The New York Academy of Medicine will hold a memorial meeting in honor of the late Dr. Abraham Jacobi on the ninetieth anniversary of his birth, May 6, at 8.30 p.m. A bas-relief of Dr. Jacobi will be presented by George McAneny, Esq. It will be accepted by the President of the Academy, Dr. George David Stewart. An oration will be delivered by Dr. George Vincent of the Rockefeller Foundation.

Health Officers to Meet.—The first conference of Ohio health commissioners with the State Department of Health will be held in Columbus, May 12, 13, and 14. Under the new health law it is the duty of every board of health, whether of a city or general district, to appoint the health commissioner as a delegate to the conference.

Typhus Fever.—It is announced from Belgrade that sanitary conditions in the Balkan region are daily assuming more serious aspects, and there is grave danger from the spread of typhus in many localities. Seven thousand Russian refugees have arrived there, and are under the observation and care of the American Red Cross. The U. S. A. Transport *Pocahontas* arrived recently in this port from Dantzig with 1,626 Polish soldiers, among whom were two cases of typhus fever. The soldiers and 150 civilian passengers were sent to Hoffman and Swinburne Islands for observation.

State Section of the American College of Surgeons.—The Montana section of the Fellows of the American College of Surgeons was recently organized in Butte with the assistance of Dr. Franklin H. Martin, national secretary of the organization. Decentralization of the organization and the establishment of State sections that will permit the members of the college to attend the annual meetings in their own territory is stated to be the object of forming State branches of the College.

Public Health and Prohibition.—Prohibition is increasing hospital efficiency and promoting economy in the treatment of hospital cases, according to Frederick D. Green, secretary of the United Hospital Fund of New York City.

The most significant figures quoted by Mr. Green were supplied by the City of New York Board of Ambulance Service under which the city is districted into ambulance zones. This board keeps a record of all calls in these zones. The following figures, giving the number of ambulance calls due to intoxication and alcoholism for the entire city were supplied by James L. Murray, Examiner of the Board:

January, 1919 (no prohibition)	412
February, 1919 (no prohibition)	364
January, 1920 (prohibition half month)	307
February, 1920 (prohibition entire month)	133

Mr. Murray called attention to the fact that Bellevue Hospital, whose services along alcoholic lines were formerly higher than any other hospital, showed, during the first two months under prohibition, the following reduction in ambulance calls for alcoholics:

January, 1919 (no prohibition)	136
February, 1919 (no prohibition)	92
January, 1920 (prohibition half month)	21
February, 1920 (prohibition entire month)	10

The New York Hospital, with the largest am-

bulance service of any private institution in the city, shows the following reduction in calls for alcoholic patients:

January, 1919 (no prohibition) 53
February, 1919 (no prohibition) 47
January, 1920 (prohibition half month) ... 28
February, 1920 (prohibition entire month) 14

There were proportionate decreases in ambulance statistics for Flower Hospital, Knickerbocker Hospital, Lincoln Hospital, and other New York City institutions.

Vacancies in Civil Service Positions Open to Physicians.—The Civil Service Commission of the State of New York announces examinations to be held May 15, for appointments to fill the following positions:

Sanitary Supervisor, State Department of Health. $3500. Age limits 21 to 50 years. Candidates must be physicians and graduates of recognized schools of medicine. They shall (*a*) have served as a health officer of a city, town or village having a population of not less 5,000 persons for a period of at least four years; or (*b*) shall have received instruction approved by the Public Health Council, or a duly authorized committee thereof, in sanitary science, including five hours of instruction per week during the school year in an educational institution, and shall have had at least two years of experience in public health work; or (*c*) shall have received a degree, certificate, or diploma in public health granted after the completion of a course approved by the Public Health Council, in an educational institution, and at least one year of practical experience in public health work; or (*d*) shall have submitted proof satisfactory to the Public Health Council, or a duly authorized committee thereof, that they have actually engaged in public health work of such a character as shall qualify them for the duties of the position. Appointees will not be allowed to engage in the regular practice of medicine or in any other regular occupation or business which will interfere with the full discharge of their duties. Open to both residents and non-residents.

Epidemiologist, State Department of Health. $3500 to $4000. Age limits 21 to 50 years. Candidates must be physicians and graduates of recognized schools of medicine. They must submit evidence satisfactory to the Public Health Council, or a duly authorized committee thereof, that they have had (1) not less than three years of experience in public health work which relates to the cause, prevention, and control of communicable diseases and actual experience in dealing with such diseases; (2) a practical knowledge of vital statistics, and the interpretation of figures relating to morbidity and mortality rates; (3) actual experience in the making of sanitary surveys in cities and rural districts, and (4) a working knowledge of bacteriological technique, which shall include the various methods of making specimens for submission to the laboratory, including lumbar puncture, blood cultures, and throat cultures. Open to both residents and non-residents.

Pathologist, Craig Colony for Epileptics, Sonyea, N. Y. Salary $2500 a year with maintenance. Candidates must be trained and experienced along the following lines, so that not only may they conduct work in these various branches, but direct that of others associated with them; neuropathology, general pathology, performance of autopsies, bacteriology, serology, working knowledge of the technique of various blood examinations and tests, including Wassermann and similar tests, uranalysis, making of vaccines, etc. They will be rated on education, training, experience, and personal qualifications. They may be required to make a written statement of their conception of the duties of the position. Inquiry may be made as to their character and ability and all statements of experience are subject to verification. An interview may be required.

Director, Division of Communicable Diseases, State Department of Health. $4000 to $4500. Age limits 21 to 50 years. Candidates must be physicians and graduates of recognized schools of medicine. They must submit evidence satisfactory to the Public Health Council, or to a duly authorized Committee thereof, that they have had not less than five years of experience in those phases of public health work which relate to the administration, cause, prevention and control of communicable diseases. Open to both residents and non-residents.

Assistant Bacteriologist, State Department of Health. $2000 to $2500. Age limits 25 to 45 years. Candidates should have a collegiate education or its equivalent; a general knowledge of the principles of physics and chemistry; and should possess a thorough knowledge of the principles of bacteriology, infection and immunity. They should have considerable practical experience in the bacteriologic and serologic diagnosis of infectious disease, and in the preparation and standardization of anti toxins, serums, and vaccines. Open to both residents and non-residents and to both citizens and non-citizens.

Application should be sent to the State Civil Service Commission, Albany, N. Y.

Medical Society Elections.—The Hartford (Conn.) County Medical Society, at its annual meeting held April 6, elected the following officers for the ensuing year: *President*, Dr. E. A. Wells, of Hartford; *Vice-President*, Dr. T. G. Alcorn, Thompsonville; *Secretary-Treasurer*, Dr. C. B. Brainard, Hartford.

The Massachusetts Homeopathic Medical Society, at its annual meeting held at Boston, April 14, elected the following officers for the ensuing year: *President*, Dr. George N. Lapham, of Rutland; *Vice-Presidents*, Dr. Charles T. Howard, of Boston, and Dr. Edgar A. Fisher, of Worcester; *Recording Secretary*, Dr. Nathan H. Garrick, of Boston; *Corresponding Secretary*, Dr. Benjamin I. Loring, of Watertown; *Treasurer*, Dr. Thomas M. Strong, of Boston; *Chairman of Censors*, Dr. Harry J. Lee, of Boston.

The South Carolina Medical Association, at its seventy-second annual meeting, held in Greenville, S. C., April 20-21, 1920, elected the following officers for the ensuing year: *President*, Dr. W. P. Timmerman, Batesburg; *First Vice-President*, Dr. J. M. Walker, York; *Second Vice-President*, Dr. W. A. Boyd, Columbia; *Third Vice-President*, Dr. W. W. Fennell, Rock Hill; *Secretary-Treasurer*, Dr. E. A. Hines, Seneca.

Obituary Notes.—Dr. Wallace Harlow Deane, of Springfield, Mass., died of pneumonia on April 10, at the age of sixty-seven. He was graduated from Yale University School of Medicine in 1877, and had practised in Springfield for forty years.

Dr. EDWARD J. CONNEL of New York City died of pneumonia April 11 at the age of 44. He was graduated from Cornell University Medical College in 1899, specializing in ophthalmology and otolaryngology.

Dr. JULIUS JEROME GOLDSTEIN of New York City died April 14 at the age of 36. He was graduated from University and Bellevue Medical College in 1909 and devoted his attention largely to tuberculosis.

Obituary.

JOHN W. S. GOULEY, M. D., NEW YORK.

Dr. J. W. S. GOULEY of this city died on Monday last at the home of his daughter in Brooklyn. He was born in New Orleans of French parentage on March 11, 1832. He was graduated in medicine from the New York College of Physicians and Surgeons in 1853, and after serving a year as interne in Bellevue Hospital, began practice in this city, devoting special attention to general and genito-urinary surgery. During the Civil War, from 1861 to 1864, he served as assistant surgeon in the United States Army. He was demonstrator of anatomy and instructor in histology and operative surgery in the Medical Department of the University of New York from 1859 to 1866, and professor of clinical surgery and genito-urinary diseases in the same institution from 1866 to 1871, and of genito-urinary surgery from 1876 to the date of his retirement from practice. He was surgeon to Bellevue and St. Vincent's Hospitals and held numerous other appointments during his long professional career. During the 70's and early 80's he made many valuable contributions to medical literature, chiefly on urological subjects.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, April 9, 1920.

Medical Practice in Dublin.—As may be imagined the terrible social and political conditions in Ireland have introduced a good deal of disorder into medical practice. Much credit therefore is due to Irish practitioners for the lack of serious consequences that have followed the many obstacles and difficulties they have encountered on every side. In ordinary times in many districts of Ireland medical practice is carried on under many and grave disabilities of undermanning, long journeys, and meager pay. The revolutionary times which now exist have naturally emphasized these disabilities, but scarcely to the extent which might have been anticipated. In a city like Dublin, however, the increased gravity of the situation is obvious. The medical man, so to speak, carries his life in his hands. Between the hours of midnight and five in the morning medical men are granted special permits, as also are nurses and those engaged in certain other legitimate business, to be abroad during prohibited hours, but it is needless to say that permission to be out and about by no means insures safety. The hesitation of a doctor, or the stupidity of an armed employee may bring about a tragedy at any moment. But over and above the dangers involved in the night work of a medical man there remains a tremendous amount of inconvenience, the result of the existing abnormal conditions of medical practice. Calls to attend are not received, sometimes because messengers refuse to carry out their functions or because in haste to discharge them they omit to obtain the necessary permits and are detained by the police authorities. The telephone service is inefficient and dilatory to an incredible degree, and it is absolutely impossible to procure special drugs or, in fact, any pharmaceutical material with the promptness which is so frequently essential to their remedial or curative employment. It says much for the courage and coolheadedness of the Dublin medical practitioners that under such critical and dangerous conditions they have continued their night services, on the whole, with success.

Tuberculosis Settlements.—The Ministry of Health have appointed Colonel Nathan Paw, the well-known Liverpool authority on tuberculosis, and Dr. Varrier Jones, tthe head of the Papworth tuberculosis colony, to visit various likely localities with a view to the establishment of village settlements for tuberculous ex-service men. This is in connection with the contemplated scheme for sanatoriums, to which reference has been made in previous letters.

Measuring Emotions.—Research as to many of the phenomena connected with the nervous system is proceeding apace. Some of the results of experiments in this direction are well deserving of attention as they possess a practical application. By means of the galvanometer, for instance, under the supervision of Professor Waller of South Kensington, it has been found that "large and sudden" electrical responses which are independent of any muscular movement, accompany a great many of the shocks and alarms of life. In the first series of experiments strong and disagreeable stimuli were used, that is, an unexpected loud sound, an unexpected burn, a disagreeable pungent smell, a painful thought. It was found that while muscular movement of any sort might be absent marked electrical reactions occurred. It was found likewise that the most effective ideas were such as were accompanied by disagreeable or painful emotion and that the threat of a burn was often more effective in altering electrical relations than the burn itself. Lighting a match might give a larger effect than the application of a match to the free hand. The apprehension of a bad smell which had just been experienced proved to be particularly effective. The expected prick of a needle produced in some cases more effect than an unexpected prick. The conclusion was drawn that different subjects react differently to different stimuli, and the same subject in different states of health and at different times of day react differently to identical stimulation. It will be observed that this kind of work amounts to a measurement of emotion in terms of electrical phenomena. It may later be possible to state to how great extent the stress and strain of modern life is caused by noise and other stimuli, a question of very great importance at the present time when energy has had to be expended in most prodigal fashion.

Cost of War Pensions.—According to the Ap-

propriation Account of the Ministry of Pensions the gross expenditure of the department in 1918-19 amounted to £46,563,831 against £23,152,123 in the previous year. Some of the principal items under the head of pensions and gratuities were: disabled naval officers, £73,706, disabled army officers, £623,570, treatment of disabled officers, nurses, and men, £4,587,753, training of disabled officers, nurses, men, and widows, £791,-254, provision of artificial appliances, £341,623. Owing to rapidity of demobilization and the large number of men who put forward claims to pensions on account of disability it was considered by the military authorities to be impracticable to carry out the normal procedure of bringing such men before medical boards, and provisional examination by a medical officer was substituted. In the exceptional circumstances the Auditor-General raised no objection to the grant of temporary pensions, and examination by a medical board takes place before renewal. In addition to agreements on a capitation basis with various institutions for the treatment of discharged and disabled officers and men, proposals for the provision of hospital accommodation under ministry control were placed before the treasury in 1918. Subject to certain limits and conditions general sanction was given for capital expenditure and employment of staff in cases where direct management by the Ministry was unavoidable. Some fifteen institutions were open in March, 1919, and a test examination has been applied to the accounts with generally satisfactory results. The altered conditions arising out of the armistice necessitated a review of the position and fresh proposals have accordingly been submitted to the Treasury.

Closing of an Important London Special Hospital.—Not a day goes by that the journals do not announce that several hospitals in different parts of the country are in grievous difficulties. A few days ago Sir Frederick Macmillan, chairman of the Governors of the National Hospital for the Paralyzed and Epileptic, Queen Square, Bloomsbury, London, when presiding at its annual meeting, commented on the grave financial straits of the institution. He stated that during the year 1919 the total expenditure of the hospital and convalescent home exceeded the income by nearly £7,000, the deficit being due to rise in prices. Either a considerable sum of money must be raised immediately or the hospital must be closed. If £10,000 could be raised this year and £5,000 for each of the next two years over the present income the debt could be liquidated and the hospital could be carried on until 1922. Appeal was, therefore, made for contributions toward the special maintenance fund, but in the event of failure to obtain promises the governors had determined to close the hospital with the exception of the out-patient department and possibly the surgical wing. The Convalescent Home, the pathological department, the school of massage, and the Annexes, Bray Court and Lonsdale House, which were either self-supporting or were paid for by the Ministry of Pensions, would be carried on. That such an institution as the National Hospital for Paralyzed and Epileptic should be menaced with closing, shows to how critical a stage the hospital situation in Great Britain has come. The Queen Square Hospital is the most important special hospital of its kind in this country and one of the most important in the world. It was in this institution that Hughlings Jackson made his discoveries and that Gowers made his name. It is especially notable for being the place in which that great surgeon and thinker, Victor Horsley, practically revolutionized brain surgery. When a hospital of the eminence and endowed with so great traditions is threatened with obliteration, it can truly be said that the time has come to reorganize the hospital system of the country.

Sanatorium Benefit Under the Insurance Act.—As mentioned in previous letters sanatorium treatment of tuberculosis has been taken away from the domain of the insurance committees. On March 25 last Lieut.-Commander Kenworthy asked the Minister of Health if he would state to whom and in what manner it was proposed to transfer the duty of providing sanatorium benefit to insured persons, hitherto performed by the insurance committees, under the provisions of the new National Health Insurance Bill. Dr. Addison, the Minister of Health, replied that institutional treatment for insured persons suffering from tuberculosis was already being provided in most areas by the public health authorities under agreements made with the Insurance Committees, and it was proposed to transfer the duty of providing such treatment to appropriate public health authorities. He said that he was hoping to introduce legislation for this purpose at an early date. Domiciliary treatment for insured persons suffering from tuberculosis would be provided by insurance committees under Clause 4 of the National Health Insurance Bill as part of the medical benefit.

LETTER FROM PARIS.

(From an Occasional Correspondent.)

PARIS, April 10, 1920.

DURING a recent visit to Marseilles, your correspondent had the good fortune to obtain some first-hand information relating to typhus fever as met with in the Serbian soldiers who developed the disease at Bizerte, Tunisia, in 1916, and the epidemic of 1917 which raged in Moldavia, Roumania. The following is a brief summary of what the French military physicians who were present at both these epidemics, have found and their conclusions cannot be devoid of interest to your readers. Their observations confirm the belief that neither fleas, bedbugs, nor ticks are the vectors of typhus and also that the sputum and mucous secretions and the dust of hospital wards are in no way dangerous and cannot propagate the disease.

Typhus fever has no symptomatology or any pathognomonic sign, in the strict sense of the word, belonging to it. The exanthema, formerly regarded as a constant sign, may frequently be absent. The eruption does not generally appear before the third to the fifth day, so that it does not help in making an early diagnosis. However, certain symptoms will permit the physician to make a diagnosis if he be on the lookout for them, namely, the peculiar temperature shooting to a point and followed by a remission on the second

day, the oculopharyngonasal catarrh and buccal exanthema. The clinical forms of typhus fever are varied. There is the medium form, the typhus levissimus or mild ambulatory type without exanthema, and lastly the petechial ataxo-adynamic form. The latter is by far the most serious of all whether it be marked by a predominance of phenomena of septicemic infection (cardiac symptoms) or of nervous intoxication (cerebral or bulbar phenomena).

The complications, which are numerous, are both medical and surgical in type, but they are to be dealt with by the classical treatment of these affections, independently of the general treatment of the case which, of course, must never be neglected. Morbid associations are not exceptional, especially in the greater epidemics. Typhus fever is an absolutely cyclical disease undergoing its evolution in fifteen days in the average case. The prodromes are often distinctly perceptible for those that know them, the incubation period being normally from seven to fifteen days, but the phenomena accompanying them may pass completely unnoticed if the attention of the subject has not been especially attracted by the bite of a louse. The patient presents a characteristic exanthema but which, it should be repeated, is often wanting. Unless some serious complication results in death or, on the contrary, prolong the affection by febrile manifestations quite independent from its evolution, defervescence occurs on the thirteenth or the fourteenth day of the disease. The patient then either recovers or dies. Death therefore is more prone to take place in hyperthermy, but it may occur in hypothermy, although there may be no intercurrent causal factor, such as associated cholera, for example.

Strictly speaking, typhus is one of the epidemic diseases of armies in the field but it also attacks the population of cities or the country as well, although no army may be present. The poor are the most commonly stricken and the well-to-do classes are less prone to be afflicted, merely because of better hygienic surroundings. However, physicians and nurses have been found to pay an enormous tribute to the disease. The mortality varies with the age, constitution and pathologic antecedents of the patient, the average being from 13 to 20 per cent, while in intellectual subjects—physicians in particular—it may attain from 30 to 40 per cent. One attack of typhus does not appear to confer an absolute immunity to the disease and recurrences, although rare, are quite possible.

In a fully developed epidemic the diagnosis is relatively easy but such is not the case when there is no epidemic. Reference has been made to the three cardinal initial symptoms and it may be added that the differential diagnosis of typhus from other toxi-infectious processes is relatively easy. The seroreactions which have so far been proposed as specific are valueless and laboratory examinations only result in negative data but permit one to eliminate other febrile diseases. Certitude can only be had by guinea-pig inoculation, especially when this is done in series, but the result will be known only after the clinical evolution of the typhus fever will have taken place in the patient, but it will allow the physician to make a *retrospective* diagnosis, the importance of which is always great from the viewpoint of prophylaxis. This diagnosis can be made after recovery of the patient—even a very long time after—by merely looking at the subject from the difficulty in walking, the ankylosis of the joints, the insomnia and pain in the limbs which is particularly marked at night.

Experimental research work and microbiological studies have not as yet given any conclusive results in respect to the pathogenic agent of typhus fever. It is supposed to be a protozoön since we now know that the louse is its intermediary host. However this may be, the various bacteria which have been described have now been recognized as simply symbiotic agents of the specific organism yet to be discovered. At all events, this unknown virus appears to belong to the category of filtrating virus and in all probability it is fixed in the white corpuscles of the blood. The changes in the red blood corpuscles described by some observers do not appear to be in any way specific. All the viscera of guinea-pigs experimentally infected contain the virus during the febrile period and Nicolle of Algiers has realized its unlimited preservation by successive passages in this animal.

The treatment of typhus is above all prophylactic: deparasitation and hygiene. Next it is symptomatic and deals with the clinical manifestations while lastly, serotherapy may be resorted to. Various sera have been essayed, serum from convalescents, from patients in the height of the disease and experimental sera, but of all the procedures so far advanced, that of Nicolle is the only one worth retaining in practice. Unquestionably, this serum cannot be regarded as specific because the true agent of typhus is still an unknown quantity, but until it has been discovered it would seem from reports that the antiexanthematic serum should be used in the treatment of this dire morbid process, combined with all the other resources of general therapeutics.

PRACTICE OF HYGIENE IN PLACE OF PREACHING.

To the Editor of the Medical Record:

Sir:—The public and the medical profession are getting thoroughly convinced that a department for the use of passive and active exercise as a means of restoration of health and prevention of disease should be established upon a recognized standard. If the hospitals include this undertaking, such work will be under scientific supervision and will give the desired results.

If it is not practical to embody such a department in existing institutions, an equipped pioneer institution should be planned, which should be self-supporting and economically independent.

This work in European countries is an applied science that has the indorsement of medical authorities. They consider it a means of vital importance for assistance in completeing their work for health and reconstruction.

C. Carman Harriot.

125 West Fifty-eighth Street,
New York.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 15, 1920, clxxxii, 16.

1. Gas Bacillus Infection in Civil Practice. Ernest L. Hunt.
2. The "Common Cold" in Relation to Certain Microorganisms, and Its Treatment with Bacterial Vaccines. Cleaveland Floyd.
3. X-Ray Diagnosis and Therapy. Ester M. Sundelöf.
4. The Surgical Treatment of Chronic Empyema. Wyman Whittemore.
5. An Unusual Case of Myelitis. Arthur L. Kinne.

2. The "Common Cold" in Relation to Certain Microorganisms, and Its Treatment with Bacterial Vaccines.—Cleaveland Floyd uses the term "common cold" to designate the infection of the various respiratory passages seen so commonly in this part of the country in the winter. The results of many recent observations, he says, point to the predominant place of members of the streptococcus and pneumococcus groups in the etiology of infections of the upper respiratory tract. He suggests a general classification of the various types of the "common cold" based on fairly constant bacteriological finds. The production of an active immunity through the use of appropriate bacterial vaccines will be of value prophylactically, he thinks, in the control of infections of the upper respiratory tract. The method devised has been as follows: The isolation of members of the staphylococcus, streptococcus and pneumococcus from cases where the infection has been severe, and the preparation of bacterial vaccines from each one of these types of organisms. Therapeutically, early in the fall, three or four inoculations are given of a combination of the vaccines of the streptococcus and staphylococcus groups. In the early part of the winter a second series of inoculations is given with a combination of the vaccines of the members of the streptococcus and pneumococcus groups, and this is repeated in the early spring. Should a cold develop in the interim, the patient is urged to present himself for inoculation during the first twelve hours of the onset of the infection. One or two inoculations will occasionally bring the cold to a rapid termination. In those cases where abortive colds appear, or where, in spite of inoculations, an extensive infection develops, microorganisms are studied in each instance, and autogenous preparations made and used in subsequent inoculations. The results of this method have been in some instances unsuccessful, but in the majority the inoculations have materially modified the severity of the types of colds usually endured, and have diminished their frequency. In some individuals practical immunity from acute respiratory infections has been secured. This has been especially the case in those individuals who have an abnormal susceptibility to this type of infection and in whom it is not uncommon to see one cold rapidly succeeding another.

New York Medical Journal.

April 17, 1920, cxi, 16.

1. Dental Infection in the Causation of Mental and Nervous Diseases. Charles K. Mills.
2. The Present Status of Oral Sepsis in Relation to Medical Diseases. James M. Anders.
3. Observations on Dental Therapeutics Based on Clinical and Röntgen Ray Investigations. William Middleton Fine.
4. The Relation of Focal Infection to Mental Diseases. Henry A. Cotton.
5. Major Surgery of the Maxillary Bone Through the Oral Orifice. Stewart L. McCurdy.
6. Oral Hygiene in Relation to Public Health. Alfred C. Fones.
7. A Survey of Dental Infections. M. Diamond.
8. The Evils of Fixed Bridge Work. Herman E. S. Chayes
9. Notes on Mouth Sepsis. Lester R. Cahn.

2. The Present Status of Oral Sepsis in Relation to Medical Diseases.—James M. Anders holds that a closer cooperation, better team work, between dentist and physician is urgently needed in order to set at rest many questions bearing upon the etiological relationship of mouth to systemic infection. In any case of oral sepsis in which constitutional symptoms are found in association, the dental surgeon should report both the *x*-ray findings and those of the bacteriological laboratory to the physician in charge. While the writer favors consultations between dentists and physicians in cases of tooth root disease with their symptoms manifested by outlying organs, he calls attention to the fact that the recent developments in so-called focal infections have thrown added responsibilities upon the dental profession, and these should be recognized now, and fully met in the immediate future. When the time arrives that a complete report from the dentist is available to the physician, it will be incumbent upon the latter to show the connection between the local and general morbid states, including their symptoms. It will be the clear duty of the internist to demonstrate the presence of an identical organism or its pathological effects, in the affected organs outside of the mouth cavity. In this way, and in this way only, can real progress be made that will be of mutual advantage to the dental and medical professions. In this way also may it be hoped to arrest the serious blunder of sacrificing useful teeth. The scientific study of mouth infection from the viewpoint of diagnosis can never reach the high plane which its dignity and importance demand so long as it does not receive the continual impetus resulting from combined laboratory and clinical methods. It follows that every progressive dentist and physician must utilize the advantages offered by a private o public bacteriological laboratory, so as to be able to make an etiological diagnosis whenever possible. The question of the prevention of tooth root disease should be preeminent in the minds of all who are interested in the health and welfare of the race. This must come through education and enlightenment, especially with regard to the cleanliness and care of the masticating apparatus. An abscess about a tooth root which cannot be freely drained should not lead to the immediate extraction of the organ; apiectomy, if required, whenever feasible should be undertaken. In the treatment of an abscess that can be drained the preparation and use of an autogenous vaccine is to be advised, with the object and assurance of shortening the disease. Among the various morbid medical conditions of oral origin, as shown by the fact that correction or removal of the chronic focus about the teeth has effected a cure, or at all events, a well marked and immediate amelioration of the symptoms, the writer mentions arthritis, endocarditis, pericarditis, myocarditis, myositis, gastritis, gastric ulcer, myocardial degeneration, arterial fibrosis, chronic nephritis, and exophthalmic goiter.

Journal of the American Medical Association.

April 17, 1920, lxxiv, 16.

1. Operation and Reoperation for Gallstone Diseases. John B. Deaver, with a Report on Pathologic Research by Stanley P. Reimann.
2. Ideals and Their Function in Medical Education. George E. Vincent.
3. The Larger Function of State University Medical Schools. Walter A. Jessup.
4. Changes in the Blood in Influenza. Ralph A. Kinsella and Goronwy O. Broun.
5. Can the Tuberculosis Transmission Rate Be Reduced? James G. Cumming.
6. Typhoid Fever in the American Expeditionary Forces: A Clinical Study of Three Hundred and Seventy-three Cases. Victor Clarence Vaughan, Jr.

1. Operation and Reoperation for Gallstone Disease.—John B. Deaver discusses the question of recurrence of symptoms after the surgical treatment of affections of the gallbladder and the biliary passages, with report of pathological research by Stanley P. Reimann. In a previous report on more than a thousand operations on the gallbladder and the biliary passages Deaver found that 4.07 per cent. were reoperative cases, some of the patients having had three operations. Among 800 cases coming under his observation since January, 1916, 8.5 per cent. (seventy cases) were secondary (there were also a few tertiary) operations. Of the recent series, fifty-one patients were originally operated on elsewhere by other surgeons, the remaining nineteen having been operated on by the writer. In thirty-six of the fifty-one, recurrence took place after a cholecystostomy and fifteen after a cholecystectomy. The longest interval between operations was fifteen years. The average interval between operations in this group was about five years and nine months, the average period of freedom from symptoms being about two years and three months. In his per-

sonal series it was found that in eight cases the symptoms recurred after primary cholecystostomy, one after choledochostomy, and ten after cholecystectomy, or 1.3 per cent. after removal and 10 per cent. after drainage operation. Excluding the fifty-one cases of the first group (in which the patients were primarily operated on elsewhere), a primary cholecystectomy was performed in 611 and cholecystostomy in 78 cases; other primary operations consisted of cholecystoduodenostomy, 27; choledochostomy, 11; choledochoduodenostomy, 1; exploratory, 16; pancreatostomy, 4; and duodenotomy, 1. The longest interval between operations in the drained cases was fourteen years, the shortest one month, with an average of six years and four months, while freedom from symptoms averaged three years, the longest period being thirteen years and the shortest one month. Of the fourteen patients whose gallbladders were removed, five remained well for a period varying from two months to two years, two were not benefited by operation, and seven required secondary operation during convalescence. The great variance between recurrence after radical surgery of the gallbladder and those that take place after conservative surgery leads to the manifest conclusion that radical treatment gives the greater prospect of a permanent cure. From the pathological studies it is concluded that the peraticular streptococci recovered from human gall bladders and injected intravenously into rabbits showed no elective affinity for the gall bladders of the animals; at least not with one injection of what seemed an adequate number of organisms. This conclusion in itself, however, does not negative the importance of the streptococci in the human gall bladder. With streptococci in the gall bladder, a chronic toxemia may be present for long periods of time; a constant stimulus for lymphangitis and connective tissue proliferation is present, and an opportunity for a general bacteriemia is always at hand.

The Lancet.

March 27, 1920, cxcviii, 13.

1. Hunterian Lecture on the Late Results of the Surgical Treatment of Chronic Ulcers of the Stomach and Duodenum. James Sherren.
2. The Significance of Arneth's Reaction, with Particular Reference to Pulmonary Tuberculosis. H. A. Treadgold.
3. The Problem of the "Positive Throat" in Diphtheria Convalescents. A Clinical Study of 50 Consecutive Vaccine-treated Cases. James Law Brownlie.
4. Life Assurance and Glycosuria. R. T. Williamson.
5. A Note on the Diagnosis of Tuberculosis in Recruits and Pensioners. John Guy.
6. Army Hygiene in the Future. Sir John Goodwin.

1. The Late Results of the Surgical Treatment of Chronic Ulcers of the Stomach and Duodenum.—James Sherren summarized this Hunterian lecture delivered before the Royal College of Surgeons of England on February 11, as follows: While gastrojejunostomy combined with general abdominal exploration and dealing with other diseased organs is curative in the majority of cases of chronic duodenal ulcer, each must be studied, and those eroding the pancreas or spreading to the stomach removed. Gastric ulcers which have perforated and are adherent to neighboring organs, indurated ulcers on the lesser curvature, and all in which there is any suspicion of malignancy, must be treated by partial gastrectomy. Gastrojejunostomy for chronic ulcer will become the less frequent operation. Symptoms arising later if the correct operative procedure has been adopted are due to mechanical or ulcerative changes in the region of the anastomosis, both prevented by careful technique, in the majority of cases, and becoming less frequent as individual experience ripens.

3. The Problem of the "Positive Throat" in Diphtheria Convalescents.—James Law Brownlie, from a clinical study of fifty consecutive vaccine-treated cases, concludes that local antiseptic throat applications are unreliable for the carrier and the positive throat. Diphtheria vaccine produces well-defined degeneracy in morphological appearance of the cultured organism, followed by its complete dispersal from the locality invaded. In the past the diphtheria carrier has been subjected to hospital residence for weeks, perhaps months, which were avoidable. Diphtheria vaccine is effective in the treatment of the positive throat convalescents, and its use is administratively and economically sound.

British Medical Journal.

March 27, 1920, i, 3091.

1. Abdominal Emergencies. Prof. Rutherford Morison.
2. Remarks on the Association of Aortic Endocarditis and Aortitis. J. E. MacIlwaine.
3. Treatment of Cerebrospinal Fever by Monotypical Serum. W. T. Munro.
4. The Association of Lethargy with the Influenza Bacillus. W. M. Crofton.
5. Appendicitis without Protective Stiffening of the Abdominal Wall. John D. Malcolm.
6. A Note on Artificial Pneumothorax. With Description of a New Needle. Frederick C. Coley.
7. Dermatitis Artefact in the Army. Haldin Davis.
8. Treatment of Gonorrhea in Women. R. Stafford Foss.

1. Abdominal Emergencies.—Professor Rutherford Morison holds that in every case of abdominal emergency for which one may be called the patient has abdominal pain. The first question to be answered is whether this is due to some serious cause or not, and that can often be decided, if the patient is seen in the early stage, after a single look. "Abdominal facies" is an important aid to diagnosis for the observant clinician. At the commencement of every serious abdominal emergency there is "shock," and this produces effects so obvious as to alarm the patient's friends. It is well to listen to their story, because in some cases "shock" very quickly disappears and a stage of reaction follows, when recovery may appear to be so complete as to deceive the most wary. This occurs even in such serious and hopeless conditions as lacerations of the hollow viscera by injury and perforations of gastrointestinal ulcers. Operation within six hours would save 90 per cent. of these patients; the policy of "wait and see' 'allows 90 per cent. of them to die. In the reactive or second stage the patient may look and feel so much better that it seems almost impossible that there are serious results to follow. Now is the time when the diagnosis is most difficult, and often most important, and it may be impossible to answer the first question one must ask oneself, namely, whether the condition is or is not a serious one. The third clue is to be found in the history of pain. The causes of abdominal pain are special to the abdomen. Illustrative cases are cited to show the significance of irritation of the peritoneum, forcible contraction of unstriated muscle, and dragging on the mesentery (torsion). Rigidity of the abdominal wall is a physical sign of great importance. Intraabdominal hemorrhage is a serious abdominal emergency, of which pain is usually the first symptom, whether it be caused by injury or not. Relief of pain is what the patient demands, but before giving either a hypodermic injection or morphine or any purgative it is essential to determine whether or not the case is a serious one. A rise in the pulse rate is the most important sign of progressive mischief, and in doubtful cases the pulse rate should be noted every hour. Operation offers the only reasonable chance in an overwhelming majority of serious cases, and its chief objects, in the abdomen, as everywhere, are (1) to arrest hemorrhage, (2) to remove or exclude a focus of disease, and (3) to deal with mechanical obstacles. Every patient with a more than ordinary pain in the abdomen ought to be sent for observation, and. if needful, operation, to a properly equipped hospital without delay. It is always to be remembered that abdominal pain may depend upon conditions not strictly surgical, and the advantage of a physician's cooperation should not be lost sight of. The writer suggests the following list of possibilities: 1. Irritation of the lower six intercostal nerves, resulting from pneumonia, pleurisy (purulent or otherwise), pericarditis, herpes zoster, growths or caries of the vertebræ, locomotor ataxia, and hysteria. 2. General toxic conditions, such as arise from chronic kidney disease, diabetes, Addison's disease, Henoch's purpura, ptomaine poisoning, lead poisoning, typhoid fever. 3. Abdominal conditions, such as pyelitis, kidney and ureter stones, tuberculous lymphatic glands, and especially acute dilatation of the stomach, and in women, dysmenorrhea. The most common cause of an abdominal emergency is appendicitis. Acute intestinal obstruction, perforation of stomach and duodenum, gallstones

and cholecystitis, ovarian cyst with twisted pedicle, and ectopic gestation are other conditions considered in this connection.

5. **Appendicitis Without Protective Stiffening of the Abdominal Wall.**—John D. Malcolm calls attention to the fact that the importance of protective contraction of the abdominal wall over the cecal region as an indication of appendicitis is sometimes exaggerated. He cites a case in proof.

Finska Läkaresällskapets Handlingar.

January-February, 1920, lxii, 1-2.

Radiation Treatment of Uterine Myoma and Hemorrhagic Metropathy.—Boije has treated 52 cases of myoma and 14 of metropathia hemorrhagica with *x*-rays. Of the former the hemorrhage was checked in 83 per cent., while in 8 patients it was not checked but brought to normal limits. In 95 per cent. of cases studied the tumors were contracted to a minimum or materially. In a few cases these were hardly palpable. In but one of the 52 cases was the result entirely negative. There was one case, however, in which it was decided to operate and one patient vanished from observation, so that the end result was in doubt. The observation period lasted from 4 months to 5 years. Of 14 cases of metropathia hemorrhagica complete amenorrhea was obtained in 9, while in 4 normal menstruation was secured. The other patient vanished from observation. The author, in view of these superior results, recommends the method when by reason of myoma heart or other complication the knife is contraindicated. Radiation is contraindicated in secondary degeneration of myoma and in polypoid, submucous and other operable cases. The pains of myoma yield rapidly to radiation in cases under examination. If the patients have flowed to the point of anemia and narcosis is contraindicated, the tumors may be rayed until the case becomes operable. Generally speaking radiation is not desirable in young women and should be thought of only after the age of 40. This side of that age even a palliative operation is better than the rays. In cases for radiation before climacteric years one should not seek to suppress the flow of blood outright but only to bring it within the bounds of normal menstruation.

Le Progrès Médical.

March 13, 1920, xlviii, 11.

Treatment of Burns Since the Close of the War.—Rozieès writes on a timely theme which involves the reputation of the so-called ambrine and its numerous substitutes and congeners. Most practitioners to-day are using picric acid and the ointment of Reclus. A number of other substances of the most opposite type have more or less value. It is clear that we must have something more than empiricism as a guide to arrive at any standardization. Resin of amber is sedative and keratogenic at the same time, or in other words, both analgesic and cicatrizant. The alleged benefits derived from the routine use of the ambrine type may be omitted as already well known. They at least give a line on the nature of a remey for burns which should possess the qualities mentioned above. Sunlight is said to possess both of these and is useful *per se* and as an adjuvant to the dressing. Treatment of burns by this resourse is an old subject and was written up in 1904 by Bernhard. It may be begun after the subsidence of the acute symptoms or about 5 days after the injury. A third mode of treating burns is founded on the prevention of adhesion to the dressings. Before the late war Quénu had recommended the use of silk. After initial disinfection with weak sublimate (1-10,000) the silk is applied dipped in ordinary serum. Another resource is tulle which has been smeared with some soothing substance—vaseline, wax, castor oil, balsam of Peru, etc. Tulle already prepared in this manner may now be procured. The author has had two cases in which this prepared tulle gave perfect results in sedation and cicatrization.

La Riforma Medica.

February 14, 1920, xxxvi, 7.

Grippal Meningoencephalitis.—Pace gives two cases of this affection from the clinic of Prof. Cadarelli, which is referred to as extremely rare. One is as follows: Housewife, aged 36, was still in hospital recovering from an operation for prolapse when she was attacked suddenly by fever, headache, delirium, and motor agitation. On the third day was transferred to the medical side in full delirium. Diagnosis hesitated between malarial fever, central pneumonia, and primary cerebral grippe. Rachicentesis brought away clear fluid under high pressure and was followed by singular improvement, temperature falling two centigrade degrees to nearly normal. The microscope showed a classical lymphocytosis. Another case seen about the same time closely resembled the preceding, but in the second the cerebral affection was not primary, but a sequela of an attack of ordinary influenza. The patient also developed a comatose instead of delirious state, and it was necessary to exclude uremia and apoplexy. The patient was subjected to venesection and spinal puncture and the latter, as in the first case, was followed by great relief and the punctate showed the same qualities. As both patients recovered it was hardly possible to clinch the diagnosis, but the second case was plainly grippal, and the resemblance of the first to the second was striking. From what we know of autopsy cases, together with certain data concerning the punctates, the probable lesion is meningoencephalitis. Of such interest is the fact that these cases do not bear any resemblance to any of the many types of lethargic encephalitis. Coma in the latter has been only terminal coma in the fatal case.

La Riforma Medica.

February 28, 1920, xxxvi, 9.

Magnesium in Cancer.—In an editorial note it is stated that the tumultuous proliferation seen in a neoplasm is believed by Boveri to be due to a defect of chromosomes. There may be many factors which can determine the proliferation which may also be visualized as a defense phenomenon. It is claimed that the disequilibrium is aggravated by the monovalent alkalies and antagonized by the bivalent calcium and magnesium. The elderly are said to be defective in reserves of magnesium. The power of magnesium locally applied over warts and even malignant papilloma in dogs is ascribed to reconstitution. The author quotes from an article by Dubard published during 1919 on the magnesium theory of cancer, which has been reproduced in part in various journals, but is not accessible in the original. The paper in question was published in *La Bourgogne Médicale* for July 15, 1919, and it is not known that any of the alleged finds have been substantiated. Dubard has seen magnesium waste in the urine during cancer. Shortage of this element in the organism is felt notably in the nervous centers, especially in the grey matter, and is attended by neurasthenic depression and diminished functional capacity. This has heretofore been attributed to waste of phosphoric acid, but apparently Dubard accuses the loss of the magnesium in the phosphates. Dubard has given a mixture of calcined magnesia, sodium fluoride, manganese binoxide (both the latter in minute amounts only) and phosphoric acid over a period of 6 or 8 months with alleged good results. In the cerebral affection it is possible that magnesium only acts by fixing the phosphorus.

Fleas and Contagion.—Ferrari not only believes that fleas play a rôle in the spread of smallpox, measles, and scarlet fever, but asserts that this flea transmission offsets some of the benefits of vaccination. He would thus explain why a considerable number vaccinated within ten years from a given date contract the disease during its epidemic incidence. The revaccinated, while they are relatively immune, present not a few cases of mild variola during epidemics. The inference is that vaccination ought always to be associated with vigorous house to house fumigation to abolish the insect menace. This view, he says, is now that which obtains in Germany, for while the flea has not been specifically accused in that country, house fumigation is practised with good statistical results as a necessary part of prophylaxis in association with vaccination.—*Brazil Medico.*

Book Reviews.

A Concise History of Medicine. By Sir William Osler, M.D., F.R.S., Regius Professor Medicine in the University of Oxford. Baltimore, Md.: Published by permission of the Encyclopaedia Americana Publishing Co. by The Medical Standard Book Co. 1919.

The distinguished author begins with the time of Boerhaave, Morgani, Haller, Cullen, Hunter and Hahnemann, these men serving rather to give the impetus to modern medical thought than to make actual contributions to modern practice. They were succeeded by Laennec, Bright, and a school of similar clinicians. The subject matter now becomes limited to the United States and the students of American fevers and other autochthonous maladies, the founders of medical schools and American medical philanthropy. The author passes to laboratory research, specialism—with especial regard to alienism—and organized prophylaxis, the latter being founded on bacteriology and parasitology. These branches, since they represent the keystone of the arch, receive proportionate space. Next follows an account of the progress made in stamping out the great plagues, fourteen of which are discussed in detail. The essay closes with a few paragraphs on modern therapeutics as contrasted with those of former years, drugs and depletion having been succeeded largely by dietetics, physical therapeutics and mental measures.

The Medical Aspects of Mustard Gas Poisoning. By Alfred Scott Warthin, Ph.D., M.D., Professor of Pathology and Director of the Pathological Laboratories of the University of Michigan, Ann Arbor, Mich., and Carl Vernon Weller, M.S., M.D., Assistant Professor of Pathology, University of Michigan, Ann Arbor, Mich. With 156 original illustrations. St. Louis: C. V. Mosby Company. 1919.

The investigations which form the basis of this volume were begun as an independent war research problem in 1917, and were continued when the Pathological Laboratory of the Medical Department of the University of Michigan became associated with the Medical Advisory Board of the Chemical Warfare Service. The various individual reports have been gathered together, corrected and expended to form the chief part of this volume, which covers, with bibliography and index, 267 pages. The eight chapters include the medical aspects of gassing in warfare, the cutaneous lesions produced by mustard gas (dichlorethylsulphide), the ocular lesions, the lesions of the respiratory and gastrointestinal tracts, the general pathology, the clinical pathology, the treatment of the injuries, and a general summary of dichlorethylsulphide poisoning.

Nervous and Mental Diseases. By Archibald Church, M.D., Professor of Nervous and Mental Diseases in Northwestern University Medical School, Chicago; and Frederick Peterson, M.D., formerly Professor of Psychiatry, Columbia University. Ninth edition, revised. With 350 illustrations. Philadelphia and London: W. B. Saunders Company, 1919.

For twenty years this book has been a favorite with students and practitioners. It is, in reality, two monographs; each author being responsible for his own section. The present revision presents no radical changes. The subjects of General Paresis and Traumatic Insanity have been rewritten, and various additions and corrections have been made. The style is attractive, and the authors have presented their facts clearly and concisely; at the same time they have been careful not to include the numerous radical views and fads which have not yet met with more than a limited acceptance. In another edition some mention should be made of: Cerebrospinal fluid, wet brain, choked disc, Brudzinski's sign, vagotonia, catalepsy, and method of re-education; these terms are not in the index of the book.

The Opium Monopoly. By Ellen N. La Motte. New York: The Macmillan Company, 1920.

This volume is written without bias and the data are drawn from government sources. The reader may doubtless have been led to believe that the evils depicted had been suppressed or at least repressed, but it is only the enlightened communities of Europe and America which have been hostile to the opium traffic. In the Far East there is apparently no great moral struggle. Business men and the consumer both sanction the traffic which is a matter of supply and demand. The author sketches the opium traffic in Hindustan, Japan, Singapore and the Straits Settlements, Siam, the great Chinese seaports, Turkey and Persia, Mauretius, British North Borneo, etc., and in the Western Hemisphere, British Guiana. The British and Indian monopolies, the traffic in modern Japan and in China before the reform movement are outlined. There is no opium problem in Australia, New Zealand and the Philippines while in China it is limited to the treaty ports, etc.

A Manual of Obstetrics. By John Cooke Hirst, M.D., Associate in Obstetrics, School of Medicine, University of Pennsylvania; Obstetrician and Gynecologist to the Philadelphia General Hospital; Obstetrician to St. Agnes Hospital; Gynecologist to Mount Sinai Hospital; Gynecologist to the American Hospital for Diseases of the Stomach; Fellow of the College of Physicians, Philadelphia. With 216 illustrations. Philadelphia and London: W. B. Saunders Company, 1919.

This little volume is intermediate in size and contents between the compend and the text-book. The author has managed to include everything of importance and has carefully avoided unnecessary and unprofitable discussion. The book presents the modern ideas and teachings on the subject of obstetrics, it contains only the very essential points of embryology, and the pathology of the new-born infant is limited to the puerperium. The author writes clearly and concisely, and has not forgotten the difficulties of the beginner. Among the chapters which are of special interest may be mentioned those on the mechanism of labor, hemorrhages, and the forceps. The illustrations are well selected. As a first book on the important subject of obstetrics, this volume can be warmly commended to medical students.

A Manual on Foot Care and Shoe Fitting. For Officers of the U. S. Navy and U. S. Marine Corps. By W. L. Mann, Ph.B., A.M., M.D., Lieutenant Commander (M.C.), U. S. Navy, Post Surgeon, Marine Barracks, Quantico, Va., and S. A. Folsom. M.D., Lieutenant (M.C.), U. S. Navy; Medical Officer in Charge of Orthopedic Division. Medical Department, Marine Barracks, Quantico, Va. With 58 illustrations. Philadelphia: P. Blakiston's Son & Co., 1920.

This booklet contains much valuable information and illustration, the text of which from the small compass allowed is given in very condensed form. There is no logical arrangement into chapters or other divisions, the matter having been arranged by subjects *seriatim*. There are numerous sections headed "shoe fitting" of which the first appears to be a misprint for sock fitting. The book deals with the foot, the shoe, the sock, the diseases and deformities of the foot and the detailed technics of shoe fitting.

The Systematic Development of X-Ray Plates and Films. By Lehmann Wendell, B.S., D.D.S. Chief of Photographic Work, Instructor of Prosthetics and Orthodontias, College of Dentistry, University of Minnesota. St. Louis: C. V. Mosby Company, 1919.

The nine chapters of the book are devoted respectively to the Introduction, Fundamentals, Methods of Development, Developing Formulas, Alteration of the Negative of Chemical Means, Tanks, Chemicals, Useful Suggestions, the Darkroom and Lantern Slide Making. The book therefore conforms to manuals of ordinary photography. There are 33 figures which include *x*-rays of bones and especially teeth and photographs and cuts of apparatus. The book is intended to fill an unoccupied space in *x*-ray literature and the author appears to have well performed what he attempted.

Le Ferite del Retto. By E. Ricciolli, Bologna: L. Cappelli, 1919.

This brochure of 65 pages, well illustrated by photographs, is based in part on personal experience with seventeen military cases of wounds of the rectum, which were often badly complicated. It is certain that these injuries are very rare and that nearly always the subject is badly wounded, usually in the vicinity of the rectum and at times at a distance from the same. There are no pathognomonic symptoms and the diagnosis is made only after careful examination. Death occurs as usual from shock, hemorrhage, sepsis or peritonitis.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventy-first Annual Session, Held in New Orleans, April 26-30, 1920.

(Special Report by Telegraph to the MEDICAL RECORD.)

HOUSE OF DELEGATES.

DR. HUBERT WORK OF PUEBLO, COLO., SPEAKER, IN THE CHAIR.

First Day—Monday, April 26.

President's Report.—Dr. ALEXANDER LAMBERT presented this report, which was devoted to a discussion of the hospital situation and urging the association to take a greater interest in hospital development. For a number of years this interest had been evinced in making the hospital not merely a place in which to treat the sick, but an institution playing a prominent part in medical education and closely linked up with the medical schools. In order that it might meet these requirements there should be at its head a man with a combination of medical and executive ability. It had been recognized for some years that to develop hospital organization properly so that the hosiptal might fulfill its various functions as an institution, there should be some association or body composed of the various agencies interested in different branches of hospital work. A conference of a large number of such organizations was called in Cincinnati last year in the hope that they would form an association for the purpose of developping the hospitals as they should be developed. This effort was not successful. The subject, however, was of such importance to the medical profession that they should lend their support to it. This was first recognized by the American College of Surgeons, which had undertaken to formulate a standard for hospitals as regarded equipment and technique. At present but 20 per cent. of the hospitals in the United States had an interne service; 80 per cent. of the smaller hospitals did not have internes. As the council on education of the American Medical Association had done such effective work in standardizing medical education it would seem that they should undertake the work of hospital standardization and development along similar lines. A question that came up was whether to put this work under one of the councils or bureaus already in existence or to create a new council. This question had been discussed by the trustees and the majority favored the creation of a special council. In this work the cooperation of the various special societies interested in special activities connected with hospital development should be sought. Physicians should also be interested in the nursing question, which was so vitally connected with hospital work. The American Medical Association could little afford to stand aloof from this undertaking. The president recommended the creation of a standing committee on hospital standardization and development to be known as the Council on Hospitals, and that the by-laws be amended so as to provide for such a council.

Secretary's Report.—Dr. ALEXANDER CRAIG of Chicago presented this report. It stated that the members of the various constituent State associations on April 1, 1920, numbered 83,338; the fellowship of the scientific assembly on April 1 was 47,045, being a net increase in eleven months of 1,633. It was recalled that last year comment was made relative to the activity of the association in assisting physicians formerly in military service to resume their civil practice, and the universal opinion was that physicians were receiving a hearty welcome in localities where they formerly practised. It was gratifying to know that the organized profession had met the obligation which was then anticipated, and that in large part the members of the Medical Reserve Corps had again taken up civil practice. There were now other obligations somewhat similar in character to be undertaken, new economic and civil relationships which were of peculiar interest to individual practitioners. In all these questions the association must taken an active interest. In order to cope with these problems it was advisable to strengthen the organization wherever possible by concerted effort to increase membership. There was a possible danger from a multiplicity of organizations in the same territory having practically the same object. In a few instances new organizations had diverted from county and State branches the activities of certain members who had previously taken a prominent part in county and State work. It had been proposed that financial support should be given to certain of their new bodies which otherwise might deprive branches of the American Medical Association of funds which if available could be used through regular channels of State and county organizations. This matter was brought before the house in order that it might be brought to the attention of State associations and county societies and that all branches of the organization and members of the medical profession should be urged to devote themselves to the advancement as well as the extension of county, State, and national bodies.

Report of the Board of Trustees.—Dr. PHILIP MARVEL of Atlantic City, N. J., presented this report. In these times of unusual political and social unrest, matters of the association were progressing satisfactorily. The detailed statement showed that 3,760,351 copies of the *Journal* were printed in 1919, the average weekly circulation being 74,919, an increase of 7,375. The first year of the Spanish edition had been reasonably satisfactory, the subscription list being 2,908. It was published at a loss, however, of a little less than $10,000. The report reviewed the status of the special journals published by the association and stated that it was proposed to commence the publication of the *Archives of Surgery* in July. It was planned to publish this bi-monthly at first. An appeal from a large number of physicians had been made for a special journal to take the place of the *American Journal of Obstetrics and Diseases of Women and Children*, but the present condition of the printing plant did not warrant undertaking this. The report intimated that it might be necessary to raise the prices of all the journals a dollar a year each. The cooperative Medical Advertising Bureau was no longer an experiment; it was a great success and was so regarded, it was believed, by all the State journals it represented. The bureau had demonstrated that it was possible to secure for these journals a fair amount of advertising, of which neither the journals themselves nor the medical profession need be ashamed. The bureau had removed the temptation to accept that class of advertising which for so many years had been not altogether creditable. With reference to the work of the Council on Pharmacy and Chemistry, a suggestion had been made last year that there be closer cooperation between the large pharmaceutical houses and the Council on Pharmacy and Chemistry. In reply to this a statement was submitted to the effect that when the Council was organized it was hoped that all the large pharmaceutical houses would find it possible and desirable, if not actually more profitable, to cooperate, and to shape their business methods so as to make their proprietary and other articles conform to the conservative standards upon which the council based its rules, and thus render such articles acceptable for "New and Unofficial Remedies." They had been disappointed in this hope, for many pharmaceutical houses were not only unwilling to cooperate, but in many instances actually exhibited definite antagonism. Evidently the problem had resolved itself into this: The Council, constituted of scientific men, working without remuneration in the interest of scientific medicine and the medical profession, expected and rightfully, the cooperation and support of the members of that profession. What was needed, therefore, was active, sympathetic cooperation of physicians; then the cooperation of the pharmaceutical houses would follow as a matter of course. The interest of the profession and public in the work of the propagander department was increasing. During the past year the department had received more inquiries from newspapers regarding medical "copy" than ever before, and had also had an unusually large number of inquiries relative to itinerant quacks. In reply to these inquiries data were furnished which in many instances sufficed as a basis for action that had materially protected the public: in some instances the

information was used as the basis of legal action against quacks. The department also had answered a remarkably large number of inquiries from schools and colleges, showing the degree of attention that teachers were giving to the nostrum evil, and the knowledge they had of the availability of the propaganda department's educational material. More than the usual number of inquires had been received regarding these patent medicines, whose most potent ingredient was alcohol. Pamphlets, educational posters, and stereopticon slides that had been prepared and issued by the propaganda department continued in active demand. One of these pamphlets was considered of sufficient importance to be introduced into the records of a government committee that was considering a bill designed to restrict advertisements relating to the treatment of venereal diseases and of certain sexual disorders. A new edition of "Nostrums and Quackery" was in the hands of the printers and would be issued shortly. This department of the *Journal* continued to justify its existence. As a clearing house for information on subjects with which it dealt it had proved a boon alike to the profession and the public.

The Treasurer's Report, which formed a part of the report of the Board of Trustees, showed the reserve fund of the association on December 31, 1919, to be $283,186. The surplus at the beginning of the year amounted to $471,661.50, and the surplus at the end of the year amounted to $456,839.39, a decrease of $14,822.11.

Report of the Judicial Council.—Dr. M. L. HARRIS of Chicago submitted a revised copy of the constitution and by-laws which at first sight, he said, might give the impression that many radical changes had been made, but upon closer investigation it would be seen that such was not really the case. During the past few years of evolutionary development of the association quite a number of changes had taken place in the character of the work done, as well as in the manner of doing it. Some of these changes, while fully recognized, had not been clearly set forth in the by-laws. The constitution likewise had failed to state correctly that character and form of organization. Opportunity had, therefore, been taken to define the organization as it really was and had been since the reorganization in 1901. Verbiage had been changed in many places for the purpose of clarification and to eliminate ambiguity and duplications, but there were no changes made in principles or fundamentals. During the past year the council had been collecting data on the subject of old age and invalidity insurance for members of the association. A brief questionnaire had been sent to the secretary of every county medical society affiliated with the organization. The questionnaire asked for information as to the number of physicians in the county dependent on financial aid and as to how many of that number were members of the county medical society, also the number over 65 years of age dependent because of age, with the age of each, if known, and the number under 65 dependent because of physical disability, with the cause of physical disability, if known. Reports were received from every State in the Union, and covered 53.48 per cent. of the total number of physicians in the entire country, or 77,083 of the 144,116, estimated total number of physicians in the country. One hundred and fifty-six were reported to be dependent on financial aid; 120 on account of old age, and 36 on account of physical disability. Only 42,824 of the 77,983 reported were members of the American Medical Association, and of this number less than 2 per cent. were dependent. In studying these statistics one was impressed by the remakably small number of dependent physicians.

Dr. Harris did not think it an appropriate time to consider changes in detail and suggested that these be taken up after the report was returned from the Reference Committee. Old age pensions might be treated as a local matter that could be left. so far as the financial side was concerned, with State and local organizations.

Report of Council on Health and Public Instruction. Dr. VICTOR C. VAUGHAN of Ann Arbor, chairman, called attention to the report of 1919 in which it was stated that one of the more urgent needs in the present public health situation was an increased knowledge regarding organized and official public health activities as a basis for constructive legislation. In 1914 the Council said the necessity for such an investigation need hardly more than be stated. The American Medical Association stood unreservedly pledged to the securing at the earliest possible moment of an adequate national health organization. No careful study had ever been made, from a legal standpoint, of the exact limitations of the federal government along public health lines. What could the national government do under the constitution for public health? No one was to-day in position to answer this question authoritatively. As a result, bills were drafted and measures proposed that would probably, if adopted, be unconstitutional, while such measures as the Harrison narcotic law, a law intended solely for improvement of public health conditions in broader sense, were passed ostensibly as revenue measures and were later by amendment converted into revenue producing measures with serious injustice and inconvenience to law-abiding physicians. If Congress had power to regulate the sale of habit-forming drugs for the public good, then it was not necessary for Congress to pass such measures under the guise of revenue laws which, after their passage, were distorted and misconstrued by federal officials into unfair and inequitable revenue-producing measures. This country would never have a federal department of public health such as had been advocated rather vaguely for fifty years past, until public health functions and powers of the federal government under the Constitution had been definitely determined. Two questions must be answered: First, What could the federal government do for public health; and, second, What was the federal government now doing for public health? These questions were not at present being considered by any other organization, yet their solution was the fundamental development of public health in this country.

Following the Atlantic City meeting, at a joint committee from the Council and the executive committee of state health officers, an agreement was made to cooperate in endeavoring to secure a reorganization of federal public health agencies. The possibility of the Council undertaking a survey of public health work was discussed and this led to realization that any such survey carried on by private or unofficial agencies would be neither constructive nor authoritative and that such an investigation could be made only by a commission created by act of Congress authorized and empowered to summon before it heads of the various bureaus and departments, and to call for official reports, estimates, records of expenditures, etc. A careful study of the situation in Washington, together with an inquiry that the legal and parliamentary questions involved, showed that the best form of securing the end sought was by means of a joint concurrent resolution. Such resolution was accordingly drafted and introduced into the Senate by Hon. Joseph E. France of Maryland, as Senate joint concurrent resolution 14, and into the House by Hon. E. E. Denison of Illinois, as House joint concurrent resolution 33. The resolution provided for a joint committee to consist of three members of the Senate and three members of the House "to make a survey of and report on these activities of the several departments, divisions, bureaus, offices, and agencies of the Government of the United States which relate to the protection and promotion of public health, sanitation, care of the sick and injured, and collection and dissemination of information relating thereto." The committee was directed to report to Congress. This resolution passed the Senate on December 20. The New Orleans session of the American Public Health Association endorsed the action of the joint committee, urging the passage of the resolutions by Congress and authorizing the appointment of a committee to cooperate with the joint committee in securing the passage of this resolution. The committee thus created formed an effective means whereby the combined influence of three organizations could be utilized for constructive public health work. The Council felt that for the first time in the history of the association it was on the right track. It was hoped that the concurrent resolution would pass the House at the present session and that a committee might be appointed to carry on its survey during the summer recess of Congress so as to report early in December.

After reviewing the report on legal work submitted at the 1919 session, this report stated that during the past year a second volume of the medicolegal series on the "Medicolegal Relations of Physicians" had been completed and was now being prepared for publication. This digest contained 3,000 Supreme Court decisions on all the personal legal relations of physicians, except malpractice, and would be of great value to the profession in affording authoritative information on many legal questions of vital importance to physicians. Plans were being made for the compilation of a third volume on the "Powers and Duties of Health Officers" which the growing work of municipal, county, and State health departments had rendered imperative.

In its 1919 report the Council had summarized the history of vital statistics legislation in this country, showing that in 1906 when the committee on legislation took up this work in cooperation with the division of vital statistics of the Bureau of the Census, there were only 10 States in the Union that had any effective laws for registration of deaths, and only 8 in which there was birth registration. A model bill on vital statistics had now been adopted in all but five States, namely, Arizona, Iowa, Nevada, South Dakota, and West Virginia. The house of delegates had reported upon and endorsed a model law and urged its adoption on various State associations. This support had been of the greatest assistance in securing the adoption of these laws in the various States. The Council urged the house of delegates to reaffirm this endorsement and to urge the State medical associations in States that had not adopted it to take the lead in educating public opinion in these States and to secure its adoption at the next session of the legislature. The subcommittee on protection of scientific research had, during the past year, done one of the best pieces of work in its history. Senate bill 1258, introduced by Senator Myer of Montana, while apparently only intended to forbid the use of dogs for experimental purposes in the District of Columbia, was in reality an opening wedge for general restrictive legislation. The bill was referred to the judiciary committee of the Senate and by this committee referred to a subcommittee consisting of Senator Norris of Nebraska, chairman; Senator Colt of Rhode Island, and Senator Ashurst of Arizona. Hearings covering several days were held in Washington during the first week in November, 1919. The usual lobby of antivivisectionists, officers of antivivisection societies, and others was present to urge the passage of the bill. The scientific side of the case was presented by an imposing array of distinguished scientific men under the leadership of Dr. Walter B. Cannon of Harvard Medical School. It was doubtful if any discussion of this question had ever been more brilliantly or convincingly conducted. A full report of the hearing, published by the committee, formed an interesting collection of scientific data as well as an exposition of the misstatements and fallacious arguments of the antivivisectionists. The bill has never been reported out of committee.

Soon after the organization of the original committee on defense of scientific research, a set of rules for the care of animals in scientific laboratories was formulated and printed and copies were distributed to each medical college and scientific laboratory in the country with a request that they be posted and enforced. This voluntary action on the part of the medical profession for the regulation of any possible abuses in animal experimentation had proved one of the strongest arguments against the adoption of special legislation for this purpose. Although the rules were still being enforced, the length of time that had elapsed since their distribution made it advisable, in the opinion of the committee, to print a new edition of the rules and send them to all scientific laboratories. Copies of these rules with circular letter have therefore been sent to each of 85 medical colleges and eleven additional laboratories.

The Committee on Conservation of Vision stated that in addition to 20 pamphlets now on hand, forming a popular series on the conservation of vision, two others were now under consideration, one on crossed eyes and one on cataract. The chairman from this committee and secretary for the Council had conferred with the committee from the American Optical Association with a view to the inauguration of a campaign for the education of the public on conservation of vision especially among school children and industrial employees. This plan if consummated would be financed by the American Optical Company.

The Committee on Cooperation with the National Education Association was reorganized at October meeting of Council. A fourth pamphlet in the series prepared by this committee on the results of health conservation in rural schools was now in course of preparation.

The Committee on Social Insurance appointed by the Council in 1915 reported that the House of Delegates had not as yet seen fit to commit the association to any positive position on this question, evidently feeling that the time had not yet come for the association to go on record either for or against social insurance. The members of House of Delegates, of course understood that the House of Delegates was the only body under the constitution and by-laws of the association, that had any power or authority to adopt any policy or commit the association to any opinion on this or any other question. Its determination lay entirely outside the jurisdiction of the Council. Evidently this fact was not clearly understood by many members, inasmuch as in the last few months statements had appeared in several State journals, either in the editorial column or under the head of correspondence, criticising the Council for failure to take a positive position against social insurance. Such criticism of course was entirely unwarranted, as in was not the function of the Council to formulate the policies of the association. The failure of Davenport bill to pass the New York Legislature left no State in which this question at present was up for discussion in any concerted form, while the growing opposition of physicians and the increasing attention given to it in professional circles would probably prevent the passage of social insurance bills in any State without the medical profession being thoroughly informed and prepared to participate in the discussion of them. The objects which the Council had in view in creating this committee, viz., to arouse the medical profession to a discussion of this subject and to prevent the premature adoption of any such measures in this country, as had been done in England, without full knowledge of the medical profession, had evidently been accomplished.

The Council called attention to the increased registration tax for physicians under the Harrison law which had been increased from one to three dollars. The Council pointed out that this law was enacted by Congress to carry out our international obligations in compliance with the recommendations of Shanghai commission on control of opium traffic, and that it was extremely doubtful whether Congress had any authority under the constitution to regulate importation and sale of drugs so long as the object of regulation was the improvement of public health or the moral status of the people; and that in order to give Congress jurisdiction on this subject, the Harrison law, like the Esch phosphorus bill, had been put in the form of a revenue measure. The American Medical Association and its *Journal* cooperated heartily and cheerfully in the enactment of this measure, in the hope that it would be of material value in restricting the use of narcotic drugs to legitimate purposes. The medical profession of the country also accepted the imposition of the tax and the inconvenience of registration as its contribution to the operation of the law and as necessary accompaniments of any practical plan for control of illicit traffic in habit-forming drugs. The object of the law was not and never had been the raising of revenue. The revenue feature was incidental and secondary, yet in the revenue bill for 1918 the license tax for physicians under Harrison law was increased from one dollar to three dollars. Estimating the number of physicians in the United States at 150,000, this increase formed an unwarranted and inequitable tax on physicians of $300,000 a year. A license law was no more effective with a $3 fee than with a $1 fee. The only possible justification of the Harrison law was the public good; the expense of the operation of the law should therefore be borne by the public and not by a special tax levied on one particular class. The Council recommended that the House of Delegates record its emphatic disapproval of this exploitation of physicians

and that it demand reduction of the registration fee for physicians to a nominal amount and only so long as the law remained in force. The Harrison law had now been in operation a sufficient length of time to afford a fair opportunity of determining its effectiveness. It must be admitted that it had failed of the purpose for which it was enacted, namely, restriction of use of habit-forming drugs to legitimate purposes. It was estimated that there was imported into this country each year four or five times as much opium as was needed for medical purposes. Reports indicated that the efforts to enforce the law in face of this oversupply of drugs had resulted in a marked increase in illicit distribution of opium, morphine, heroine cocaine, and other prohibited drugs, while extortion of the unfortunate victims of drug habits had been made possible by illegal methods under which the traffic was necessarily carried on. Enormous profits of the illegal traffic in drugs had led to systematic efforts to increase the number of prospective customers while the opportunities for profits due to the dishonest enforcement of the law in different localities had led to blackmail and official corruption. Continued failure and scandal could but result so long as it was possible to produce and bring into this country each year many times the amount of these drugs needed for legitimate purposes. The only effective method of control was by Government, through the United States Public Health Service being given complete control of the importation and distribution of habit-forming drugs, the forbidding of their manufacture or importation by any private individual or firm, the ascertaining of the approximate amount needed each year for legitimate purposes, the importation of this amount under Government control and its distribution to properly qualified and registered persons through the Public Health Service, with requirement of strict accountability for all drugs issued. The council recommended that it be instructed to inaugurate an investigation into (1) the amount of narcotic drugs required for each year for legitimate purposes; (2) the amount of narcotic drugs now actually imported into the country, and (3) the devising of effective methods by which these drugs under proper Government supervision might be restricted to legitimate uses.

Report of the Council on Medical Education.—Dr. ARTHUR DEAN BEVAN submitted this report, which stated that instead of 162 medical colleges, which existed in 1904, this country now had but 86, the character of which had been greatly improved. Instead of only 3 per cent in 1904 requiring two or more years of college work for admission now 92 per cent had that standard. The lowest ebb in the enrollment of medical students due to the adoption of higher entrance qualifications was, 13,052 students in 1918-19. An estimate showed that the enrollment in the present session 13,554 students. Increased enrollments of premedical students showed that the classes in medical schools would continue to increase at least during next several years. The trend of medical schools to limit their enrollments of medical students was in the interests of better medical education. Even with this limitation the capacity of Class A medical schools was sufficient to care for many more than were at present enrolled in medical schools and the capacity could be easily expanded to meet future needs. With the higher standards adopted during the last sixteen years, the requirements for admission to medical schools in United States were now on par with other leading countries. The American scheme of premidical education was of particular advantage in that the student could postpone his final selection of the medical profession until he was best qualified to make that choice. Hospital internships were formerly voluntarily obtained by a great majority of medical graduates, but now an internship had been made an essential qualification for license in ten States and it had been adopted as essential for a degree by eleven medical schools. The present demand for hospital internships could not be met if the number of medical school graduates should be doubled or trebled each year, which increase was not necessary to meet the normal demand for physicians. The hospital interne problem might be solved by (1) extending the internship to two years, (2) employing resident physicians, (3) training assistants or nurses to do much of the work now devolving on internes, (4) having stenographers take down histories from dictation at the time the staff members examined patients. There was no scarcity of physicians in United States, but there was an imperfect distribution of the present supply. Medical care in rural communities was improving rapidly with better roads, automobiles, etc., by which the services of physicians in nearby cities might be more readily secured.

A reinspection of all medical colleges was being made by the council preparatory to a revision of the classification of medical schools. This resurvey was also revealing many improvements as compared with conditions found in 1906. The improvement in hospital service was now one of the most important works confronting the medical profession. It was work in which, naturally, physicians were most largely concerned. The American Medical Association also was the agency in the best position to do the work. The work of the association in connection with hospitals had rapidly grown since 1903. Under the Council on Medical Education there was now a bureau on hospitals with a man who devoted his entire time to the work. With the rapidly increased interest in hospital development during the last few years, the work had been correspondingly extended. Besides collecting hospital information each biennium for the American Medical Directory, more elaborate surveys of all hospitals were made in 1912-14 and 1915-16. A third extensive survey was now in progress. An advisory committee on hospitals to cooperate with the Council had been appointed by every State medical society. These committees were doing splendid work and several had undertaken the personal inspection of all hospitals in their States. The association should continue to conduct a clearing house of hospital information; further develop the hospital service department in the *Journal;* perpetuate indexes and classifications; inspect hospitals where satisfactory information was not otherwise obtained; create permanent hospital committees in all States; develop closer relationship with individual hospitals; and cooperate with other agencies working for better hospital service. An organization known as the American Conference on Hospital Service had been created at the suggestion of the Council on Medical Education in which various agencies interested in hospitals were represented. The first meeting was held at the American Medical Association headquarters, Chicago, on April 21, 1919. Subsequent meetings for the completion of organization were held in Cincinnati on September 9-19, 1919, and again in Chicago on March 3-4, 1920.

There was great need in this country of increased and improved facilities for graduate medical education. This need could be best supplied by our leading university medical departments. Efforts should be continued to rearrange educational methods so that the average age of medical graduates might be reduced by at least two years. The solution now seemed to be in reorganization of intermediate and high school education. Extravagant and unnecessary expenditure of money in the development of medical education should be deprecated. In some recent plans for development this point seemed to have been entirely disregarded. There was a serious tendency in present day medical education to drift into the ultrascientific and to ignore or belittle the development of a closer relationship of the preclinical and clinical branches. This tendency would be decreased if it was required that teachers of laboratory departments in medical schools should have had a complete medical training by which they would obtain the medical point of view.

Report of the Council on Scientific Assembly.—Dr. H. SHELTON HORSLEY of Richmond, Va., chairman, reported that the council held a conference on January 10, at which all sections were represented by their secretaries or one or other executive officers. Arrangements were made so that each section would hold one meeting on each of the days assigned for section meetings during the 1920 session. Seven sections convened each morning and eight each afternoon. In the opinion of the council this had made it possible to provide a well balanced scientific program for the entire scientific assembly. At the last annual session of the House of Delegates the section on dermatology requested that

its name be changed to the section on dermatology and syphilology. The council recommended that this request be complied with. The council recommended that the by-laws be amended so that the time allowed for the presentation of papers before the sections be limited to fifteen minutes, and that no one be allowed to discuss a paper more than once or for more than five minutes, except with unanimous consent of those present.

Report of the Committee on Red Cross Medical Work.—Dr. CHARLES W. RICHARDSON reported that the committee having put itself in relation with the American Red Cross, it found the American Red Cross had decided it was useless to call a meeting of the committee or to put it into action this year on account of the cessation of war and that no further need of general action existed between the Red Cross and the American Medical Association. The committee therefore requested that it be discharged.

These reports were referred to the respective reference committees.

Resolutions Opposing Compulsory Health Insurance.—Resolutions were presented stating that the American Medical Association was opposed to any plan embodying a system of compulsory contributory insurance against illness or any other plan of compulsory health insurance which provided that medical service be rendered to contributors or their dependents, provided it was controlled or regulated by any State or Federal Government.

Medical and Surgical History of the War.—A resolution was offered that an appropriation of $150,000 which had been made to the Surgeon General's office by Congress be used in the preparation of a medical and surgical history of the war.

Second Day—Tuesday, April 27.

Report of the Reference Committee.—The Reference Committee, to which had been submitted the various reports made on Monday, recommended as follows:

Report of Judicial Council: The committee submitted the revised constitution and by-laws to the House. The changes in the same were taken up, discussed, and voted on seriatim, and the revised constitution and by-laws were adopted by the House as a whole.

Legislation and Public Relations, Report of the Council on Health and Public Instruction, and that of the Special Committee on the Narcotic Drug Situation: The Reference Committee reported that it had considered the reports of both 1919 and 1920 and commended the progressive spirit of the Council in dealing with these many problems of vital importance to the medical profession. It recommended that the House of Delegates endorse and approve of the Senate concurrent resolution providing for a joint congressional committee to make a survey and report on Federal public health activities, and that it urge its passage by the House of Representatives. Such survey would furnish information needed and would mark another step forward in securing national health organization. The committee approved of the medicolegal work which had been carried on and recommended that the Council be instructed to complete this work. The work of the Council in securing the passage of a model bill for registration of deaths and births was approved and the Council was instructed to urge the medical societies in States now without adequate laws on this subject to take the lead at the next legislature in their States to have this bill enacted. The work of the Committee of Scientific Research was approved, and it was recommended that a report of the hearings before the Senate committee on antivivisection be reprinted as one of its educational pamphlets. It also offered the recommendation that the State associations have committees appointed to attend the State Teachers' Associations and to ask the appointment of a committee from the Teachers' Association in each State to cooperate with the medical profession to promote health in the public schools. The committee recommended that the House record its disapproval of the inequitable increase in the cost of registration of physicians under the Harrison law and demand a reduction of the fee to a nominal amount so long as this law should remain in force. The only effective solution of the narcotic drug question was for the Federal Government to take complete control of the importation of habit-forming drugs, restrict the importation to an amount required for legitimate purposes, and provide for the distribution through the Public Health Service of such drugs to properly qualified and responsible persons only. It recommended that the Council on Health and Public Instruction be directed to inaugurate a systematic survey and then to report on the amount of narcotic drugs required each year for legitimate purposes, and on the methods by which these drugs might be restricted to legitimate purposes. It also urged that other recommendations be adopted as follows: That ambulatory treatment of drug addicts so far as it related to prescribing and dispensing of narcotic drugs to addicts for self-administration at their convenience be emphatically condemned. That heroine be eliminated from all medical preparations and that it should not be prescribed or dispensed, that the importation, manufacture, and sale of heroine should be prohibited in the United States. That Senator France's bill 2785 and Representative Rainey's bill 11778 to provide aid from the United States to several States in the prevention and control of narcotic drug addiction and in the care and treatment of drug addicts be approved, and that Senator France and Representative Rainey be so notified. In view of a statement in the Government report that about 90 per cent. of all narcotic drugs now imported were used for other than medical purposes, the Treasury Department was respectfully urged to study and report on the narcotic drug situation, including the question of Government control of these drugs; and that the Bureau of Public Health of the Treasury Department be respectfully requested to continue the compilation of State laws and regulations relating to habit forming drugs and bring it up to date. The committee recommended the adoption of the report as a whole and urged the Association to lend encouragement and assistance to the Council in order that the work might be continued.

Health Insurance: The Reference Committee had carefully considered the resolutions on health insurance, as amended, and recommended their adoption. It also offered a resolution that the Council on Health and Public Instruction be instructed to investigate and make a survey regarding the adequacy of medical service to the public, and to report at next meeting. All the resolutions presented by the Reference Committee were adopted.

OPENING MEETING.

Tuesday Evening, April 26, 1920.

DR. ALEXANDER LAMBERT OF NEW YORK, PRESIDENT, IN THE CHAIR.

THE meeting, which was held in the Shriners' Temple, was called to order by the president, Prayer was offered by Bishop Laval.

Addresses of Welcome.—Owing to the unavoidable absence of Mayor Behrman, the Hon. Mr. Riggs extended the welcome of city to the association. The medical profession of Louisiana extended a warm welcome through Dr. Homer Dupuy, president of the Louisiana State Medical Society. On behalf of the people of the State, Governor Elect John M. Parker extended a cordial welcome. In his address he expressed his appreciation of the honorable privilege which was his of addressing such an intelligent and patriotic body as the American Medical Association. He appeared before this body feeling better than he had at any time since his nomination for governor, owing to the fact that for the first time in the history of Louisiana arrangements had been made for properly taking care of the insane, feebleminded, defectives, and other persons needing hospital and institutional care. Within the last few years, in traveling over the State, he had been impressed with the lack of proper facilities for caring for these individuals, and had determined that during his incumbency no politics should enter directly or indirectly into the management of institutions for the treatment and care of these unfortunates, who formed a considerably increasing element of the community. He asked that distinguished and experienced alienists suggest the names of young physicians who would be able and willing to make a special study to

fit themselves for manning these institutions, so that their management might in time be in the hands of men absolutely free from political influence, and capable of giving the very best service. The great medical centers of the East could be of invaluable assistance to the South in this regard. What was needed, not only in Louisiana but in other southern States, was a radical commonsense change in the management of these public institutions. In this work he earnestly bespoke the cooperation and assistance of the American Medical Association.

Introduction of the Incoming President.—Dr. ALEXANDER LAMBERT, the retiring president, in introducing and installing the president elect, Surgeon General William C. Braisted, U. S. Navy, paid a glowing tribute to the Navy, which had always been held high in esteem by the American people. The association had expressed this appreciation by making the surgeon general of the Navy its president.

Address of the President.*

Rear Admiral W. C. BRAISTED, Surgeon General, U. S. Navy, then delivered the Presidential Address, in which he discussed "The Obligations of Medicine in Relation to General Education." In the old Navy, he said, a midshipman was defined as a person with no rights and few privileges, and many societies and associations had a feeling akin to this about their president and regarded him as a sort of lay figure on which to drape honors but from whom no serious participation in affairs was expected. He hoped no one would think he was exceeding his rights or straining his privileges in taking for discussion a subject which had been largely entrusted, during the Association's long campaign for the education of the public and the improvement of our medical schools, to members having special knowledge and special ability. He believed that, while leadership belonged to the few who enjoyed peculiar qualifications, intelligent cooperation was the obligation of all, and he therefore conceived it his part to foster by every means in his power a general participation in the educational program which had characterized this Association since its incipiency. He then continued:

It is glorious to think that the practical, material benefit which we anticipate from this meeting is only secondarily for ourselves. We want to be more capable in the service we render to our patients rather than to increase either fame or fortune. This is very well as far as it goes, but it is not enough. We must realize afresh at each annual convocation that before being members of the Association we are physicians, before physicians citizens, before citizens men. In so far as we neglect the functions of the citizen or forget the obligations created by man's social environment and repudiate every duty not directly connected with private practice, we are recreant to a high trust.

In the recent war the medical men of America laid aside their practices at no small sacrifice and with no small risk to their future prospects to play the patriot; and so did lawyers, business men, teachers in colleges, scientific investigators, and so on. It was a noble stand to take, but the glory of this spontaneous uncalculating action will be considerably dimmed if, now that the threat of invasion, the foreign menace to our institutions has passed, we relapse into that narrow life pursued by so many who tacitly maintain that because they sustain important private relations to the sick they are absolved from participation in the struggle for the betterment of town, city, county, State and country, and of the world itself.

In this matter of responsibility outside of mere professional life we all need education and what more fitting opportunity than this to solicit from you all a holier dedication to your patients' interests by thinking of what they need to be told, how they should be guided and how helped when they are not actually suffering from bodily ailments. When we do this we are at the threshold of social and preventive medicine —a medicine of education as well as of prescribing and operating.

*An abstract from advance proofs through the courtesy of the Editor of the *Journal of the American Medical Association.*

Education of the Public in Health Matters.—The education of the general public in matters relating to health has not been entirely overlooked in the United States. A good deal has been done, especially in the last few years, but the sum total is small indeed when considered, on the one hand, in relation to the importance of the subject, and, on the other, to our great territory, huge population, vast resources, multiplied and highly productive forms of energy and our general advance along all lines. Certainly in many details of health regulation and health promotion we are behind the older nations of Europe, relatively if not absolutely. After the dissipation of life incident to all great wars, men invariably turn to the importance of saving life and prolonging it, and health-giving measures excite at least a temporary interest. We will therefore miss a great opportunity if we do not at this time use every endeavor to press home the great self-evident truths about health and long life as they affect national prosperity and race permanence.

Is there anyone who doubts for a moment that the physical integrity of its citizens and their ability to deploy all the energy which unvitiated, untainted nature can generate are of the first importance for the onward and upward progress of this republic? Is the health of the nation a national concern? If so, then the nation as such should go into the matter with the same business acumen, on the same scale and with the same continuity of effort manifested in any other vital public concern.

One of the most remarkable and anomalous incidents of history is the way the Hebrews have preserved their race entity and characteristics though deprived for two thousand years of a local habitation and though prior to their final dispersion they had been for centuries the objects of foreign domination—enslaved, driven out, carried into captivity. While today the Jews may enjoy the benefits of other civilizations than their own, it is generally recognized that in the earlier periods of their history their cohesion and their national achievements were largely the result of a unique and remarkably extensive hygienic and sanitary system far beyond anything employed by any other race. Their peculiar observances were not due to the influence of physicians, to whom there is scant and none too favorable reference in the Old Testament, but embodied the wisdom of Egypt and Mesopotamia and had behind them the force of civic and religious obligation and were administered by the priestly caste.

The State's Need of Sturdy Men.—Can we pretend for a moment that the stability of Rome through twelve centuries of existence under kingly, republican, and imperial rule, vexed by enemies within and without, was not dependent in a large degree on the extensive municipal provisions for health, which included an ample and excellent water supply, adequate drainage, extramural sepulture, and on the universal respect for physical prowess and physical hardihood inculcated by kings and consuls and not by the physicians, who to their lasting shame cared little for these things? We know how much the national life of Sparta owed to its rigid discipline and the paramount emphasis laid on bodily vigor, and how Athens all through its glorious period of intellectual development continued to cultivate physical perfection. To my mind the most paradoxical feature of our modern civilization is the indifference of a comparatively educated and well informed world to the human body. I submit that the nation's health is a national concern; that it underlies all industrial and business effort; that it is the fundamental element in successful competition with rival nations, whether under the slow and prolonged strain of commercial contests or the sudden and imperious demands of armed conflict; that if we look ahead, as true love of country compels us to do, and estimate the trend of future events, we must acknowledge that physical vigor will, in a large measure, decide our complete development and permanent possession of the land which our forefathers won for us not only on the fields of battle but in strenuous struggles against the elements; in the mighty labor of felling forests, tilling the soil, and developing the resources hidden in the heart of the earth.

I am very far from undervaluing the work of the

many agencies already engaged in indoctrinating the people in the fundamentals of health; but it is undeniable that so far their efforts have been inadequate to the magnitude of the task as I conceive it. The campaign must be one of concerted measures, nation-wide in extent and unflaggingly prosecuted.

Teaching of Hygiene in Primary Schools.—I think that up to the present we have been guilty of a cardinal error in seeking wholly to proselyte the adult. Our preaching has been to people enslaved by the chains of lifelong habits. We have advised men with damaged hearts and kidneys and blood vessels to eat and drink and smoke less; to take moderate exercise; to learn to relax and play; to avoid undue excitement so that they might spin out the thread of life by a few years. We have appealed to high school, college, and university students to abjure tobacco and alcohol; have held up personal purity as something of supreme importance, given instruction about venereal diseases, instituted courses in personal hygiene that perhaps conveyed to them for the first time in their lives some rudimentary knowledge of their own bodies. In all this we have overlooked two things. The man of middle life cannot make his depraved body over and replace worn out organs. If he stops work he dies for lack of occupation. If he gives up some habit that has become an integral part of his being he may suffer devitalizing mental and bodily reactions not unlike those of the opium eater deprived of his drug. The lad or maiden who has for years been goaded to study grammar, mathematics, languages; on whom there has been exerted insistent pressure to acquire mental attainments, cannot easily be persuaded later on that a subject kept in the background or displaced in favor of something else is the one of paramount importance. We cannot expect the young to believe that hygiene, physiology, and health are matters of prime importance when everything else has come ahead of these subjects. The children are right, because we do put first what we esteem to be first. I propose that we abandon at once all half measures, get away from routine, conventional methods and embark on something new, radical, revolutionary, but something at the same time perfectly feasible, if undertaken on a scale fully commensurate with the colossal results desired.

Sound Health the First Requisite of a Liberal Education.—Let us throw out as irrelevant and misleading the occasional benefits conferred on humanity by the prodigious accomplishments of some individual whose genius bordered on insanity; let us forget that here and there an invalid, a neurasthenic, a neurotic has enriched the intellectual life of the world or done some epoch-making thing. Let us begin the child's education by teaching him health before everything else; first in point of time, first in importance. We must get possession of the child himself, affect his inner consciousness, modify his personality, and give his life a definite bent, so that he will progressively and increasingly contribute by his own efforts to secure and preserve the health indispensable for the fullest use of the opportunities of high school, college, and university. The primary school is universally recognized as the place to acquire certain things indispensable to future mental development and ultimate success. There is world unanimity about these essentials, but how common it is to have to take children out of school for reasons of health before they have got well into the three r's—reading, writing, and arithmetic. What I propose is to go back of the three r's and begin all education by instilling into the child before he can read or write some knowledge of the human machine and the laws that regulate its upkeep; to elaborate and intensify this teaching step by step with other instruction, showing by practical illustration how to obtain the maximum yield from this machine. The teaching of physiology and hygiene to the youngest pupils requires no book, but it does require a trained teacher. Unfortunately, however, there are teachers who do not care for that feature of the work even though they are competent. The reason for their indifference to the subject is that they did not grow up in that atmosphere of health culture which I would like to see created for the next generation. The really clever teacher makes his subject entertaining and interesting but does not wander far afield in search of mere diversion. The teaching of health and the first anatomy and physiology lessons will be by the Socratic method of question and answer, and by the still older case-method first known as the parable. There will be no fear of lack of interest when the day's session begins with a tale like this. "John ran away from his mother. He was so little and he ran so fast that he fell down. There was a piece of glass just where he fell and he struck the sharp edge of it with his hand. What happened? What made the blood come? What is blood? Do animals have blood? What is it for? How was the bleeding stopped?" Such lessons can be varied and multiplied indefinitely and made practical by reference to or, when possible, by actual demonstration with natural objects and natural phenomena.

They are very much mistaken who tell you that children cannot think and would have early instruction rely in the main on memory. Even very young children do far more thinking and think far more accurately than the average adult realizes. They are not capable of abstract thought, but in relation to the things of everyday life they are constantly observing and trying to deduce conclusions.

The child is forever discovering new and surprising aspects of his terrestrial environment and is eager to investigate them. He gets into many a scrape through ceaseless experiment with cause and effect. He is eternally asking, "Why?" What a field is this young mind for the sowing of seed, and how much needless suffering and disappointment he can be spared if we will only teach him the important things first.

In the kindergarten and in the lower grades of the primary school which are to be devoted, in the proposed scheme, to health and hygiene, clean hands, clean finger nails, clean faces, proper carriage, proper breathing; sound, well-brushed teeth, and all the little details of physical deportment that are matters both of social convention and of health (like the use of a handkerchief for a moist nostril, holding up the hand to cover the sneeze or cough) will receive reward and make for class standing exactly as does the correct solution of an algebra problem or a good recitation in the higher grades. As the pupil grows and advances the health instruction will be increased and extended, and will, I am sure, serve to make chemistry, physics and natural history more interesting in themselves, while, conversely, these topics will render more intelligible the hygienic lessons.

Public Schools as Natural Health Centers.—Our public schools, then, must become the health centers of their respective communities. Every measure carried out in them should be fully explained, so that the wisdom of preventive measures shall be fully appreciated by the pupil and he may become an advocate of them for the rest of his life. In connection with the bowl of hot broth furnished daily there may be lessons in diet. Temperance in all details of food and drink may be inculcated at the same time that the evils of alcohol, tobacco, and narcotic drugs are set forth. Then the necessity for scalding knives, forks, and spoons must be emphasized and the menace of the mouth secretions fully explained. The child must acquire, on the grounds of health, the same horror of the mouth secretions that refined people have for the spitting habit. Such a program may commend itself to you, but the difficulties attending its execution are rather staggering. In the first place, we must have better teachers, and that means teachers who have had special training and will therefore expect better pay. There will be need for special textbooks, and this is one of the most critical features of the whole business, for good books of any kind for children's use, and especially textbooks, are among the hardest things in the world to produce.

While on the subject of schoolbooks, and having in mind the examinations conducted under the draft law, which revealed a high percentage of refractive errors in our adult population, I cannot refrain from making something more than a passing comment on the type used in the schoolbooks supplied to young children. Some thought has been given to schoolroom illumination and to proper posture in reading, but nine children out of ten, if left to themselves, get their noses on the paper when they write; hold the book too close when they read, and will do both without regard to the quantity or source or direction of the light. Dr. G. I. Hogue, in an address before the school teachers of Milwaukee,

estimated that 30 per cent. of the schoolchildren of this country had some visual defect. In Milwaukee, 27.24 per cent. of the schoolchildren had visual defects. In New York City, out of 650,000 children in the public schools, 30 per cent. at least were two grades behind what they should have attained. Ninety per cent. of these backward pupils are suffering from some defect in eye, ear, nose or throat. He estimates that out of 22,000,000 schoolchildren in the United States some 6,000,000 suffer from ocular trouble. Good food, ample exercise in the fresh air, and hygienic surroundings will counterbalance a host of objectionable practices, but the ever-growing strain imposed on the human eye by modern life calls for special consideration. I profess no special knowledge of the pathology of the eye, and I have consulted no specialist preliminary to making these remarks, but I do not hesitate to declare that the time is ripe for a reform in the construction of children's schoolbooks.

Causes of Eyestrain in Children.—When you get home from this meeting take your child's geography, history or arithmetic—if not blessed with a child of your own, a nephew, a niece, a neighbor's or a patient's child can supply you—and observe what a large proportion of the text is in fine print. The paper is good; the illustrations are attractive, and the binding is child-proof, but the questions for review, the footnotes, and much of the explanatory matter are set up in six point. I think I am very conservative in the opinion that no child of 10 or under should have to study a book printed in anything smaller than twelve point lower case or eight point capitals, and older children should not have to con by the hour a type finer than ten point. If fine print could be officially stigmatized as a menace to eyesight; if the federal government were to forbid the transmission through the mails of children's schoolbooks improperly printed, we would have a ready solution of the problem. Left to the example of the individual school or to the individual State, the correction of an evil of this kind will not be achieved for many, many years.

This thought and a consideration of the difficulty of securing the services of properly trained teachers and sanitary inspectors and physicians not merely for local experiment, for the collection of data, as a demonstration of some useful doctrine, but as part of a continuous and permanent health campaign, lead naturally to a consideration of government responsibility for the public health fostered and encouraged in the children but affecting also the adult in relation to trade and commerce, preparation for war and so on.

Need of a Federal Department of Health.—I wish that the public had a fuller appreciation of the really great educational work of our distinctly military services. Through the work of the medical officers of the Army and Navy, our government may be said to have been carrying on for years a health propaganda, within the sphere of the activities presided over by two cabinet officers, affecting directly some 200,000 men in time of peace, and, to a much more limited extent of course, in the past three years acting on a force of several million men. But if we continued to maintain an army of from two to three hundred thousand men and a navy of a hundred thousand the matters of health which are made prominent in military service would still not directly touch half of 1 per cent. of our population, and we have these men under our influence for relatively short periods—not more than from four to eight years out of a life of three score. This humanitarian, educational work is an incident and not the chief purpose of the departments referred to.

We have to admit, then, that vital as it is for us to maintain a high standard of physical development for the eventualities of war, neither the Secretary of War nor the Secretary of the Navy has any way of concerting measures which will assure for the military needs of the country the necessary number of men of sound bodies with unimpaired special senses. We reject every year thousands of applicants for enlistment who are ineligible for service by reason of conditions which might be regarded as preventable but which are not prevented. We reject men with serious defects of the teeth, with inferior vision or color perception, insufficient development of muscle, bone and tendon, poor heart-action and a defective innervation. Furthermore, the conditions of life in this hurried age; the social environment of the tenement; insufficient training in the home or the lack of a home, and the ravages of alcohol and syphilis in parents, are making for the development of neurotic and unstable types unavailable for service training in peace and of worse than no value for war. All these men are debarred at the recruiting office, but what becomes of them? The Secretary of War and the Secretary of the Navy have no cognizance of them, but they remain a part of the nation, an element of weakness, a burden, a disgrace and transmit their defects and weakness to their children. The bad teeth, the weak, strained eyes, the overworked, injudiciously used hearts, and the distorted and depraved nervous systems are all preventable. Whose care is it to concert far-reaching plans to fend off from the younger generation and future generations ills that are not by any means an inevitable concomitant of birth?

It is by what might be called an accident of birth that our very efficient but small Public Health Service is conducted by the Treasury Department. The U. S. Public Health Service, originally called the U. S. Marine Hospital Service, dates from 1798, when Congress made provision for the medical care of sailors in our merchant marine by generously mulcting each sailor 20 cents of his monthly pay for the support of hospitals ashore and for the pay of the physicians who worked in them. The money was to be collected by the several collectors of customs, who were of course officials of the Treasury Department. It was not until nearly a hundred years later that this body of physicians had any but a curative function.

In 1878 Congress directed the supervising surgeon to prepare and forward to State and municipal health authorities weekly abstracts of consular reports and other information relating to contagious and epidemic diseases; but it is interesting to note that even in 1796 Congress had recognized some measure of responsibility for public health by passing an act requiring all revenue officers to cooperate in the execution of state health laws.

In 1879 Congress appropriated $50,000 for a National Board of Health whose existence was limited to a period of four years. This board owed its creation to the terrible epidemic of yellow fever raging in the Mississippi Valley. It was after this that the Marine Hospital Service was financed by funds voted by Congress for the specific purpose of preventing the spread of epidemic disease, more particularly smallpox and yellow fever.

In 1892 the Marine Hospital Service achieved notable results in preventing the introduction into this country of the cholera so extensively prevalent in Europe. Then came the passage of an interstate quarantine law and later a national quarantine act in virtue of which a systematic examination of all immigrants has since been maintained. Gradually this service has assumed a distinctly educational function. Its Research Laboratory was one of the first agencies of the kind. Its work in connection with malaria, pellagra, hookworm, infantile paralysis, leprosy, rabies, typhoid and Rocky Mountain fever, school hygiene, the pollution of water, trachoma, the problems of rural life, and railroad and industrial sanitation, has been of a high order.

I give this outline of the history of the United States Public Health Service because I think too little is known of what it has accomplished; because its growth in importance shows very plainly that, as the value of this kind of work became more and more apparent, ways and means were found to make it possible. The work has been economically done by trained experts often opposed by local prejudice but far more seriously hampered by general indifference and by the fact that they could act only in an advisory capacity, and were only a side issue in the Treasury Department, whose main concern was with other and very unrelated affairs. This history of the Public Health Service illustrates how the government has been able to play a rôle of considerable importance in promoting public health though acting in an ancillary capacity, and we see how from purely medical practice its members have assumed more and more an educational function. Then, too, in recent years the government's obligations

have been recognized by the passage of pure-food and child-labor laws; by enactments regarding the sale of narcotic drugs; by assigning to the Public Health Service supervision of the manufacture and sale of serums and vaccines. But to-day the public health is, so far as the federal government is concerned, a matter of secondary importance whereas it should be first.

Wastage of Life and Natural Resources.—As a people we are of all civilized nations the most wasteful of human life as well as of food, natural resources and public funds. France and Italy have a minister of public education and England has a ministry of health. During the year 1917 our railroads, which under government administration cost us a million dollars a day, were responsible for 194,000 injuries, 6,300 of which resulted in more or less serious crippling, and for 10,000 deaths. In the same year the funds assigned for the maintenance of the United States Public Health Service, including its laboratory, its department of zoology, its field work, the salaries of 200 medical officers and 1,800 other employees totaled $3,250,000. That is to say, the national government's expenditure for its only accredited and official agency for the care of the national health was at the rate of a little over three cents a head for the total population. As regards vital statistics, birth registration and morbidity reports we are far behind Europe.

A department of health in Washington would be purely civilian in composition and would call to its aid or give its assistance to all private or corporate forms of endeavor, very much as the army and navy call on the Carnegie Foundation, the Rockefeller Institute or the American Red Cross. Then we would coordinate effort for improved public health of every kind and make it continuous and progressive instead of desultory and sporadic, and many problems would be diligently attacked which now, in spite of their importance, must await until some great calamity excites public attention or arouses the sympathy of a philanthropist.

Facts Revealed by the Operation of the Draft Law.—We have learned and the general public has learned a good deal about our national weakness from the facts revealed by the operations of the draft law. Massachusetts, stimulated by the knowledge of the number and character of the rejections for military service, and other sections of the country alive to the declining birth rate of the white race are proposing enactments to remedy crying evils in the physical development of our people, but years may pass before other sections awake to the importance of these efforts. Meanwhile the whole nation is concerned and the nation as a whole should be at work to remedy what is wrong.

How are we to explain the fact that the older sections such as New England, New York, Virginia, North Carolina, and Louisiana lead in nervous and mental disorders; that in defects of the eye New York, Boston, and New England generally and the cities of Ohio, Michigan, and Illinois were the most conspicuous; that Rhode Island led in defect rate and Vermont came next, while Kansas had the lowest defect rate of all the states; that the extreme northeast, including New York and New Jersey made the poorest showing in regard to the teeth? Are these fortuitous facts or are they susceptible of explanation and correction? It is clear that when we have as physicians informed ourselves on these topics there must be education of the public to prepare it to cooperate with, and there must be legislation to enforce, the necessary corrective measures. There is a mystery in the report of the Provost Marshal General that Oklahoma and Arkansas for the number of men examined gave the highest percentage of men going into Class A and Arizona and Rhode Island the lowest—men in Class A being the fully qualified, able to see and hear well, able to transport themselves by walking, having a circulatory apparatus able to stand the stress of physical exertion, the intelligence to understand and execute military maneuvers, obey commands and protect themselves.

Nation-Wide Versus State Control of Health Matters.—How impractical to expect that any one State alone, or even two or three, should go into the study of these things at considerable expense, or that just and reliable conclusions could be arrived at from such a partial study! These are national matters most easily, most economically and most satisfactorily studied as national questions by national rather than local agencies. I can perfectly understand a strong disinclination to any step that might appear to open the way for government control or restriction of the practice of medicine or that tender to paternalism, especially in view of the agitation developing here and there for all sorts of medical, dispensary, and hospital privileges. As a general proposition, I am firmly opposed to the disposition to saddle every public and semipublic enterprise on the government, but I am unqualifiedly in favor of a national department of health with a cabinet officer at its head which shall by its very creation give a great object lesson to our people and shall correlate and vastly expand all the efforts now put forth for the improvement of the race, the prolonging of life and the full development of physical capacity for work and production.

Practical Knowledge of Hygiene Needed by Physicians.—Our semiscientific and popular current literature, and even the daily papers, are constantly giving out bits of information about the flea, the louse, the bedbug, and the mosquito in their relation to the transmission of disease. A layman does not quiz his physician about anatomy or pathology, but he does turn to him for enlightenment about these and kindred matters bearing on health and disease which he can understand and on which he would like to be informed. When the physician cannot fully satisfy the questioner about the rôle of these insects, about the potability of water; the danger of damp, newly constructed buildings; the proper trap to a water closet; the infections that may be acquired from intimate contact with domestic animals, he loses enormously in prestige and, what is more important, he loses the chance to thrust home some valuable lesson in public health and public duty.

We are beginning to develop here and there schools offering special courses and special degrees in hygiene, and I think this is a forward step, for we must have men of special training prepared to do advanced research work in this field, but can any one reasonably pretend that the medical profession can wisely permit this branch to become one for specialists only, and that, while pathology belongs to the physician, hygiene and sanitation are not his sphere? On the contrary, will not the exhaustive teaching of hygiene and of public health medicine in our medical schools immeasurably enlarge the scope and improve the character of the practice of medicine itself?

Let us institute a thorough course in hygiene and sanitation, making a real knowledge of the subject indispensable for graduation. We could include in this course whatever features of the specialties bear directly on the public health.

Restrictions as Applied to Candidates for Admission to Medical Schools.—Far more important than determining what particular subjects are to be emphasized and how the medical student's time is to be apportioned in classroom and laboratory is the standard of fitness to which a young man must conform before he can be permitted to study medicine. Admission to a medical school contains the implied promise that diligent application for a given period will qualify him for a diploma as a doctor of medicine. In justice to the public, to the profession, and to the candidate we must endeavor to establish three things before the medical school opens its doors to him. The prospective physician must be sound in body; he must have sufficient mental training and acquirements to enable him to pursue the course with profit; he must give evidence of those personal, temperamental, and moral qualities which promise reasonable adaptation to the highest aims and purposes and to the best practice of the American profession.

There is, I am convinced, a real danger in the modern trend to practical instruction so called. The danger of neglecting the necessary fundamental and more or less abstract teaching for the distinctly enjoyable clinical and bedside work is increased by the realization that the latter has stronger attractions for the student and that it greatly facilitates the acquisition and retention of information furnished in the classroom. Students and even teachers speak of schools as theoretical

and practical, having in mind apparently the distinction between didactic lectures and laboratory exercises, but it is very easy for an unconscious transposition of ideas to lead one to think of theoretical instruction as removed from the domain of usefulness to the sick because the word theoretical is connected with the idea of speculation and hypothesis. Now, as a matter of fact, by theoretical instruction in medicine we mean the abstract handling and presentation of scientific truth as compared with its application as a practical means of healing. With this clarification of terms it becomes manifest at once that the school must be primarily the place for medicine as a science, for if the young physician have not scientific knowledge what is he to apply when he comes to the bedside?

Eras of Medical Teaching.—We have known in this country the era of strictly practical medical teaching. The physician jogged along from house to house, and the neophyte who accompanied him saw the patients and picked up what he could about them through the dissertations of the preceptor. It was followed by the era of cheap medical schools where men were shown at clinics the manifestations of disease; where they committed to memory prescriptions for fever or diarrhea or cough. These schools had short courses and the fees for diplomas were essential to their maintenance. We have, through the American Medical Association, rung the death knell of the medical diploma mill. But historical justice compels us to admit that there was much excuse, in our country's undeveloped period, for giving some kind of brevet to men willing to settle and supply what primitive rude aid they could in remote and sparsely settled sections that would never have attracted or adequately compensated those who had spent the time and money necessary for more complete training in the half a dozen high-grade medical schools we possessed. Conditions are very different now, and there is a more equal distribution of wealth and education throughout the land; the standards and requirements of various geographic sections are more uniform. I look forward to the time when we shall have in this country an even higher standard than now and uniform medical requirements with comprehensive courses of five and six years as in England, France and Italy. That a need for something of this kind has been recognized by the profession in this country is shown by the rise of the American College of Surgeons and other American colleges, to be a fellow of which implies an advance in attainments beyond those of the ordinary graduate. This need is shown, too, by the existence to-day of the National Board of Medical Examiners, an incorporated but privately supported organization whose aim is to stamp the successful candidates coming before it as men of peculiarly liberal acquirements. The gradual elevation of State requirements for license to practise and their constant approach to uniformity justify this board in looking forward to a time in the near future when we shall have a single standard for the whole country.

Galen in trying to stabilize medicine, to free it from wild speculation and the vagaries of individual schools and the excesses of individual teachers bound it with iron bands and stopped all progress for thirteen hundred years. The Faculty of Paris, standing like a rock for a maximum of book learning, insisting that the physician must be a savant, holding to narrow conceptions of the dignity of the profession, despised the manual operations of surgery, exacted from aspirants for a license an oath to do no surgery and by cutting itself off from the opportunities for acquiring that knowledge of anatomy, physiology, and pathology afforded by operative investigation made the practice of medicine in France as dead and as meaningless as the branch which it so effectively circumscribed for four centuries. But just here is a feature of the development of medicine that we are apt to overlook. It was not until the itinerant bone setters, the cutters for stone, the oculist, the herniotomists succeeded in being admitted to the schools that they exercised any vital effect on the profession. The schoolmen were narrow, as every one admits, but the practical men who had not been to school were butchers, and they had no real influence until surgery in the person of Felix cured Louis XIV of a fistula in ano which had never been benefited by salve or unguent. Maréschal, successor of Felix as court surgeon, influenced Louis XV to establish five chairs of surgical instruction and La Peyronie induced him to pass an ordinance making it obligatory for masters of surgery to qualify first as masters of art.

The Evils of Too Purely Academic Instruction.—In recent years we have perceived with ever increasing intensity the evils of a too purely academic instruction, and in the inevitable reaction to practical methods we run the risk of going to an equally dangerous extreme the other way. It behooves us to find a way to teach so that the two lines shall have their proper proportion. All ages, whatever the attainments of science, have produced great healers, and the family physician of an earlier generation must ever remain the ideal minister to the sick. It is the personality of the upright, big-hearted man whom people trust to use what knowledge he possesses rather than abstract scientific qualifications that counts in the long run. Can we expect men to qualify for the sacred function of receiving the confidences of sufferers in mind and body if we expunge poetry and philosophy and art from their preliminary education and wholly replace fairy tale and legend, Longfellow, Tennyson, Hawthorne, and Shakespeare by so-called strictly scientific premedical work? We want a man broad in interests and understanding, not the recluse who finds more pleasure in dissecting a beetle than in viewing a sunset, who gets more soul satisfaction out of the hum of a machine just because it is a machine than in listening to a Patti singing the Last Rose of Summer. Dr. W. M. Beach of Pittsburgh well epitomized all this when he said at Atlantic City last year that "proficiency in the physician requires development in the direction of spirituality; there is a curative force that is moral."

The Kind of Men Needed.—We want the men who take up medicine in America to be big men; big in heart, big in brain, blessed with vigorous health. The possession of a store of facts is nothing as compared with evidence of native ability and sterling integrity of character. Before we permit a young man to matriculate in medicine we should have assurance that he is careful of his health and careful of his financial obligations; that he commands the respect of former classmates; that he has qualities that make for leadership; above all else that he understands and justly values and possesses that indefinable exquisite, delicate something as intangible but as real as the bloom on the plum and the fragrance of a wild flower—the sense of honor. Our inquiry into the premedical career of a prospective physician will be of infinitely more value if it enlightens us on these points than if it merely establishes his ability to memorize a book and on admission we discover that the high marks and the multiplicity of diplomas were won by a physical and moral runt.

It is time that the subject of examinations be very thoroughly gone over by professional educators and substitutes found for such methods of testing a candidate for promotion or honors as do not indicate reasonably lasting acquisition. The bulk of our examinations as at present conducted have but little to recommend them. Their only merit and the reason why the pedagogic world hesitates to discard them lie in the powerful stimulus they provide to the study of even the most difficult branches and the most obnoxious details. When, however, we stop to consider that the labor incited by the examinations is usually not for the acquisition of knowledge but for the passing of the examination; when we admit that the modern examination determines, in the main, a very ephemeral form of attainment, we may find that something better than the examination may not be so very difficult of accomplishment after all.

Present Methods of Examination.—The present method is vicious for two reasons: first, it fails largely of its object because we do not get a correct idea of mental capacity and mental development, nor a proper appreciation of a student's grasp of the subject by examinations which he can undergo successfully by cramming. In the second place cramming is a devitalizing process and the very opposite of memory cultivation, because behind the effort to acquire is the deliberate conscious purpose of unloading the mind of the stores taken aboard as soon as a given contingency has

passed. The willingness to forget and the deliberate effort to forget negative and weaken the retentive power. For years, in our examinations at the Naval Medical School in Washington, we have allowed laboratory notes to be used by candidates in the chemistry and hygiene laboratories considering that memory for the exact quantities in various solutions is not required, nay undesirable, where men are trying to do accurate work. What we demand are the principles involved, the meaning of the steps, the interpretation of the results. This is the method followed by the National Board of Medical Examiners. It is in the necropsy room, the laboratory and the hospital ward that we test the candidates in an endeavor to ascertain what they know by what they do, instead of judging entirely by what they say or write.

Basis for Scientific Study.—Sir George Makins, president of the Royal College of Physicians, does not think that we should relegate the teaching of physics, chemistry, and biology to the premedical period for fear that the medical student may not have a sufficiently thorough grasp of these subjects. On the other hand, Thomas Huxley held very emphatically to an opposite opinion. He said: "The great step toward a thorough medical education is to insist on the teaching of the elements of the physical sciences in all schools, so that medical students shall not go up to the medical colleges utterly ignorant of that with which they have to deal; to insist on the elements of chemistry and the elements of physics being taught in our ordinary and common schools so that there shall be some preparation for the discipline of the medical colleges."

I agree with both Makins and Huxley. My own view is that these subjects should be taught in the school and college course and in the medical school also. In the preliminary courses pupils should acquire a knowledge of the great fundamental principles involved and the methods employed in scientific work, because all this emphasizes the value of accurate observation and correct interpretation of facts and both of these mental processes are invaluable in every department of human activity. The future lawyer, doctor, business man needs this training. In the medical school chemistry, physiology and biology will be taught with reference to their bearing on medicine. But the premedical courses must be very different from those now pursued. The textbooks must be simpler and the courses be made general and then pupils must be compelled to master what they go over. I should put biology and physiology or nature lessons among the earliest, since they go naturally with the health teaching and the hygiene by which all schooling should begin. Next would come physics. Chemistry would come later still.

It will be impossible, I fear, to allow for more than two years of college for the intending student of medicine with five years of classroom and practical work still ahead of him. We want him to graduate while relatively young, so that he may face the discouragements and trials of early practice and the long uphill climb to a financial competency while still possessed of the resiliency, the buoyancy, the freshness, the enthusiasm, the high courage, and the endurance of youth.

In enumerating these so-called scientific features of premedical education it is important to remember that a slightly greater familiarity with them prior to matriculating in medicine will not compensate for the dwarfing effect of a course restricted to them and unbalanced by studies of a complementary character, bearing always in mind that the object of premedical work is to develop not to indoctrinate. It is many years since M. T. Davison wrote these significant words: "A man who has been trained to think upon one subject, or for one subject only, will never be a good judge in that one; whereas the enlargement of his circle gives him increased knowledge and power in a rapidly increasing ratio."

Mistakes of the Middle Ages.—Education, and as a part of it medical education, in the Middle Ages, was distinctly scientific in character. The strong literary bias and the study of languages which become so marked in the seventeenth and eighteenth centuries did not develop until the Reformation and after. This is not commonly appreciated, but it is a fact. Now, then, when we consider that for 400 years the premedical studies of Europe were grammar, rhetoric and dialectic, making the trivium; and music, arithmetic, astronomy and geometry, making the quadrivium (called collectively the seven liberal arts, but really sciences not arts), and when we realize how absolutely sterile of results was the medical practice to which these premedical studies lead up, have we not some basis in history for questioning the extreme ground which some people take to-day in decrying the value of the humanities and insisting on purely technical preliminaries?

The Place of Latin and Greek.—There is no question that we must give up Greek, and I believe that Homer, Sophocles, and other ancient authors will give more pleasure through the good translation of ripe scholars than from the perspiring schoolboy's own efforts, but I consider that Latin, if ably taught, has a place in our schools. I do not offer in support of this study that it helps in acquiring scientific nomenclature, for that is as roundabout and difficult a way of doing the thing as Charles Lamb's roasting of a pig by burning down the place of his abode. I believe in three or four years of Latin because, along with other and indirect benefits, it is the easiest and surest way of teaching boys and girls to write and speak Englisb correctly. Latin is not an elastic, plastic vehicle of thought like Greek, English, or French but an inflexible one cast in an iron mold. Properly taught to young people of reasonable intelligence the translation of Latin into English prose can be made as fascinating as a picture puzzle. The study of Latin is thus a powerful though indirect method and, because indirect, the easiest way of teaching English grammar. It should be begun early when the necessary memorizing will be least laborious and continued beyond the time when the pupil would be put at English grammar, a study of great difficulty and universally obnoxious. Grammar can be taught, as it were, objectively and solely through Latin, which illustrates the rules of construction in a way that our own language does not.

Need for More Attention to English.—And if I am right in this idea I think the place of Latin is secure in the schools because the one thing that we must insist on is that our boys and girls, whatever their purpose and destiny in life, shall speak and write English correctly. Nowhere in the world is there such need for the teaching of the national language, because nowhere is the school population made up of such a variety of elements, and in the case of many their mother tongue is not English. With no pretension to a mastery of style and no great sympathy with the exaggerated purist, I am nevertheless frequently surprised by the laxness, the inaccuracy, the atrocious barbarisms of the language of daily conversation and even of the public press, the magazines and the books printed in this country. Long observation as examiner on navy boards has brought me to a realization of the sad fact that the young men of America can go through the high school and even obtain a baccalaureate degree, and yet be incapable of writing plain and simple English correctly.

It is to deem knowledge of little value and to take a narrow, selfish and limited view of intellectual pursuits of any kind to deliberately despise and neglect language, the instrument by which we contribute to others and make them sharers of our work and its results. The crying need of premedical scholastic training in America, and of all school and college training at the present time, is for reform in the teaching of English. With all due respect to our capable, earnest, and largely underpaid teachers, I must confess to a feeling that our public school courses are suffering from too large a variety of subjects to permit thoroughness. This is serious, because it is not so much what is taught that counts, as the permanence of the knowledge and the effect on the acquisitive mechanism produced by the way study is conducted. A superficial acquaintance, a smattering, a glossing over a thing is pernicious in the extreme. Better no schooling than such a process. The idea that school must be a place of entertainment and amustment rather than of hard, grinding work, I hold the parents responsible. Too many of them, while contributing little enough toward education in the home, resent the pressure of the teacher and yet desire their children to leave the high school

with a large variety of showy accomplishments.

Finally we have to recognize that in every field of endeavor the best men are largely self-taught. In the progress toward the predestined goal disclosed by the lifting mirage of the future each chooses his own path and has his own peculiar problems to solve. As he advances further and further into the kingdom of truth he discards authority and flings off the fetters of tradition. It is only the mediocre man satisfied with a stereotyped career that can be fully equipped by any system of schooling for all the eventualities of his small and narrow life. What the school and college can do for all is to develop the capacity for true feeling and sound thinking. The medical profession must agitate in season and out of season for a high standard of physical capacity as a basis for intellectual achievement and for normal conduct. It must show its full appreciation of proper values by using every means to divert from its ranks those who have failed to demonstrate the possession of principle as well as of mental proficiency.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held February 17, 1920.

DR. CARY EGGLESTON IN THE CHAIR.

THE program of the evening was furnished by the Staff and Out-Patient Department of Gouverneur Hospital.

Epithelioma of the Jaw.—Dr. LEHMAN presented this case, which he said was quite interesting from the point of view of proving one of the theories supposed to account for malignant growth, namely, that irritation was a factor in the production of malignancy. The patient was a man, 60 years of age, who six years ago began to have pain on the right side of the cheek. A jagged tooth had caused irritation, first what seemed to be an abrasion, then ulceration, and finally epithelioma had developed. After the condition had persisted for 5½ years the man consulted a physician who gave him a mouth wash. Later the tooth causing the irritation was extracted. Finally a piece of tissue was removed for examination and was reported to be epithelioma. The patient had recently been to the Memorial Hospital where the condition was declared to be epithelioma. Two radium treatments had been given, one about three weeks ago and the other the day before. Dr. Janeway expressed the opinion that operation was not necessary and that he could effect a cure within six months by radium treatment, and he also questioned whether the man would stand a radical operation. It was found that the glands in the axilla were enlarged. Dr. Janeway stated that it was one of the peculiar features of epithelioma of the jaw that it did not spread. The ulcerated portion of the epithelioma was on the inside of the cheek; the broken-down area had not spread during the past six months. The first radium treatment was followed by a decided improvement, and further improvement was observed even during the short period that had elapsed since the second treatment.

Dr. L. T. LEWALD said that he thought that because of the glandular involvement in remote parts of the body the possibility of an associated syphilitic lesion should be taken into consideration. It might be worth while instituting antisyphilitic treatment to see what effect it would have on the growth.

Dr. LEHMAN, in replying to Dr. LeWald, said that if the man had syphilis that probably had no effect on the epithelioma. There was no question as to the diagnosis of epithelioma as this diagnosis had been made by two or three different pathologists in different hospitals. He did not understand why the glands were enlarged even though the growth was an epithelioma.

Report of Cases of Methyl Alcohol Poisoning.—Dr. ALEXANDER COMORA read this report. He stated that from Nov. 17, 1919, until Dec. 1, 1919, Gouverneur Hospital received seven definite cases of methyl alcohol poisoning. Subsequently nine cases of suspicious wood alcohol poisoning were reported by their ambulance surgeons, three of whom gave evidence of visual impairment, but all refused to be moved to the hospital and so unfortunately the opportunity was lost of studying the cases and confirming the tentative diagnosis. In view of prohibition the visiting staff had cautioned them to be on the look out for methyl alcohol poisoning and hence every case brought in unconscious was closely observed for symptoms of wood alcohol poisoning. Three of the seven cases died. One patient entered the hospital Nov. 17, 1919, at 8.55 P.M., and passed out at 11.30 P.M. Another patient was admitted Nov. 18, 1919, at 12.10 midnight and died at 12.20; a third patient entered Nov. 19, 1919, at 2.30 A.M., and died at 4 A.M. The history in brief of the patients who recovered was as follows: (1) They had been drinking alcohol; one definitely knew he was taking wood alcohol and had been taking it for several weeks preceding his collapse when he took four ounces at one gulp. (2) Impaired vision. (3) Abdominal symptoms varying from discomfort to severe cramps. (4) Nausea. The physical findings elicited were: (1) Unconsciousness. The recovered patients, however, regained a clear mentality within twenty-four to forty-eight hours. (2) Cyanosis. (3) Pupils equal, enlarged, and in two cases markedly dilated. (4) Pupils showed a sluggish reaction to light. (5) Respirations were deeper and slower than normal, varying between fifteen and twenty per minute. The clinical manifestations in these cases did not show anything definite. The temperature ranged between 98.6° and 100° F. The pulse was increased to between 90 and 120. The urine was normal when made in the routine way. The blood was normal. When the stomach contents were taken early and examined a report of methyl and ethyl alcohol was returned. Dr. Benjamin Schwartz performed the autopsies upon all the cases. Nothing definite or pathognomonic was found. A congestion of all the organs was observed, and a subsequent chemical analysis of the brain, liver, and kidneys showed the presence of methyl and ethyl alcohol in these organs in all three cases. Four patients survived. Two patients recovered their eyesight completely within twenty-four hours; both left the hospital within a week in very good condition. Of the other two, one regained his sight almost entirely; he could differentiate colors and tell time on an ordinary watch, though he still had difficulty in reading. The fourth patient though entirely blind at first left the hospital seeing shadows. Both of these patients though asked to do so had not returned for further study. Our consulting ophthalmologist had made a diagnosis of optic neuritis with beginning optic atrophy in both of these men. The pupils of both were still dilated when they left the hospital but less markedly so than on admission. One of the visiting staff, Dr. Benjamin Schwartz, reported that in some of the cases autopsied at another hospital a chemical analysis of their organs showed the presence of wood alcohol. Clinically these same cases had been diagnosed as cerebral hemorrhage, brain tumor nephritis and surgical abdomen. The writer offered the following conclusions: (1) A definite clinical diagnosis of methyl alcohol poisoning was not always possible. (2) In every unconscious case due consideration should be given to methyl alcohol poisoning. (3) A specimen of urine and of stomach contents should be taken immediately for a chemical analysis for the detection of wood alcohol.

Dr. BENJAMIN SCHWARTZ said the gross pathology of methyl alcohol poisoning showed nothing definitely pathognomonic. The only abnormality present was marked congestion of the internal organs, petechial hemorrhages of the heart and pleura, and fluid blood in heart. Clotted blood was found in one instance. In one of his cases in which the patient was blind no changes were found in the optic nerve and in another case the optic, phrenic, and vagus nerves were examined, and although this subject was blind Dr. Schwartz found no changes in the optic nerves; there were changes, however, in the vagus and phrenic nerves. Changes were found in the retina accounting for the blindness. Birch-Hirshfeld has found changes in the retina consisting of a chromatolysis and destruction of the retinal elements.

Dr. SANDS said that inasmuch as alcohol appeared in the spinal fluid an analysis of the spinal fluid would show its presence if the patient was suffering from

wood alcohol poisoning. The French made use of this method in persons who had committed crimes to determine whether the crime was committed under the influence of alcohol. Alcohol was quite permanent in the spinal fluid and lumbar puncture would reveal its presence.

Dr. C. N. B. CAMAC said that Dr. Schwartz's remarks in reference to the retinal changes were extremely interesting from the point of view of prognosis in relation to the eyesight. Neurologists hitherto seemed disposed to believe that there would be a brief improvement but that ultimately a case of methyl alcohol poisoning went on to optic atrophy. Up to the present time no large number of cases of wood alcohol poisoning had been available for study. It was unusual to see seven cases within such a short period of time. Dr. Camac asked that Dr. Schwartz be invited to tell them more about methyl alcohol poisoning since, as Deputy Medical Examiner, he had had a great deal of experience with this form of poisoning, and everyone connected with a hospital service should be prepared to recognize the condition when he met it. There was no question but that in the cases reported by Dr. Camora, the eyesight had improved, and by following them it might be possible to arrive at a revision of the prognosis in regard to the regaining of eyesight. This report should emphasize the need at the present time of vigilance on the part of physicians in observing every case of unconsciousness as one of possible wood alcohol poisoning.

Dr. SCHWARTZ said that in every case of unconsciousness brought into a hospital the possibility of methyl alcohol poisoning should be considered. The majority of cases in this city went unrecognized or were diagnosed as cerebral hemorrhage, nephritis, or even acute surgical abdomen. One case showed marked abdominal rigidity and a surgeon was called and the advisability of operation discussed. The patient soon went into coma and died. In cases in which wood alcohol poisoning was suspected an examination of the stomach contents should be made. This was done by first oxidizing the stomach contents and then distilling them. To the distillate one-half per cent. resorcin was added and then sulphuric acid; if a red color resulted it indicated the presence of methyl alcohol. In the urine there was a large amount of formic acid and a condition of acidosis was considered to exist clinically. This being so it was possible that the condition might be neutralized by the alkaline treatment.

Report of a Case of Melanoma.—Dr. STEPHEN R. MONTEITH read this report which he said was presented for the following reasons: (1 The volcanic rapidity of its clinical course. (2) The distribution of the metastases as shown at autopsy. (3) The comparatively minute quantity of pigment seen in the tumor masses. The patient was a woman, 23 years of age, admitted to Gouverneur Hospital, Oct. 25, 1919. She was thin and undernourished, though not markedly cachectic. She was markedly dyspneic, somewhat cyanotic, and jaundiced, the jaundice being a lemon tint and not a bright yellow. On the right side of the back, at the lower part of the neck, above the scapula, was a large, firm reddish cauliflower mass, raised above the surface of the skin three-eights of an inch, and measuring 1½ inches transversely by 1 inch vertically. This mass was sloughing and exuded a bloody discharge. Extending outward from this mass was a scar which reached to the shoulder. In the line of this scar and attached to the skin were two firm hard masses. The family and previous history of the patient were negative. The masses above described were first noticed by the patient five years previously, but gave her no concern. She had been in good health until four weeks previous to her admission to the hospital. At that time the hard masses of the right shoulder began to itch, and later ached and pained. Three weeks before admission her physician had incised the most painful of the masses. From this wound, since incision, had grown the cauliflower mass described. The next symptom noted by the patient was a severe, non-productive cough and later pain in the upper right abdomen. This was followed by chills and fever, a cough productive of a thick tenacious sputum, and a few days before admission the patient began to suffer from severe dyspnea. In addition to the masses mentioned above there were other nodules as follows: Over the right side of the back, just within the inner border of the scapula was a mass about ½ by ¼ inches in extent. Over the left side of the back, on a level with the ninth dorsal vertebra was a firm swelling not attached to the skin, but which seemed to be attached to the ribs for about three quarters of an inch. Over the right side of the neck posteriorly, on a level with the sixth cervical vertebra and adjacent to the cauliflower mass, was a nodule one-half an inch long. Below this area and somewhat to the right was another similar nodule, but smaller in extent. Posteriorly, in line with the posterior cervical lymph nodes was a sharp firm mass resembling in consistency a large lymph node. This also was not attached to the skin, as was true of the others. In this area there were other small shotty lymph nodes. The axillary and inguinal lymph nodes were not palpable. No neurological disturbance was noted, a fact emphasized because no post mortem examination of the cranium was made. The heart was normal in size and position, with a harsh systolic murmur heard at the apex and transmitted to the axilla. Examination of the lungs showed that motion was impaired, being greater on the left than on the right side. The right lung on percussion showed flatness below the clavicle. Auscultation over the same areas gave a low-pitched tubular breathing, amphoric in character with no râles present. Posteriorly percussion and auscultation were negative. The left lung anteriorly on percussion or auscultation gave a low-pitched tubular breathing below the clavicle, many loud leathery râles being present. Posteriorly there was complete flatness over the upper half of the lung. Auscultation gave marked tubular breathing. Bronchophony and coarse râles on inspiration and expiration were noted. Thus the left lung clinically was involved to a markedly greater extent than the right lung. Other features of the physical examination, including the reflexes, were negative. The symptoms presented by the patient on admission became progressively more marked. There were frequent stools, those of the first day being brown in color. On the following day they were clay-colored and sticky. A very small amount of urine was passed which was dark amber in color and smoky, the quantity being about 400 c.c. in 24 hours. Tests for albumin and glucose were negative. A few granular casts, blood cells, and erythrocytes were found. The blood examination showed erythrocytes 4,750,000; leucocytes 23,500; polymorphonuclears 85 per cent.; small mononuclears 12 per cent.; large mononuclears 3 per cent.; hemoglobin 70 per cent. Suspecting a melanotic tumor, the test for melanin was applied to the urine and found to be positive. This excretion was one of the many interesting features of melanotic tumors and was brought about as follows: By the metabolic processes of its chromatophore cells the tumor produced melanin in excess. This pigment entered the blood and was excreted by the kidney glomeruli as pigment granules. Or, as others held, the melanin in the blood as changed by the liver to colorless melanogen, which was in turn excreted by the kidney. The essayist described the test for determining the presence of true melanogen. Within a few hours after admission the patient's respirations had increased to 60 per minute, and the pulse rate to 160. She became progressively weaker and finally died Oct. 27, having been in the hospital forty hours. Autopsy was performed by Dr. Benjamin Schwartz of the Gouverneur staff. It centered largely around the distribution of the metastatic processes, and was given quite in detail. The pleural sacs were apparently practically obliterated by adhesions. The pericardial sac was distended and contained an ounce of clear yellow fluid. The first metastases were found in the left ventricle there being four firm masses projecting from the surface, grawish-white in color, homogeneous, firm, and well circumscribed. The anterior mediastinal lymph nodes were involved. The right lung was lumpy in consistency and contained numerous large well circumscribed oval tumor masses. In the center of the tumor mass of the left lung were two blackish circumscribed nodules about three-eighths of an inch in extent, these being the only ones of the enormous number of tumor masses which showed any black pigmentation whatsoever, macroscopically. Further invstigation revealed a tumor mass in the vault of the diaphragm

and tumor masses throughout the pancreas. The liver, gallbladder, and spleen, two organs commonly the seat of secondary tumor growth, were uninvolved. The adrenals, kidneys, bladder, ovaries, stomach, and mesentery were involved. The uterus was much enlarged and contained a six months fetus; the test for melanin applied to the amniotic fluid was negative permission to open the cranium could not be secured, thus valuable information as to the possible seat of the original tumor or of extensions to the central nervous system could not be obtained. In drawing a practical lesson from this case, the essayist stated that they had here a young woman admitted to the hospital with a diagnosis of pneumonia, a disease with a very striking picture, rapid breathing, cyanosis and dyspnea, and profuse signs in the chest, hardly a picture of a chronic tumor growth. Such a picture could not have been produced by a slow gradual metastatic growth. The reasonable conjecture was that the disturbance of the afore-mentioned tumor caused a volcanic disturbance of the chromophores, which, as was well known, was possible, and that the subsequent findings on the autopsy table were the direct result of the incision to which the patient was subjected. The chief interest lay in the extreme rapidity with which the colossal changes were produced. It must be concluded that the striking findings were produced in the space of about four weeks. It was of course a hackneyed suggestion that melanomas must not be interfered with except when the surgeon was prepared to do a very radical operation.

Dr. SCHWARTZ said one very rarely had the opportunity of performing an autopsy on a case of melanotic sarcoma. In some 4000 autopsies this was the first melanotic sarcoma he had encountered. Dr. Symmers in some 1300 autopsies had met three cases and in these there were also metastases in the heart. In Dr. Monteith's case microscopical examination of the skin showed no pigmented cells; the only pigmentation found was in the tumor of the left lung.

Dr. CAMAC referred to the fact that one of the original foci in the eye in these cases of melanoma had at times been diagnosed by the oculists as glaucoma. Dr. Hart recently reported a case in which the oculist made a diagnosis of glaucoma. In another case specimen and photograph of which were here shown a similar diagnosis was made at an eye hospital and the eye removed and placed in a bottle. The patient from whom the eye had been removed later developed a large growth of the liver. The physician who saw her went back to the hospital and procured the eye. A section of this eye was examined and showed melanotic sarcoma, so that it was evident the liver growth had had its origin many months before the liver involvement from the eye but that the condition had been overlooked in the erroneous diagnosis of glaucoma made. In the case Dr. Monteith reported it was difficult to say where the origin was. It was not a skin growth but seemed to be beneath the skin in the muscles. The important point for the clinician to remember was that in cases of growths of this kind if there was involvement of the eye the oculist might diagnose the condition as glaucoma, and if the condition was not glaucoma but melanotic sarcoma it would surely lead to death in a short time. Another point was the ease with which melanotic sarcoma could be diagnosed. The urine if allowed to stand and become oxidized or if oxidized by a chemical reagent presented the dark brown or black color of the specimens here presented. Still another point to be emphasized was that care should be exercised in incising these skin growths, as a volcanic metastasis might quickly follow.

Brain Lesions in Gas Poisoning.—Dr. BENJAMIN SCHWARTZ spoke briefly on this subject. He stated that the gross lesions of the brain in gas poisoning were symmetrical softening of the anterior, inferior, and internal portions of the lenticular nucleus, together with a red color in these areas. These changes did not occur unless the individual had been unconscious from carbon monoxide poisoning for 48 hours or more. Oftentimes these infarcts were converted into cystic cavities. These infarcted areas were due to thrombosis of the arterial vessels. Kalisco was the first to point out that the artery producing these lesions was a small thread-like artery given off from the anteriorcerebral artery which had a peculiar course and turned on itself backward at an angle of 180 degrees. He believed that in gas poisoning the blood pressure was lowered and produced stasis which led to a diapedesis of the red blood cells and thrombosis. In all cases the lenticular nucleus was affected, and in every case in which this condition was found in the lenticular nucleus the patient had been unconscious for 48 hours. Recently he had seen a case with unusual lesions in the brain. This girl was taken from a room in which two other persons were found dead, the decomposition indicating death took place at least two days ago. The gas was turned on though no longer escaping as the meter supplying the gas was a twenty-five cent deposit meter and the supply had been exhausted. This girl was admitted to Gouverneur Hospital in an unconscious condition, a temperature of 102° to 104° F., and a normal blood count. She lived 43 hours after admission. From the temperature and the few physical signs present it was thought she had a bronchial pneumonia, and these were the lesions usually present in cases of gas poisoning. This patient went into coma and died. At autopsy, bronchopneumonia was found, but in addition the peculiar thing found was not a softening of the lenticular nucleus but of the optic thalamus, which was red in color. Examination of the infarcted areas showed the veins thrombosed and no thrombosis in the arteries. This condition was due not to gas poisoning but to infection and thrombosis of the veins. The usual finding in cases of poisoning from carbon monoxide gas was the softening of the anterior, inferior and internal portions of the lenticular nucleus.

Dr. CAMAC recalled that this was the popular method of suicide at the time of the French Revolution, and was said to be a very delightful way of passing out. The method was popular among the unhappy victims on account of its euthanasic qualities in preference to the guillotine. Carbon monoxide gas had not been used in warfare because it was not heavier than air and would not cling to the ground. This was illustrated by the following incident. Upon opening the door of a room from which came a strong odor of gas, a small dog leaped up and barked. On a low seat was a child slightly overcome by carbon monoxide gas, and in a chair was a woman who had been killed by the gas. The child recovered. This was a very interesting demonstration of the effect of gas from above downward, the gas having killed the woman and stupidfied the child while it did not harm the dog. The small red pinpoint lesions in the lenticular nucleus could be seen in the gross and often constituted the only evidence of gas poisoning.

Dr. SCWARTZ, in closing, again emphasized the fact that the changes occurred on the anterior, inferior and internal portions of the lenticular nucleus and in the case cited by Dr. Globus he thought the ganglionic changes accounted for the symptoms. So far as the bleeding was concerned they found stasis of the arteries and diapedesis into the lenticular nucleus. If there had been a general destruction of blood vessel tissue in the case cited it was rather strange that the evidence should be found only in this part of the blood supply.

Pulmonary Syphilis.—In a paper from the Department of Medicine of the Jefferson Medical College, Elmer H. Funk expressed his belief that late syphilis of the lung occurs clinically more often than is generally taught. Diagnosis is difficult and judgment may have to be suspended until lues has been controlled by treatment, when "apical râles" will clear with the associated bronchitis if signs are due to syphilis. The author reports in detail three cases of what he believes were pulmonary syphilis that have come under his own observation. In arriving at a diagnosis the following points are important: (1) the history; (2) signs of syphilis in other organs; (3) the location of the lesion —syphilis usually involves the hilum areas of the bases, unusually rare locations for primary tuberculosis lesions; (4) the persistent absence of tubercle bacilli when signs of advanced pulmonary disease are evident; (5) a positive Wassermann reaction when all tests for tuberculosis are negative; (6) certain roentgenographic features which the author gives in detail; and (7) the response to antisyphilitic treatment.—*Amer. Rev. of Tuberculosis.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

CALIFORNIA STATE BOARD OF EXAMINERS.

October, 1919.

(*Concluded from page* 675)

SURGERY.

(Answer ten questions only.)

8. What conditions require tracheotomy, name the diseases in which they occur. Describe the operation.
9. Discuss briefly sacroiliac relaxation.
10. Give the indications for paracentesis tympani. Describe the operation.
11. Give the symptoms of nephroptosis. Discuss briefly the treatment, with special reference as to relative value of operative and nonoperative measures.
12. Give the different causes of traumatic keratitis, with the treatment.

OBSTETRICS AND GYNECOLOGY.

(Answer ten questions only.)

1. Give differential diagnosis between right-sided salpingitis, tubal pregnancy, and appendicitis.
2. Define menorrhagia, metrorrhagia, dysmenorrhea, amenorrhea, dystocia.
3. Give the origin and distribution of: (*a*) The blood supply of uterus and ovaries; (*b*) nerve supply of uterus and ovaries.
4. Differentiate a four months' pregnancy from four other conditions causing enlargement of the abdomen.
5. (*a*) Name the indications for version. (*b*) Describe the operation of podalic version.
6. Describe the operation for vaginal hysterectomy.
7. Name the female genital organs: (*a*) Internal, (*b*) external.
8. Post-partum hemorrhage: (*a*) Give four predisposing causes; (*b*) give four immediate causes; (*c*) give treatment.
9. Describe mechanism of labor in R. O. A. position.
10. Discuss vomiting of pregnancy.
11. Discuss artificial infant feeding during the first three months.
12. Describe the change in the fetal circulation upon ligation of the umbilical cord.

ANSWERS.

SURGERY.

8. *Indications for tracheotomy.*—(*a*) Certain cases of laryngeal obstruction caused by diphtheria; (*b*) some forms of chronic ulceration of the larynx, where respiration is dangerously interfered with, such as syphilitic and epitheliomatous ulcerations; (*c*) cases of severe stenosis of the larynx dependent upon cicatrization, or when the interior is filled up with proliferating growths, such as papillomata; (*d*) for the removal of foreign bodies from the trachea, or bronchi, in cases where upper bronchoscopy has failed; (*e*) as a preliminary to the performance of some severe operation about the lower part of the pharynx and larynx. —(From Waring's *Operative Surgery.*)

Tracheotomy.—"The patient is placed on the back with a narrow pillow under the neck. Chloroform or cocaine can be used as anesthetics. An incision, one and a half inches long, is made downward from the cricoid cartilage, keeping strictly in the mid-line. The incision is deepened till the tracheal rings and isthmus are exposed. Enlarged veins give trouble during this stage if there is dyspnea. A director-hood is thrust into the trachea, and the point of a knife is slid along the groove to open the trachea from below upward. The patient is allowed to cough for a few minutes while the wound is kept open with dilating forceps; then the tube is tied in."—(*Aids to Surgery.*)

9. *Sacro-iliac relaxation.*—"When some of the sacro-iliac ligaments are ruptured or relaxed we get the chronic condition called sacro-iliac relaxation. When this exists the individual may injure the articulation again and again because of its unsteadiness, he may now and then have trouble, he may be in a constant condition of helplessness, with backache, groinache, pain in the hip and over the ischial tuberosity, lumbar rigidity producing lateral curvature, etc. *Treatment:* After securing by manipulation normal relations in the articulation, insist on rest and apply a spica bandage of plaster of Paris or a brace. If there is marked tendency to displacement, ankylosis may be secured by operation. Fixation by a bone-graft from the tibia should give the most rapid and permanent result."—(Da Costa's *Modern Surgery.*)

10. *Indications for paracentesis of the membrana tympani.*—To evacuate pus in the tympanum (and so to relieve pain, limit the infection, shorten the disease, and prevent complications); for enlarging perforations which are too small to allow adequate drainage; it is employed also in certain catarrhal and inflammatory conditions of the ear.

The parts are to be sterilized, an anesthetic (local or general) given; and the incision is then made with a slender, sharp-pointed knife. A speculum and adequate illumination will be necessary. The particular quadrant which should be incised depends upon the condition calling for the operation. The incision should be made sufficiently long; a mere puncture is not sufficient. If possible the incision should be so placed that the opening will extend from near the floor of the canal upward and through the bulging portion of the membrane. The surgeon should avoid touching the auditory ossicles.

11. *Symptoms of nephroptosis.*—"A movable kidney is often discovered by accident, and may be entirely free from symptoms. In some cases the patient comes under observation because she has observed a movable lump in the abdomen, which on handling is painful, the pain being often associated with nausea and vomiting. In other cases pain and vomiting bring the patient under observation, the doctor discovering the movable kidney. The pain is referred to the back, or perhaps shoots along the ureter to the groin, testis, or labium majus. Vomiting is a significant sign, and the surgeon should never omit to examine the loins in cases of obstinate vomiting with no apparent cause. Periodical exacerbations of these symptoms, with a temporary diminution in the amount of urine, result from kinking of the ureter (*Dietl's crises*); sudden relief, followed by an increased flow of urine, possibly containing some muco-pus, indicates that the organ has returned to its normal situation. Repeated attacks of this type may result in pyelitis and hydronephrosis. On examining the abdomen, a movable tumor can often be observed with ease if the abdominal parietes are not loaded with fat, and on manipulation pain and vomiting may be induced. The adoption of the genu-pectoral position will sometimes enable a movable kidney to be more certainly felt, while a distinct loss of resistance is noticed external to the erector spinæ on the affected side. The patient is usually of a neurotic type, but possibly this may result in part from the mobility of the organ which necessarily involves a certain amount of traction upon the sympathetic centers in the abdomen. Evidence of the displacement of other abdominal viscera is often found, so that the detection of a movable kidney does not necessarily explain the whole case, or indicate operation. After many an operation for movable kidney, the symptoms (pain, vomiting, etc.) have persisted, even though the organ remained anchored to the abdominal wall.

Treatment.—In the great majority of cases of movable kidney operation is not required, and indeed it is usually unwise to tell the patient that such a condition is present. If it is associated with marked ability, bodily or nervous, and perhaps with general enteroptosis, a rest-cure in bed for six weeks, with abdominal and general massage and an abundance of milk and fatty foods, will do much to steady the kidney and improve the general condition. The application of a carefully fitted kidney support will then suffice to keep her comfortable. This may consist of an abdominal truss, with an end shaped like a cup to fit over the kidney, or of an air-cushion fitted into an abdominal belt. The cushion should be triangular in shape, its sides corresponding to the costal border, Poupart's ligament, and the linea semilunaris; it is put on in the recumbent posture, and for choice with the pelvis raised. The

indications for operation are: (1) Extreme mobility, so that the organ cannot be fixed by a support; (2) extreme tenderness, so that a support cannot be tolerated, and even ordinary handling causes discomfort and perhaps vomiting; (3) the recurrence of acute attacks of pain and vomiting (*Dietl's crises*); (4) persistent discomfort in the loin, combined with dyspeptic symptoms, vomiting and a great variety of neurasthenic manifestations: as a rule a kidney sufficiently mobile to produce such symptoms is tender to the touch, and examination causes pain and nausea; and (5) the supervention of hydronephrosis or pyelitis."—(Rose and Carless' *Surgery.*)

12. *Traumatic keratitis* may be caused by foreign bodies, such as particles of sand, cinders, splinters of iron, particles of emery, or particles of oyster-shell; also by erosions, wounds, burns and scalds. Foreign bodies should be removed with the aid of cocaine or holocaine, this is to be followed by the use of atropine to allay the inflammation, and bandaging. Erosions are treated by the instillation of an antiseptic lotion, and the use of atropine and holocaine and bandaging. Burns and scalds demand the prompt removal of the foreign matter, irrigation, the instillation of oil or atropine, and rest to the eye.

OBSTETRICS AND GYNECOLOGY.

1.

APPENDICITIS.	SALPINGITIS.
1. No previous local disturbance.	1. Genitourinary functions previously disturbed. Usually a history of gonorrheal or puerperal infection.
2. Chill usually absent.	2. Chill may precede fever.
3. Pain in right iliac region, sudden onset, acute, and not radiating to thighs.	3. Gradual onset, pain dull, continuous, and radiating.
4. Fever of variable degree.	4. Fever often entirely absent.
5. Muscular rigidity on right side of the abdomen.	5. No muscular rigidity unless complicated by peritonitis.
6. Inflammatory exudate about appendix three to five days after onset of symptoms.	6. Inflammatory exudate in the pelvis felt by vaginal examination at the onset of the symptoms.
7. Vaginal examination is rarely painful in appendicitis.	7. Always painful in tuboovarian disease.

—(Findley.)

Differential diagnosis between ectopic pregnancy and acute appendicitis.—Appendicitis in its onset and in its further course may very closely simulate a ruptured tubal pregnancy, but in appendicitis there are none of the general and local signs of pregnancy. There is often a history of previous attacks, with intervals of complete or partial freedom from pain and intestinal disorder. The distress is almost always confined to the right side, while in ectopic pregnancy it is often referred to the median line or left side. In both of these conditions the pain appears suddenly, and may be intense; in ectopic pregnancy it may be momentary, while in appendicitis it usually persists throughout the attack. The sudden pallor and collapse frequently following immediately upon the rupture of a tubal pregnancy never occur in appendicitis. It is at this time that a most suggestive sign appears, *i. e.*, uterine hemorrhage accompanied by a discharge of decidual membrane. In such an event there can be no further consideration of appendicitis. Much dependence is placed upon the further finding of an enlarged soft uterus and an irregular mass attached to it at the side or lying behind the uterus. When doubt exists, the uterus may be explored with a curette and the scrapings examined for decidual tissue."—(Findley's *Diseases of Women.*)

2. *Menorrhagia* is a condition characterized by excessive loss of blood at the menstrual periods.

Metrorrhagia is a hemorrhage from the uterus at other than the menstrual periods.

Dysmenorrhea is unduly painful menstruation.

Amenorrhea is absence of menstruation during the period of sexual activity.

Dystocia is labor in which there is any departure from the normal.

3. "The *blood* supply of the *uterus* is derived from the uterine artery, a branch of the internal iliac, and the ovarian, from the abdominal aorta. The uterine artery reaches the uterus at a point opposite the supravaginal portion of the cervix and crosses in front of the ureter at a distance of ¾ inch from the cervix. It then bends upward and runs close beside the body of the uterus, between the folds of the broad ligament, giving off a number of branches which supply the uterine wall, and at the angle of the uterus anastomoses with the ovarian artery. The spiral course of the uterine artery is for the evident purpose of allowing for the increased size of the uterus during pregnancy without causing tension of the vessels. The *veins of the uterus* take their origin in the venules of the mucosa and muscularis. The branches which traverse the muscularis are by far the most important. In the pregnant uterus they undergo enormous development and form the uterine sinuses. The uterine veins terminate in the venous plexuses of the broad ligament and anastomose with those surrounding the base of the bladder, the vagina, and rectum. The *ovary* is supplied by the ovarian branches of the abdominal aorta, which enter the pelvis in a fold of the broad ligament, and thence continue to the attached border or hilum of the ovary. They anastomose with the uterine arteries. The *veins* form a plexus near the ovary and empty into the ovarian vein, which in turn empties into the renal vein on the left side and into the inferior vena cava on the right. The *nerves of the uterus* are derived from the third and fourth sacral, and sympathetic branches from the hypogastric and the renal plexuses. The *cervix* is poorly supplied with nerves. The *nerves of the ovaries* are derived from the ovarian plexus, a continuation of the renal plexus.—(From Campbell's *Surgical Anatomy.*)

4. *Pregnancy at four months.*—The tumor is hard and does not fluctuate, and is situated in the median line; the cervix is soft, and some of the other signs of pregnancy are present. The rate of growth of the tumor, and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid.—Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ovarian cyst.—Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

Ascites.—Absence of the signs of pregnancy; the abdomen is distended, but the shape varies with the position of the patient; on lying down there is bulging at the sides, the tumor fluctuates, and percussion shows dullness in the flanks, with resonance in the median line, but the dullness varies with the position of the patient.

Subinvolution of uterus.—The uterus does not increase in size, there is a leucorrhea, there is generally pain in the back or ovarian region, there is a history of irregular (and profuse) menstruation, and the signs of pregnancy are absent.

5. *The indications for version* are: (1) In transverse presentations; (2) in placenta prævia;* (3) in malpresentations of the head; (4) in simple flattened pelvis, and in minor degrees of pelvic contraction; (5) in prolapsed funis; (6) in sudden death of the mother, and (7) in any case where speedy delivery is imperative.

Braxton Hicks' method of bipolar (podalic) version.—"The patient should be placed in the lithotomy position and be deeply anesthetized, to relax the parts and allow the whole hand to be pushed into the vagina. The external hand is placed over the breech, so as to depress it; while the presenting part is tilted away from the brim by the fingers inserted through the os. The fingers press against the front of the child and

flexion is lessened. When the head is out of the brim the external hand can be used to elevate it towards the fundus. As soon as a knee or foot comes within reach of the internal fingers, it should be caught and brought into the brim, the membrane being ruptured at the same time. If the os is fully dilated, delivery may be finished at once, as in an ordinary breech case; but if the os is only partially dilated, it must be left to nature, to allow the dilatation."—(Jardine's *Delayed and Complicated Labor.*)

6. *Vaginal hysterectomy.*—"The patient is prepared as for any pelvic operation, and anesthetized. The cervix is sterilized with the cautery, and pulled down by a double tenaculum. The cervix is freed from its vaginal attachments by a circular incision. The bladder is pushed up anteriorly, with gauze, a retractor placed under it for protection, and the anterior pouch of the peritoneum caught and opened. The uterus is caught with a volsellum and anteverted through this peritoneal opening. The broad ligaments are caught in clamps, and cut through near the uterus. Three clamps to each side are needed. A better, though more difficult plan, is to ligate the broad ligaments with three ligatures, cutting free each section as it is tied, and holding the stumps with a hemostat. When the broad ligaments are tied or clamped and cut, the peritoneum is opened posteriorly, and the uterus removed. If ligatures have been used, the stumps of the broad ligaments are sewed together, the peritoneum and vaginal walls closed over them with number 3 chromic catgut. If clamps were used, the pelvis and vagina around the clamps is packed with gauze, and the handles of the clamps so supported by a suspensory bandage that the blades are not dragged upon. Clamps are cautiously removed, after seventy-two hours."—(J. C. Hirst's *Manual of Gynecology.*)

7. The *internal genital organs of the female,* are: The uterus, Fallopian tubes, and the ovaries. The *external organs* include: The mons Veneris, vulva, labia majora, labia minora, clitoris, vestibule, Bartholin's glands, hymen, and vagina.

8. POST-PARTUM HEMORRHAGE. *Four predisposing causes.*—(1) Multiparity; (2) hemorrhagic diathesis; (3) precipitate labor; and (4) overdistension of the uterus.

Four immediate causes.—(1) Mismanagement of labor, such as emptying the uterus too rapidly; (2) placenta prævia; (3) retained placenta or clots; and (4) an overdistended bladder.

Treatment.—Grasp the uterus at once, through the abdominal wall, and massage it firmly. Anything in the uterus should at once be cleaned out. Pass one hand into the uterus, and with the other on the outside make firm pressure. A hypodermic of ergotin or ergot can be given by an assistant. An intrauterine douche of hot sterilized water (about 115° F.) may be given. Sometimes a very thorough packing and plugging of gauze of uterus and vagina may be necessary. Whatever is done must be done promptly; and everything likely to be needed for this emergency should be prepared beforehand in every labor.

9. *Mechanism of Labor in R. O. A.*—"(1) Accommodation of the size of the fetal skull to the size of the pelvic canal by flexion; accommodation of the shape of the fetal skull to the shape of the pelvic inlet by moulding; accommodation of the direction of the head to the direction of the pelvic canal by lateral inclination. These movements occur prior to labor, when the head enters the pelvic inlet with the subsidence of the uterus. (2) Further flexion, moulding, and accommodation of the head to the pelvis by lateral inclination, when labor pains appear, and the head is subjected to a propulsive force and to the resistance of the lower uterine segment, the cervix, and the pelvic walls. (3) Dilatation of the lower uterine cavity and of the cervical canal. (4) Descent of the head to the pelvic floor, mainly by an extension of the fetal spine. The fetal body, as a whole, is not yet propelled along the birth canal, because, during a pain and while the head is obviously descending to the pelvic floor, the fundus uteri and the breech do not sink to a lower level. On the contrary, there is a slight elevation of the fundus, and elongation of the uterus, and the distance between the head and the breech increases during a uterine contraction. (5) Anterior rotation of the occiput. (6) Propulsion and extension of the head in the direction of least resistance under the pubic arch until it is delivered, again following the direction of the lower pelvic floor, which is now upward, forward, and outward. (7) Restitution. The rotary movement of the head is not followed by the shoulders. As the former escapes from the vulva with the sagittal suture running anteroposteriorly, the neck is necessarily twisted. As soon as the head is released from the forces which compel its rotation, it immediately resumes its natural relationship with the shoulders, which lie with their long axis in the oblique diameter of the pelvis. (8) External rotation. This movement of the head is explained by the movement of the shoulders within the birth canal. (9) Descent, rotation, and birth of shoulders. The anterior, or left shoulder first strikes the resistance of the pelvic floor. In obedience to the universal law that whatever portion of the fetal body first encounters this resistance is directed downward, forward, and inward, the anterior shoulder is compelled to travel in these directions by a rotary movement of the shoulders on the spine. The anterior shoulder finally appears under the arch of the symphysis; unable to move further forward, the posterior shoulder and arm are propelled over the floor of the pelvis and are born, their escape being followed by the birth of the anterior shoulder and arm. (10) Delivery of remainder of the body by a movement so rapid that the eye cannot well follow it, the birth canal being so widely dilated that its walls offer no resistance to the escape of the small and compressible thorax, abdomen, and lower extremities."—(From Hirst's *Obstetrics.*)

10. The ordinary morning sickness is a mere symptom, has no significance, and seldom gives any trouble or needs treatment. The pernicious vomiting is very severe, is probably due to reflex nervous disturbances. It may endanger the life of mother anad child, and may necessitate the interruption of the pregnancy. If the cause can be found it should be removed, and every possible care must be taken of the woman. Other *causes of vomiting in pregnancy* are: (1) Reflex disturbance, due to rapid growth and excessive distention of the uterus; (2) disease or displacement of uterus, tubes and ovaries; (3) disease of pelvis or gastrointestinal tract; (4) excessive sexual intercourse; (5) renal disease or disturbance.

Pernicious vomiting in pregnancy may arise from a variety of causes. The most common are: Reflex disturbance, caused by the rapid growth and distension of the uterus; some pathological condition of the uterus or its adnexa; some pathological condition of the gastrointestinal tract; excessive sexual intercourse; kidney insufficiency, or some other form of faulty nitrogenous metabolism. The principal symptom is continuous vomiting, which results in exhaustion and death unless relieved. The urinary examination shows diminution of urine and total nitrogen; ammonia is in excess, indoxyl and skatoxyl are increased. Leucin, tyrosin, albumin and sugar may be found. The *treatment* consists in rest in bed in a quiet, darkened room and the administration of easily digested foods, such as milk, broths, eggs, etc. A careful search must be made for some local exciting cause, and if such condition is found it should receive appropriate treatment. Sexual intercourse should be interdicted. The bowels should be kept freely open. Sodium bromide, camphor, cocaine, silver nitrate, cerium ovalate, hyoscine hydrobromide, antipyrine, etc., are among the drugs used internally. Rectal alimentation may be necessary, and, as a last resort, dilatation of the cervix and internal os, or abortion may be performed.

11. *Artificial feeding is indicated.*—If the mother dies; absence of breast milk, eclampsia, tuberculosis, septic infection, severe hemorrhage, or chorea on the part of the mother; and in case of persistent loss of weight of the child.

Proper modification of cow's milk includes dilution, and the addition of cream and sugar of milk.

For a newborn infant, take the top 9 ounces from a quart of good milk, of this use 2½ ounces; to this 2½ ounces add one ounce of milk sugar and 17½ ounces of boiled water. This will give 20 ounces. The infant should receive about half an ounce every two hours

for the first day, and about one ounce every two hours for the next six days. During the night the infant should be fed twice. This mixture is only suitable for the first week.

The following table is compiled from several in Kerley's book on *Treatment of Diseases of Children:*

	3d to 10th Day.	10th to 21st Day.	3d to 6th Week.	6th week to 3d Month.
Gravity cream	½ oz.	1½ oz.	3½ oz.	4 oz.
Milk	3 oz.	5 oz.	8 oz.	12 oz.
Milk-sugar	1 oz.	1½ oz.	3 oz.	4 oz.
Lime-water	½ oz.	½ oz.	2 oz.	3½ oz.
Boiled water to make	16 oz.	24 oz.	32 oz.	52 oz.
Feedings in 24 hours	10	9 to 10	8 to 8	7 to 8
Amount at each feeding	1 to 1½ oz.	1½ to 2 oz.	3 to 3 oz.	3½ to 4 oz.

12. *Changes that occur in the fetal circulation at birth.*—The hypogastric arteries dwindle and close, the foramen ovale becomes obliterated, the ductus arteriosus and ductus venosus become obliterated, the umbilical vein becomes impervious, and the Eustachian valve atrophies.

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery...July 13
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix.....July 6
Arkansas	T. J. Stout, Brinkley	Little Rock....May 11
California	C. B. Pinkham, Sacramento	San Francisco..June 28
Colorado	David A. Striekler, Empire Building, Denver	Denver..... July 6
Connecticut*	R. L. Rowley, Hartford	Hartford.....
Delaware		Wilmington....June 15
Dist. of Col'ba	E. P. Copeland, Washington	Washington....July 13
Florida*	W. M. Rowlett, Tampa	Jacksonville....June 14
Georgia	C. T. Nolan, Marietta	Atlanta.....June 9 Augusta.....
Idaho*	Robt. O. Jones, Boise	Boise.....Oct. 5
Illinois	F. C. Dodds, Springfield	Chicago.....June 14
Indiana	W. T. Gott, Crawfordsville	Indianapolis...
Iowa	G. H. Sumner, Des Moines	Iowa City.....June
Kansas	H. A. Dykes, Lebanon	Topeka.....Oct. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville.....May 17
Louisiana	E. W. Mahler, New Orleans	New Orleans...June 10
Maine	F. W. Searle, Portland	Portland.....July 6
Maryland	J. McP. Scott, Hagerstown	Baltimore.....June 8
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston.....May 11
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor.....June 8
Minnesota	T. McDavitt, St. Paul	Minneapolis....June 1
Mississippi	J. D. Gilleylen, Jackson	Jackson.....
Missouri	G. H. Jones, Jefferson City	St. Louis.....June 14
Montana*	S. A. Cooney, Helena	Helena.....
Nebraska	H. H. Antles, Lincoln	Lincoln.....June
Nevada	S. L. Lee, Carson City	Carson City....May 3
N. Hampshire	C. Dunean, Concord	Concord.....Sept. 9
New Jersey	A. MacAlister, Trenton	Trenton.....June 15
New Mexico	R. K. McClanahan, E. Las Vegas	Santa Fe.....
New York	G. M. Wiley, Univ. of State of New York, Albany	New York.... Albany.....May 18 Syracuse..... Buffalo.....
No. Carolina	H. A. Royster, Raleigh	Raleigh.....June 21
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks...July 6
Ohio	H. M. Platter, Columbus	Columbus.....June
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City.July 13
Oregon	B. E. Miller, Portland	Portland.....July 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia..July Pittsburgh....
Rhode Island	B. U. Richards, Providence	Providence....July 1
So. Carolina	A. E. Boozer, Columbia	Columbia.....June 8
So. Dakota	P. B. Jenkins, Waubay	Deadwood.....July 13
Tennessee	A. B. DeLoach, Memphis	Memphis..... Nashville.....June Knoxville.....
Texas	T. J. Crowe, Dallas	Galveston.....June 22
Utah	G. F. Harding, Salt Lake City	Salt Lake City.July 5
Vermont	W. Scott Nay, Underhill	Burlington.....July 13
Virginia	J. W. Preston, Roanoke	Richmond.....June 22
Washington*	C. N. Suttner, Spokane	Spokane.....July 6
W. Virginia	S. L. Jepson, Charleston	Charleston.....July 13
Wisconsin	J. M. Dodd, Ashland	Milwaukee.....June 29
Wyoming	J. D. Shingle, Cheyenne	Cheyenne.....June
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Acute Epidemic Encephalitis.—This term is preferred by Sicard because apparently not all cases show lethargy, while some have been expressed as myoclonus. He has recently seen three cases of which two were myoclonic and one lethargic. Exhibition of convalescent serum in the spinal canal appeared to cure one of the myoclonic cases.—*Le Bulletin Médical.*

Therapeutic Hints.

Ringworm of the Nails. — In general practice, according to Robert Craik, onychomycosis is comparatively rare, and its treatment is apt to be superlatively disappointing. In two cases (both in women) he found the following treatment successful: A lotion of ℥j of salicylic acid in ℥jss of methylated spirit, to be painted on after scraping every night, and without scraping every morning, and to be used for three months or longer.—*British Medical Journal.*

Mercuric Iodide in Syphilis.—R. L. Spittel reports a method of administering mercury and iodide in the treatment of syphilis which he has found superior to any other. At the beginning of the war, when there was a likelihood of a shortage of salvarsan, he experimented with arsenic, mercury and iodide, taking as his working hypothesis dosage to the point of tolerance by the intravenous route. An experience of over 4,000 of these injections, during a period of four years, convinced him of the value of the solution used. It is a valuable adjunct to the treatment of syphilis with salvarsan; the combination establishing a cure (as gauged by Wasserman tests, provocative and otherwise, at varying intervals) more quickly and permanently than by any other method. The solution has the following composition:

Mercuric iodide ..... 50 gr. (3.24 g.)
Sodium (or potassium) iodide ... 8 dr. (28.42 g.)
Phenolphthalein (0.5% solution)...20 m. (1 c.c.)
Sodium hydrate (25% solution)..... about 2 dr.
Distilled water.....to 40 oz. (1000 c.c.)

The dose for an adult is 8 to 12 c.cm. given intravenously with a 20 c.cm. or a 30 c.cm. syringe. The required dose is filtered off through aseptic cotton wool and drawn into the syringe, which is then filled to its full capacity with strained sterile or distilled water. The number of injections and the interval between them vary with the individual case. An ordinary case of secondary syphilis may be treated with five or six injections each of salvarsan and mercuric iodide, given at intervals of from seven to ten days alternately, either in varying sequence or sometimes in successive courses.

In addition to this it is well to safeguard the patient by prescribing mercurial treatment by mouth or inunction (measures which have the advantage that the patient carries them out at home) for periods varying from eight to twelve months, according to the demands of the case. Mercury, in the form of grey powder, is to be taken for six weeks; this is to be followed by an interval of one month, in the middle ten days of which an iodide mixture is given, *e. g.*:

℞ Potassii iodidi ..... 5 to 20 gr.
Liq. arsenicalis ..... 4 m.
Extracti sarsæ liq..... 1 dr.
Syrup. glycerophosph. co..... 1 dr.
Infus. cinchon ..... ad ½ oz.

Sig. To be taken in a glass of milk or water twice a day.

These oral courses of mercury and iodide are to be continued for at least a year, or more if necessary.—*The Lancet.*

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Original Articles.

AN ACCOUNT OF POISONOUS SUMACHS, RHUS POISONING, AND REMEDIES THEREFOR.

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THE plant family to which the poisonous sumachs belong, namely the Anacardiaceæ, is characterized by numerous species having acrid, caustic, or poisonous juices. Among the more or less well-known kinds that possess an irritant poison are the Cashew-nuts (*Anacardium* spp.), the marking-nuts (*Semecarpus* spp.), and some species of pepper-trees (*Schinus*) and pistacio (*Pistacia*), in addition to the poisonous sumachs themselves, members of the genus *Rhus*, in a broad sense. At least 11 exotic species of *Rhus* have been recorded as poisonous, the most noteworthy of which is *Rhus vernicifera* from which Japanese lacquer is obtained.

American Poison Sumachs.—The American poisonous species include the coral sumach (*Rhus metopium*), the poison sumach (*R. vernix*), the poison oak (*R. diversiloba*), and the poison ivies (*R. toxicodendron*), a group variously considered to include from one to eight or more species.

The coral sumach occurs only in southern Florida, and is known also by the names, poisonwood, hog gum, and doctor gum.

Poison sumach is found throughout the states east of the Mississippi Valley. For this plant which forces itself on the public attention, I have found the following vernacular names: poison ash, poison elder, poison dogwood, poison oak, poison sumach, poison swamp sumach, poison-tree, poison-wood, poison-wood tree, swamp sumach, white sumach, dogwood, swamp dogwood, varnish-tree, quick-will, thunderwood, sulphur-wood, mercury, and in use among the French-Canadians *l'arbre à puce.*

The poison oak (*Rhus diversiloba*) is confined to the Pacific Coast; a book name is California poison sumach, and the plant is further known in English as poison ivy, California poison vine, and in Spanish as *yeara*, and *hiedra* (or *yedra*).

The poison ivies of the variable and possible polyspecific group are distributed from British Columbia and Nova Scotia south to Arizona and Florida. Excluding book names applied to the various segregates, the following vernacular nomenclature has been found for these plants: Poison ash, poison creeper, poison ivy, poison mercury, poison oak, American poison vine, climbing ivy, three-leaved ivy, wild-ivy, climbing sumach, trailing sumach, climath, shoe-string weed, mercury vine, black mercury, black-mercury vine, and various modifications of the word mercury, as markery (markory, markry), markweed, and even pickry (picry).

This is not the place for a botanical description of these plants, such as can be gleaned from the various manuals, but two points relating to the size attained may be mentioned. Poison sumach often becomes a small tree and has been known to attain a height of 25 feet and a diameter of 10 inches; while poison ivy may reach a diameter of several inches and may climb to the tops of some of the taller trees.

The Poisonous Principle of the Toxic Sumachs.—Whatever form a particular species of *Rhus* may assume, whether creeping or climbing vine, shrub or tree; whatever species even it may be, the poisonous principle seems to be the same. This conclusion is the result of modern studies, the latest investigations in a long series, which have been remarkable for the diversity of their results, and which it will be interesting to review.

In 1797 van Mons[1] announced that the poisonous principle of *Rhus radicans* was a gaseous hydrocarbon which emanates from the plant only at night or on cloudy days. In 1825 Lavini[2] agreed that the poison was a gas, but that the hydrocarbon given off by the plant was not poisonous. Thirty-three years later, in 1858, Khittel[3] pronounced the poison to be a volatile alkaloid, and in 1865 Maisch[4] controverts this by attributing the poisonous properties to a supposed new volatile acid, he calls toxicodendric acid. This was later proved to be acetic acid. In the same year Buchheim[5] asserted that the poisonous element is cardol.

In 1882, Burrill[6] in conformity to a whilom fad of tracing every trouble to germs or bacteria, launched the theory that *Rhus* poisoning is due to an organism he called *Micrococcus toxicatus.* This theory received little support and was abandoned later by its proposer. In 1893, Mathews,[7] evidently impressed by the acid theory, called the poisonous principle of varnish trees in China, tsihic acid, from the Chinese name of the varnish, tsih. Four years later in 1897, Pfaff,[8] as a result of the most scientific investigation of the subject up to that time, proved that the volatile toxicodendric acid of Maisch is acetic acid, and states that the poisonous principle is a nonvolatile oil which he calls toxicodendrol. However, the best of findings relating to *Rhus* poison, seem liable to overturning, as 9 years later, in 1906, we find Acree and Syme[9] attributing the irritant effects of *Rhus* to a complex substance of a glucosidal nature, which apparently is to some degree volatile. In publications dated 1905 to 1907 Stevens and Warren[10] asssert that the poison is

resinous and nonvolatile, and in 1907, also, Majima and Cho,[11] Japanese chemists, call it urushinic acid. A year later Miyama,[12] another chemist of that race, states that the poison is a polyhydrophenol and gives it the name of urushiol. In 1910 we find in Aiton's Encyclopedia (Vol. V), either a new theory or a somewhat imperfect atavism to Burrill's *Micrococcus* hypothesis, when it is said, the poisonous principle "resides not so much in the plant itself as in a minute fungus which lives on the plant." The very latest news I have of the *Rhus* situation, dated 1918,[13] is also from a Japanese and confirms his compatriot's finding that the poison is nonvolatile and is nothing more nor less than the principal constituent of the lacquer, the polyhydric phenol, urushiol. After floundering about among a baker's dozen of rival theories, each smashed to flinders by its successor, it is a comfort to find and lay tight hold upon this firm statement. From this point onward, therefore, we shall regard the problem of *Rhus* poison as solved for all time. As an aside, I may confess, that personally, but secretly, mind you, I fully expect some paper to appear in a year or so that will knock all previous findings into a cocked hat.

However that turns out, I would not fail to record that my experience in looking through the *Rhus* literature, has warmed my heart toward the chemists. Formerly, to my perhaps obscured vision, they appeared to be masquerading as exact scientists, but now that things are clearer to my eyes, they seem like brothers, since it proves that their science is as fully and as delightfully inexact as the various branches of my own beloved natural history.

This parallelism can be carried further, for the chemists, like the biologists, have also fallen into the pitfall of nomenclature. The older chemists steered clear of this trouble by contenting themselves with enumerating various properties of the substances they investigated. This method was not exciting enough for the newer school, however, and names were invented for each new or supposedly new thing found. Like the earlier biological nomenclators, each chemist seems to have named things pretty much as he pleased, a practice naturally giving rise to a beautiful array of names for the same thing. For instance, fourteen nominally distinct acids have been reported from *Rhus* sap, a number surely more than double the tale of different acids really present. Again we read that a Japanese chemist called the alcohol-soluble part of lachurushic acid and the alcohol-insoluble part, diastatic matter; and that a little later a French chemist called the same things laccol and laccase.

Without going into detail about substances merely described, such as a "nitrogenous substance having no oxidizing properties," we may list the definitely named constituents that have been reported from *Rhus* sap. The acids, for instance, are: acetic, gallic, Japanic, mucic, oxalic, palmitic, rhustannic, sebacic, succinic, tartaric, toxicodendric, usihic, urushic, and urushinic. Other things are: acrolein, fisetin, myricetin, palmitin, pectin, phytosterin, quercetin, gallo-tannin, laccol, laccase, rhamnose, myricyl alcohol, ceryl alcohol, methane, hexane, octane, pyrocatechol, toxicodendrol, urushiol, verniciferol, polyhydrophenol, dihydroxyphenol, besides resins, gums, waxes, alkaloids, enzymes and glucosides.

Modes of Infection with Rhus Poison.—With all this array of portentously named elements it is no wonder that almost every one finds something in the sap of poisonous *Rhus* that is not good for him. But to return to more serious ways and to our sap it may be said that the sap of *Rhus vernix* (and that of poison ivy is similar) as it flows from a cut in the bark is a thick yellowish-white, sticky emulsion, which upon exposure immediately begins to darken, finally becoming black. The juice has a peculiar sweetish odor and an acrid taste, and from it a varnish apparently identical with Japanese lac can be prepared. Refined to its purest state the actual *Rhus* poison is a powerful escharotic, severely blistering living skin; it is not a caustic, however, as it produces no escharotic effect on the skin of a corpse. The poison is present in the juice of the plant, whether in root, stem, leaves, or immature fruits, but is said not to occur in fully ripened fruits.

From a Nonvolatile Poison.—The commonly accepted theory of Rhus poisoning is that actual contact of the skin with some of the sap or some part of the plant containing the poisonous principle, is necessary. This opinion is not unanimous, however, and much discussion has centered round the theories as to modes of infection, a review of which will, I hope, prove interesting.

The most common ways of getting ivy poisoning are: accidentally brushing against the plants, casually plucking the leaves or breaking twigs with the fingers, coming in contact with broken roots in such operations as transplanting other plants, and in clearing land, plowing, and gardening. Bathers often get poisoned, especially those undressing in thickets, or taking a swim in streams bordered by luxuriant vegetation, where the poison ivy is apt to occur. Woodcutters often acquire the infection in the course of their regular business, and workers about sawmills are poisoned by vines brought in on logs, sometimes after they have lain in the yard for weeks. Numerous cases have their origin in haying operations, or in harvesting crops like corn, in which poison ivy may grow up to a considerable height in one season; and the danger does not pass with the harvest, for cases are recorded of men being poisoned when taking hay containing ivy from mows in the winter time.

Among less common occurrences that result in poisoning are: the cutting of sticks by boys from the poison sumach, for use in playing hockey and ball; the gathering for decorations of the leaves of this plant, which are among the most brilliant in autumn; and handling of herbarium specimens, sometimes when several years old. One physician states he was poisoned through rubber gloves, as the juice of the plant combined with the rubber and stained it through. A case has been reported to me of poisoning from the ashes of burned poison ivy plants.

Poisoning has resulted in several ways also from lacquer imported into this country. Romyn Hitchcock[14] notes that a piano manufacturer, trying lacquer in his establishment, was forced to give it up on account of the effects upon the workmen. Dr. Millspaugh[15] records a similar termination of an

experiment in the use of lacquer in a boot varnish, which poisoned all who worked with it. Paperhangers also have been poisoned by lacquer on imported embossed wallpapers.

Internal poisoning by *Rhus* toxin has resulted from such actions as chewing poison ivy leaves, eating the green fruit, drinking supposed sassafras tea made from roots among which those of *Rhus* were mixed, eating the root of a poisonous sumach by mistake for sarsaparilla, and from overdoses of tincture of *Rhus toxicodendron* and of homeopathic *Rhus tox* pellets.

The cases thus far discussed involve direct contact with the poison of *Rhus* either in the plant itself or in a product. There are in addition two very interesting classes of causes of *Rhus* poisoning, namely, by indirect contact, and the much disputed infection without contact, either direct or indirect.

It is well known that clothing, shoes, and the like on which *Rhus* sap has dried may cause sumach poisoning even for months afterwards, and tools that have come in contact with the sap are equally dangerous. Characteristic ivy poisoning has been known to develop on a man's thigh under a pocket in which was carried a knife that had been used in cutting a sumach plant. Even remedies, such as sweet oil, used to alleviate a case of poisoning, have produced a new case of infection, when oil from the same bottle has afterward been applied to the body for another purpose.

Handling any animal that has been brushing through poisonous *Rhus* plants is dangerous, and several cases in which human beings have transmitted it to each other are on record. Persons of greater immunity to the poison thus transfer it to the more susceptible, and one of the few fatal cases of *Rhus* poisoning reported was in this way given to a boy by a family servant who was not himself affected. Thus under certain circumstances even a handshake is dangerous.

The question as to whether *Rhus* poisoning is ever contracted without actual contact, either direct or indirect, with the poisonous principle is one concerning which there is a mass of evidence on both sides. In this discussion the point at once comes up as to whether the active poison of these plants is in any degree volatile, a supposition controverted by most of the modern evidence. But letting the settlement of this question rest for a moment, I will discuss the other methods by which it has been supposed poisoning might occur without actual contact.

Thus so long as it was held that the poisonous principle of *Rhus* was a gas it was perfectly natural for people to make statements such as the following quoted from Asa Christy,[16] 1829, in regard to *Rhus vernix:*

"The far-famed bohon upas (if actually existing) does not possess qualities of a more remarkable nature, for there is an atmosphere generated around these plants, which by simple inhalation, excites its peculiar inflammatory action in the system, attended by all its disagreeable concomitants."

Even today many persons firmly believe that they may contract the poison merely by passing near some of these poisonous plants. Modern evidence, however, does not favor this view, for it has been shown[17] that the pollen, plant-hairs, and cork-cells of the bark of these plants, the only parts likely to be carried by the wind, are non-toxic. The possibility of insects carrying minute quantities of the poison should not be overlooked in considering cases of poisoning at a distance.

The poison can be carried by smoke from burning sumachs, but exactly how it is done is not generally understood. As a sample of one of the earlier statements on this point, I quote, including some of his introductory words relating to *Rhus vernix*, the following from "An Account of the Poison-Tree in New England," by P. Dudley,[18] written January, 1721, for the London Philosophical Transactions: "The inside of the wood is yellow and very full of juice as glutinous as honey or turpentine; the wood itself has a very strong unsavory smell, but the juice stinks as bad as carrion. It poisons in two ways, either by touching or handling it, or by the smell, for the scent of it when cut down in the woods, or put on the fire, has poisoned persons to a very great degree. * * * A gentleman in the country was swelled up for several days with the smoak or flame of this wood. * * *" W. Sherard gives in the same volume, "A farther account of the same tree" (P. 217), in which he says: "When laid on the fire, of 5 or 6 persons sitting by it, some will fall a swooning, fainting or yawning, and continue so for several days, some but a few hours, and others of the company are not at all affected."

By experiment it has been learned that *Rhus* poison can be carried by unfiltered but not by filtered smoke from the burning plant, the conclusion therefore being that the active principle is mechanically carried by soot particles. Distribution of the poison by smoke may assume considerable importance, for as one of the consequences of forest fires, all the members of several families have been thus infected by *Rhus* poison.[19]

From a Volatile Poison.—Now, for what possibly is the most debated point in the whole of the exceedingly controversial *Rhus* discussion, namely, the volatile or nonvolatile character of the active principle. Practically all of the more scientific investigations of the subject have resulted in decisions that the poison is nonvolatile. For one I do not believe evidence on the other side has been given due weight. For instance, we have the deliberate statements of such well known scientists as Dr. John Bachman and Dr. Charles E. Bessey, both very susceptible to the poison, and who therefore took the greatest precautions to avoid poisoning, that they were nevertheless poisoned by plants handled in their presence, but entirely by other people. These and other bits of testimony to the same effect might be explained away by some of the indirect transferences of ivy poison, such as I have previously mentioned, did not the place where the poison took effect in several cases give such suggestive evidence of volatility of the toxin. For instance, of the case of Dr. Bessey, in which an assistant had brought in a vasculum some poison ivy plants, warning the doctor not to touch the box or its contents, Dr. Bessey himself says that he merely leaned over the vasculum directing what specimens to save and was poisoned only on the parts of his hands and face that were directly over the box. He further says:[20] "I do not see how any

one can escape from the conclusion that that which poisoned me so severely and so peculiarly was volatile enough to be carried up (apparently in straight lines) in the warm air which escaped from the tin collecting box (vasculum) when opened in my study. In this case there was no contact on my part with the poison ivy, nor with any other plants in the vasculum. I had been poisoned too often to be careless when warned by my assistant. I am not denying the truth of Dr. Pfaff's conclusion that there is a nonvolatile poisonous oil in the poison ivy. I am forced to conclude that there is a volatile poison also in the plant."

A very similar case is recorded by Dr. Richard E. Kunze,[21] who at the time was experimentally attempting to infect with the poison two supposedly immune persons. He states: "With a pair of forceps I took a leaflet from a glass jar * * * and repeatedly rubbed it across the * * * forearms of both parties. * * * To inoculate, I had to reach across the table on which stood the open jar, the mouth of which was directly under my chin. The inoculated escaped scot-free, and the operator paid the penalty. The emanations while bending over the jar produced a circular patch of vesicles three inches in diameter, corresponding with the mouth of the vessel mentioned."

Romyn Hitchcock, formerly of the National Museum, opened a bottle of Japanese lacquer that had been kept stoppered for years, had a feeling as of a warm breath in his face, accompanied by a suffocating disagreeable odor, and had an eruption on his face in three days.[22]

Acree and Syme,[9] who made one of the most thorough modern investigations of *Rhus* poison, note when a bottle containing ether-extract of poison-ivy leaves was opened, "there appeared to be an escape of vapor, and a nauseating odor * * * pervaded the atmosphere. Some days later irregular red patches appeared on [the worker's] face, though a mask of cotton cloth was worn during the work." (pp. 302-3.)

The writer is the more inclined to take the affirmative side of the volatility argument because he has experienced the feeling of the vapor from the sap of poison ivy, and after learning the acrid, irritating nature of the emanation, has on several occasions thus had the first warning that he had exposed himself to infection.

Dr. D. P. Penhallow[23] brings up this point in an account of his experiences in Japan. During a four years' residence in that country he was poisoned more than a dozen times. "One very well-defined picture of its action," he says, "was that after a few experiences it was always possible for me to ascertain whenever I came into an atmosphere charged with the poison, as in a close room. This was manifested by a well-defined, though not strong acid taste in the mouth, and a slight, somewhat acute pain directly between the eyes." Dr. Penhallow stirred and smelled some lacquer and had his face badly poisoned.

Evidence that there seems no good reason to question, therefore, indicates that under certain circumstances poisonous species of *Rhus* and preparations made from them have a poison which appears to be volatile, or that is poisonous in so finely divided a state that the particles can be carried by a volatile constituent of the sap, which in effect amounts to the same thing.

Is There Immunity to Rhus Poisoning?—From the foregoing review of the means by which *Rhus* poisoning may be acquired, it would seem that the possibilities are so varied that no person could have the good fortune to evade all of them. However, there is a widespread belief that some persons are immune to the poison. Many of these supposed immunes have sooner or later discovered to their sorrow that hypothetical immunity is a poor dependence. Some have marvelous good fortune, however, as did Peter Kalm, the early botanical explorer of America, who tested poison ivy in every way, even to the extent of squirting some of the juice in his eye, without bad effects.

However, experiment has demonstrated that probably no person is entirely immune to *Rhus* poison. In a test of this kind, Dr. Stanley Coulter experimented with more than 40 species of the plants of Indiana, reputed to be poisonous by contact. In these tests, mere handling of the plant was first tried; then in the cases of persons not affected by this process, the leaves were well rubbed in on the forearm until serum and at times blood exuded, the juice of the plant and the serum then being allowed to dry on the arm. Under this treatment no person escaped ivy poisoning and poison ivy was the only plant tested that did affect every person upon whom it was tried.[24] This result was later corroborated in California by Dr. Edward Von Adelung, who tested 12 persons who believed themselves to be immune, and found that not one was. These trials indicate universal susceptibility to *Rhus* poison.

Symptoms of Rhus Poisoning.—Now that the cause of *Rhus* poisoning, the modes of infection, etc., have been discussed, we may proceed to consider the malady itself. It is often discussed under the names of dermatitis venenata or dermatitis toxica, though these terms apply, not to *Rhus* poisoning alone, but to all external inflammations caused by irritant poisons. This particular dermatitis has been called erysipelas a rho, erythema venenosa, and among the Japanese, urushi rabure, meaning lacquer infection. It is perhaps best known in English (if we may say so) as *Rhus* dermatitis. The first description of the malady can be found in a Chinese work called Ping-yuan-hon-lun, date of about 605 to 609 A. D., and later in a Japanese document with the name of Wamyo-ruiju-sho of the relatively modern date of 923 to 930 A.D.

The symptoms of *Rhus* dermatitis in the order of their appearance are: redness of the skin, itching, swelling, and the formation of numerous small elevated vesicles or blisters, or larger eruptions of the same order known as blebs. The itching of *Rhus* dermatitis, according to the writer's experience, is specific, and from its peculiar character will be recognized immediately upon recurrence after it has once been felt. The vesicles at first are filled with a clear fluid, which later becomes yellow, like pus; if not reduced the vesicles break and the pus dries, forming a yellow incrustation. As the malady passes, desquamation of this crust ensues, leaving the skin very tender and of a florid red color. From this stage to the normal appearance

of the skin requires but a short time. In other words, "the eruption is an acute, simple inflammation of the skin, inclining always to spontaneous recovery."

The severity of a case of *Rhus* dermatitis depends very largely on the area involved. When the face is badly affected, the eyelids become tumefied and closed; occasionally the whole body is poisoned and becomes greatly swollen. In the worst cases, probably due to interference with the functions of the skin, there are constitutional symptoms, including a sympatheic fever, which may be so severe as to produce delirium. A few cases of the loss of hair and nails have been attributed to *Rhus* dermatitis, and extremely few of death.

In internal poisoning by *Rhus* toxin, the symptoms —inflammation of the mucous membranes, coughing, drowsiness, vomiting, diarrhea, convulsions, and delirium, with hurried respiration and weak pulse, are more alarming and recovery much more slow.

Recurrence of the Dermatitis Without Reinfection.—Two interesting speculations connected with *Rhus* poisoning relate to recurrence of the trouble without reinfection, and to autoinoculation, a process by which a malady is carried in the circulation to other parts of the body than that originally infected. Part of the cases which autoinoculation is invoked to explain are disposed of by the fact that poisoning often takes place through clothing, and the *Rhus* sap directly reaches a part of the body deemed protected. Another portion of these cases may be explained by unconscious transfer of the toxin by the hands from infected to noninfected parts of the body. There seems to be no sound reason for believing in the autoinoculation theory. The spread of the poison by serum from the vesicles is also believed to be impossible; observations having a contrary indication bring more rationally explained by the transfer with the serum of minute quantities of the original poison, which are amply sufficient to start a new eruption.

As to recurrence of *Rhus* dermatitis without reinfection there are profound differences of opinion. Numerous physicians have recorded such cases, but investigators of the experimental school have been inclined to deny them as absurd. In this instance as in others my position is that we should not give to theory, no matter how logical, nor to thinking, no matter how rigorous, equal consideration with apparently unimpeachable observations.

As an entering wedge for the introduction of testimony relating to recurrent cases of *Rhus* poisoning, I may cite my own experience that an old and apparently cured eruption can break out afresh. If this can happen after a lapse of weeks, it does not require great credulity to believe that it can do the same after a twelvemonth. The late Professor W. W. Cooke, a particularly methodical, careful and logical man, told me on various occasions of his own personal experience with a case of ivy poisoning that was recurrent for a period of several years. To mention only one or two of the unequivocal recorded cases of recurrence, I may cite that of Thomas Meehan,[25] the noted horticulturist, who had a *Rhus* dermatitis recur for a long series of years, during several of which he lived entirely in the city where there was almost no possibility of reinfection. In the *Ottawa Naturalist* for 1912, is cited[26] a case of poisoning on the foot (contracted when bare) which recurred for 7 years without possibility of infection. The early American naturalist, Dr. Barton, of Philadelphia, personally experienced a recurrent case of *Rhus* dermatitis, one of the periodical eruptions of which occurred while he was in Europe.[27] The regular annual occurrence of these renewals of *Rhus* poisoning, which has been scoffed at as a superstition, to my mind, not only does not weaken the case for recurrence without reinfection, but on the contrary, materially strengthens it, for it is highly improbable that new infections would be experienced at the same time in each of a long series of years.

Remedies for Rhus Poisoning.—The properties of the *Rhus* toxin, the modes of infection, the symptoms of the dermatitis and related matters all lead up to one main interest—that of remedies. The most striking feature of this section of *Rhus* literature is the extreme number and diversity of substances recommended for the treatment of the poisoning. Obviously one cause contributing to this result is the variety of theories that have been held as to the nature of the toxin. When the poison was thought to be an acid, alkalis naturally were used in neutralizing it; next when it was considered due to bacteria, germicides were in order; when a resin, solvents were called for; and as a glucoside, serum therapy with its antibodies was suggested. I notice, moreover, this is all good allopathic doctrine; the homeopaths who believe *similia similibus curantur* have a different set of curatives.

Not only did the theories call for a wide range of remedies, but physicians empirically came to favor a variety of curatives, each doctor, almost, having his pet treatment. In illustration of this variety, I will quote the opinions of a number of physicians.

Dr. W. E. Brandt[28] in the MEDICAL RECORD reports on various remedies, but declares a saturated solution of hyposulphite of soda externally, in severe cases, internally, is the best he knows, and in later pages of the same volume Dr. J. M. Ward announces chlorinated soda or Labarraquès solution as his favorite.[29]

Dr. Richard E. Kunze,[30] who himself was poisoned every year for 29 years and trying new remedies all the time, finally settled on pure acetic acid as the best.

Dr. C. H. Humphreys[31] states that sulphate of zinc affords speedy and certain relief, while Dr. A. E. Baldwin,[33] of California, after trying a number of treatments, asserts that: "Carbolic acid in solution and as an unguent is the only remedy of value."

Dr. Thomas Giffard[33] states that he used fluid extract of *Lobelia inflata* for 42 years with success, and Dr. S. A. Brown,[34] a naval surgeon, reports that bromine in olive oil was used successfully in over one hundred cases.

Dr. J. W. Hawley[35] states that spirit of niter cures in 24 hours, every time, and that he has used tincture of *Ledum palustre* for 20 years with unvarying success.

H. N. Hohnes,[36] in citing a modern remedy for ivy poisoning, says that the only satisfactory one is a solution of potassium permanganate, applied hot.

Dr. T. J. Daniel[37] says that calomel in lime water has never failed, and that a solution of sulphate of quinine in water is a specific.

One physician reports a trial of aulactotherapy; a cow was fed poison ivy leaves and her milk was imbibed the next day; this was followed by apparent immunity for the rest of the summer. This method was tried on a child also with success.[38] Another doctor who used nitrate of silver in his practice, himself became poisoned, and remarks:[39] "I did not like to black my face, although I had frequently blacked my patients'."

So it goes: one man uses one thing, another something else. I have tabulated the distinct substances recommended in the literature and those I have learned of otherwise, and so far have the following totals:

Recommended for preventing *Rhus* poisoning... 19
Recommended for internal use in treatment of *Rhus* poisoning 27
Recommended for external use in treatment of *Rhus* poisoning 198

Eliminating duplications, there are many more than 200 different substances or processes that have been used in the treatment of *Rhus* dermatitis. Various combinations of these also are used so that the total number of treatments of *Rhus* dermatitis that could be differentiated probably runs to several hundred.

In this connection it has been very appropriately remarked that all of the three kingdoms, Animal, Plant, and Mineral, have been laid under contribution to pay tribute to the Tyrant, *Rhus*.

Recommended for preventing Rhus poisoning, 19:

To be used before exposure (4): Coating exposed parts of body with sweet oil, cottonseed oil, grease, or soapsuds, dried on.

To be used internally (4): Tincture of *Cypripedium* (lady's slipper), tincture of *Rhus toxicodendron* (poison ivy), chewing leaves of *Rhus toxicodendron* (poison ivy), milk of cow fed on poison ivy.

To be used after exposure (11): Washing with soap and water, hot soapsuds, alcohol, ether, turpentine, gasoline, solution of sodium bicarbonate, solution of potassium iodide, solution of magnesium sulphate, solution of carbolic acid, rubbing with moist earth.

Recommended for internal use in the treatment of Rhus poisoning, 27:

Tinctures or fluid extracts of the following plants (12): Sweet fern (*Comptonia asplenifolia*), snakeroot (*Aristolochia serpentaria*), pasque flower (*Pulsatilla hirsutissima*), aconite (*Aconitum uncinatum*), spicebush (*Benzoin æstivale*), hura (*Hura brasiliensis*), poison ivy (*Rhus toxicodendron*), poison sumach (*Rhus vernix*), pipsissewa (*Chimaphila maculata*), yellow jessamine (*Gelsemium sempervirens*), belladonna (*Atropa belladonna*), bryony (*Bryonia dioica*),

Other remedies derived from the vegetable kingdom (5): Strong coffee, morphine, quinine, chewing leaves of poison ivy (autotherapy), or of five-leaved ivy, or Virginia creeper (*parthenocissus quinquefolia*).

Remedies consisting of chemical elements or preparations based on them (8): Fowler's solution of arsenic, sweet spirit of niter, potassium iodide, tincture of iron, sodium bromide, sulphur, calomel, Epsom salts and other saline purgatives.

Miscellaneous remedies (2): Copious drinking, soot suspended in milk.

Recommended for external use in the treatment of Rhus poisoning, 198:

Tinctures, infusions or poultices of various plants 70
Other plant products.....17
Acids 10
Salts of various elements.....44
Other chemicals 22
Emollients of various origin.....11
Various substances of animal origin.... 8
Other materials and processes.....16

Tinctures, infusions or poultices made from following plants (70): Fungi: Family Agaricaceæ: Field mushroom (*Agaricus campestris*).

Spermatophyta: Family Liliaceæ: Lily-of-the-Valley (*Convallaria majalis*); false hellebore (*Veratrum viride*); soap-root (*Chlorogalum pomeridianum*), mashed-up bulbs.

Family Orchidaceæ: Lady's slipper (*Cypripedium* spp.).

Family Salicaceæ: Cottonwood (*Populus* spp.).

Family Myricaceæ: Sweet fern (*Comptonia asplenifolia*).

Family Fagaceæ: White oak (*Quercus alba*), bark; black oak (*Quercus velutina*), bark; chestnut (*Castanea dentata*), leaves.

Family Urticaceæ: Richweed (*Pilea pumila*), bruised stems.

Family Aristolochiaceæ: Snakeroot (*Aristolochia serpentaria*).

Family Phytolaccaceæ: Pokeweed (*Phytolacca decandra*), infusion of root.

Family Nymphaeaceæ: Waterlily (*Castalia odorata*); American lotus (*Nelumbo lutea*).

Family Ranunculaceæ: Bugbane (*Cimicifuga racemosa*); wild peony (*Pæonia brownii*).

Family Lauraceæ: Sassafras (*Sassafras officinale*), infusion of roots; spicebush (*Benzoin æstivale*), infusion inner bark; camphor (*Cinnamonum camphora*), infusion wood; spirit.

Family Papaveraceæ: Bloodroot (*Sanguinaria canadensis*), juice or infusion of roots; celandine (*Chelidonium majus*), infusion.

Family Crassulaceæ: House leek (*Sempervivum tectorum*), infusion of leaves.

Family Hamamelidaceæ: Witch hazel (*Hamamelis virginiana*), extract.

Family Leguminosæ: Sweet clover (*Melilotus* spp.); bean (*Phaseolus vulgaris*), fresh leaves.

Family Rosaceæ: Raspberry (*Rubus* spp.), fomentation of leaves; California holly (*Heteromeles arbutifolia*), decoction.

Family Euphorbiaceæ: Croton (*Croton tiglium*); spurge (*Euphorbia* spp).

Family Anacardiaceæ: Poison ivy (*Rhus toxicodendron*), tincture; poison sumach (*Rhus vernix*), varnish from; cashew nut (*Anacardium occidentale*).

Family Aquifoliaceæ: Black alder (*Ilex verticillata*).

Family Celastraceæ: Bittersweet (*Celastrus scandens*), infusion.

Family Sapindaceæ: Buckeye (*Æsculus californica*).

Family Balsaminaceæ: Touch-me-not (*Impatiens pallida*), stems; Touch-me-not (*Impatiens biflora*), juice.

Family Rhamnaceæ: Buckthorn (*Rhamnus californica* and *R. purshiana*).

Family Garryaceæ: Bear brush (*Garrya* spp.).

Family Ericaceæ: Labrador tea (*Ledum palustre*); manzanita (*Arctostaphylos* spp.), decoction.

Family Loganiaceæ: Yellow jessamine (*Gelsemium sempervirens*), fluid extract.

Family Asclepiadaceæ: Milkweed (*Asclepias* spp.), juice.

Family Verbenaceæ: Vervain (*Verbena hastata* and *V. urticifolia*).

Family Labiatæ: Horse balm (*Collinsonia canadensis*), leaves and stalks; Rosemary (*Rosmarinus officinalis*), juice; mountain mint (*Pycnanthemum* spp.), leaves; pennyroyal (*Hedeoma pulegioides*), leaves and extract.

Family Solanaceæ: Nightshade (*Solanum dulcamara*), leaves and berries; jimson weed (*Datura stramonium*), leaves; belladonna (*Atropa belladonna*), extract.

Family Scrophulariaceæ: Foxglove (*Digitalis purpurea*), infusion.

Family Plantaginaceæ: Ribgrass (*Plantago lanceolata*), leaves.

Family Rubiaceæ: Buttonbush (*Cephalanthus occidentalis*), infusion.

Family Caprifoliaceæ: Bush honeysuckle (*Diervilla lonicera*), infusion; elder (*Sambucus canadensis*), decoction of bark.

Family Cucurbitaceæ: Bryony (*Bryonia dioica*), tincture.

Family Lobeliaceæ: Indian tobacco (*Lobelia inflata*), tincture, infusion leaves.

Family Compositæ: Boneset (*Eupatorium* spp.); tarweed (*Grindelia squarrosa, G. hirsutula, G. robusta*), fluid extract; goldenrod (*Solidago canadensis*), chewed-up roots; everlasting (*Antennaria* spp.), infusion; marigold (*Calendula officinalis*), juice; arnica (*Arnica montana*), tincture; wild lettuce (*Lactuca canadensis* and *L. "elongata"*), leaves and stems.

A total of more than 70 species of 37 families.

Other plant products: Alcohol (including brandy and whiskey), coffee, cocaine (glycerite and oleate of), eucalyptol, guiaicol, ipecac, laudanum, also morphine sulphate, laurel water, quinine, rice powder, starch, tannin, turpentine, elderflower water, rosewater, oil of bergamot.

For the treatment of affected eyes only, the following have been used: Eye bright (*Euphrasia*), Eserine, an alkaloid from the Calabar bean (*Physostigma venenosum*).

Acids: Acetic (also vinegar), benzoic, boric, carbolic (also glycerite of carbolic and phenol sodique), citric, hydrocyanic, lactic, oxalic, salicylic, sulphurous.

Salts of various elements: Aluminum acetate, aluminum hydrate, bismuth subnitrate, bismuth subgallate, bromine, calcium chloride (as limewater and chlorinated lime), calcium sulphite, carbon, in the form of plumbago, copper sulphate, hydrogen peroxide, indium, iodine, iron chloride, iron perchloride, iron sulphate, iron subsulphate, lead oxide, lead subacetate, magnesium carbonate, magnesium sulphate, mercuric chloride, mercuric subchloride, mercuric iodide, mercuric oxide, mercuric peroxide, potassium citrate, potassium carbonate, potassium chlorate, potassium chloride, potassium hydroxide, potassium nitrate, potassium permanganate, silver nitrate, sodium borate, sodium carbonate, sodium bicarbonate, sodium chlorate, sodium chloride, sodium hydroxide, sodium sulphite, sodium thiosulphite, sulphur, zinc oxide (also benzoated), zinc silicate, zinc sulphate.

Other chemicals: Acetanilid, ammonia, ammonium acetate, ammonium chloride (salammoniac), ammonium hydrochlorate, ammonium ichthyosulphonate (ichthyol), antiphlogistine, antipyrin, aristol (dithymol diiodide, CHI_3), benzol, chloroform, chloral hydrate, collodion, creolin, formol, gasoline, iodoform (thymol iodide), lysol, nitrous ether, resorcin, salol, thymol.

Emollients of varied origin: Cold cream, cosmoline, cottonseed oil, cream, diachylon, glycerin, lanolin, lard, linseed oil, olive oil, petrolatum.

Various substances of animal origin: The poisonous element of the sting of the honeybee (*Apis*); human urine; sepia, a preparation from the ink of cuttle fishes; flesh and juices of great spider crab (*Macrocheira kaemferi*); milk from cow which has been fed poison ivy, serums containing antibodies, sour milk, buttermilk.

Other materials and processes: Baths and bathing in hot water, hot water and soapsuds, sea water, thermal springs, Russian baths, Turkish baths, cold water; applications of ice, applications of heat—either dry or by bran poultices; applications of earth, blood letting, blistering, with plasters, etc., burned leaves and wood of the plant (*Rhus*) rubbed on, either plain or in lard; burning old rags on a rusty hatchet and collecting the "dew" (grease?), which appears for use in treating poisoned areas; soap, especially home-made soft soap; let it alone.

The last process brings to mind the remark of a Brooklyn doctor: "Multiply the number of years represented by my gray hairs by two and you will not come far from the number of personal tests which I have had an opportunity to make of various remedies from let it alone to sour buttermilk. Both are excellent."

It has often been asserted, and seems to be a fact, that in the practice of medicine the multiplication of remedies for any malady is in direct proportion to their inefficiency. Judged by this criterion, the remedies for *Rhus* dermatitis, being so extraordinarily numerous, must accordingly have an unusually low average value. As previously mentioned, *Rhus* dermatitis is self-limited with a tendency to spontaneous recovery, usually running its course in 10 to 14 days. Undoubtedly many alleged cures owe their reputation to the fact that they have been used just as the malady was abating naturally. The chief elements of a rational treatment seem to be thorough cleansing of the infected surface with hot water and soap, and applications (in the most advanced practice of alkaline washes) to relieve the subjective sensations of itching and burning—in other words, Nature must do the healing, but we can aid her a little.

As a matter of interest it may be well to present in detail the methods of treatment preferred by authors of two of the latest and most scientific contributions to *Rhus* literature. Dr. A. B. Stevens[4] recommends washing with a 2 per cent. alcoholic solution of sodium hydroxide and after ten minutes washing with an 8 per cent. solution of sodium bi-

carbonate, this process repeated three to four times a day.

Dr. I. Toyama [42] gives as his favorite remedy the application of a wash consisting of caustic potash, 1 gram or cubic centimeter, alcohol 30, glycerin 10, and water 60. This reveals the extent of poisoned surface as the resin adhering to skin is turned black. This can be removed by a 1 per cent. alcoholic solution of nitric acid. Now wash thoroughly with soap and water and apply lead acetate as a compress.

The Effects of Rhus Toxin Upon Animals.—Whether *Rhus* poison affects animals as unfavorably as it does man is another of the *Rhus* problems that is in dispute. Dr. J. C. Guernsey[43] states that horses, pigs, sheep and goats eat poison ivy without harm. Horsfield[27] says the same of horses, cows and sheep, while in a recent study of the subject it is stated,[44] with reference to Western poison oak, that: "On the ranges the leaves and berries are readily eaten by sheep, goats and horses, but not by cattle, as far as could be ascertained by observation and numerous inquiries."

Dr. J. Bommer[45] asserts, however, that animals, presumably cattle, are as badly affected as humans, the lips becoming swollen, stiff and scabby so that they cannot eat. He records curing them with a solution of ipecac.

Dr. Joseph Hunt[40] reports that: "It is said that * * * dogs exposed * * * die with dilated pupils, without coma or convulsions, but with general swelling of the body." (p. 395.)

Usefulness of Poisonous Sumachs.—With the record of causing inconvenience and suffering to thousands of people every year, and even in extreme cases of causing death, it may seem paradoxical to speak of the usefulness of the poisonous species of *Rhus*. Yet the use of the *Rhus* toxin in medicine is very extended, and, according to many doctors, very important.

In the first place, it is used by homeopaths for immunizing people against Rhus poisoning, and in the treatment of the dermatitis, both by internal administration of an attenuated tincture.

In general medical practice it has been credited with the following therapeutic qualities: Alterative, antiseptic, antispasmodic, diaphoretic, diuretic, incitant, laxative, narcotic, tetanic, and as a general stimulant for the nervous system. It has been used in the treatment of at least 41 disorders and diseases of the human body, and for a number of them is said to be the most valuable remedy known. One doctor, convinced of the value of the active principles of poisonous sumachs, complains that the substitution of Virginia creeper leaves for those of *Rhus toxicodendron* is a deception on Physic.[46]

Human Disorders and Diseases in the Treatment of Which Rhus Toxin Has Been Used: Abscesses, amaurosis, bronchitis, bruises, burns, carbuncle, cardiac hypertrophy, catarrh, cellulitis, cerebral engorgement or irritation, chilblains, cyclitis, diarrhea, eczema, erysipelas, erythema, herpes, influenza, iritis, itch, nervous prostration, neuralgia, palpitation of heart, paralysis, pemphigus, pneumonia, pulmonary tuberculosis, *Rhus* poisoning, rheumatism, scarlet fever, sciatica, septicemia, spinal anemia, spinal irritation, sprains, stings of insects, typhoid and typhus fevers, ulcers, vertigo.

A gum called doctor gum or hog gum obtained from the poisonous coral sumach is used as an antisyphilitic, astringent, demulcent, emetocathartic, styptic, and vulnerary, and is an important element of the materia medica in the region where this sumach is native.

Among the miscellaneous uses of poisonous sumachs is that recorded by Hughes[47] for the Barbados, where a "cataplasm of new-extracted juice is of service to kill chiggers."

As noted previously, the Western poison oak has some value as forage, and we are further informed regarding this species (*Rhus diversiloba*) that although greatly dreaded by the Cherokees, who endeavor to conciliate it by addressing it as "my friend," it does not seem to injure certain California tribes so much. They even use it as medicine, though sometimes poisoning themselves internally by the practice. They further use the twigs as water sprinklers in sacred ceremonies, and it is also a material for woven fabrics, and its juice, which turns black rapidly on exposure to air, is utilized as an intense black dye for basketry.[48]

Horsfield[27] records also that the branches of *Rhus vernix* once were used, presumably by Eastern tribes of Indians, for flutes, whistles, and calumets or pipes of peace. For these purposes the wood must have been given special treatment to destroy the poisonous principle.

Public Policy Toward Poisonous Sumachs.—To a very limited extent poison sumach (*Rhus vernix*) has been used as a specimen plant for parks, and poison ivy (*Rhus toxicodendron*) for an ornamental vine, for which purposes they are well suited in every way, except for their poisonous properties. I have seen these plants used for both the purposes mentioned in the city of Washington, D. C., and a former chief of bureau of the Department of Agriculture contracted a severe case of dermatitis from a poison sumach in the grounds of that department. The plant has since disappeared.

It goes without saying that specimens of these plants in public places should be removed, and it will repay private property owners to suppress the poisonous species of Rhus, so far as possible. Practicable ways of doing this on a large scale are not yet known. It has been suggested that workmen selected for their comparative immunity to *Rhus* poisoning be employed, and that they be equipped with special heavy clothing and gloves not permeable to the sumach sap, which could be daily steamed and treated with neutralizing chemicals. This method is beyond the means of most property owners, however, and, despite all the precautions proposed is not without danger to the workmen. Simpler means of killing poison ivy plants include covering them with tarred paper, creosoted below, and means adapted to both poison ivy and poison sumach are: Pouring small quantities of concentrated sulphuric acid about each stem, and treating in the same way or spraying the plants with strong solutions of sodium arsenate, say two pounds to 10 gallons of water.

Poisonous Sumachs in Lighter Vein.—A Supposed Property of the Wood: Dudley,[18] in his account of the Poison-tree of New England, records a peculiar belief relating to poison sumach. "My neighbor," he says, "that was so sadly poisoned with handling

it, told me one thing very remarkable, and that is, that when he touched it he plainly perceived it to differ from the other wood that he was throwing into his cart, by its being as cold as a piece of ice; and withal assured me that he could distinguish it blindfolded from any other wood in the world by its coldness."

Pro and Con as to the Effects of Poisonous *Rhus* on Bees: Bigelow[49] reports that "In the New York Medical Repository is an account of a swarm of bees which, having alighted on the branches of *Rhus vernix*, were the next day found dead, with their bodies black and swollen." On the other hand, bees and other insects freely visit the flowers of poisonous sumachs, from which it is reported that domestic bees make an excellent honey.

Terrific Nature of *Rhus* Poison: Dr. James C. White[50] reproduces the following very imaginative account of the *Rhus* toxin: "Bazin, in his "Affections Cutanees Artificielles," says: [Here I translate] I must tell you something of the singular effects produced by two plants which grow in America, the *Rhus radicans* and the *Rhus toxicodendron*. From these trees, if one may believe authors, there is constantly given off an emanation, irritating and poisonous to a very high degree; unfortunate the imprudent who goes to sleep in their shade! his body is soon covered by a vesicular exanthema, with enormous swelling, and at the same time there become apparent general symptoms which assume the form of acute poisoning and of such violence that death follows in a very short time. [Dr. White then remarks:] After this there should be no doubt either as to the existence or habitat of the fabled upas tree."

Susceptibility of *Rhus* Poison: Dr. Thomas Stratton,[51] who records the fact that among the French-Canadians *Rhus vernix* is called "L'arbre à puce," literally "tree of the flea," perhaps with reference to the flea, puce, or pinkish-brown color of the petioles of this plant, further states: "I heard one say that he knew persons who began to swell immediately on seeing it, and others did the same on hearing its name mentioned."

Immunity to *Rhus* Poison: The two sketches here presented related to a supposed male immune who was sufficiently convinced he was not, and to a lady who believed and hoped she was not immune, but in a particular effort she made to become infected was disappointed.

The story of the man is: Up to the age of 20 years, "I was in the habit of showing the boys how I could eat the stems or chew the leaves with impunity; at that time, in the month of January or February, I was chopping down a tree in the woods upon which there was some vine growing. . . . In cutting off the vine . . . and pulling it down it came down over my face and head, and I had a beautiful attack of *Rhus* poisoning a few days afterward. Up to that time I was entirely immune; since then I have had repeated experiences with it." (Bartley[52].)

The case of the lady is as follows: She had been corrected by her uncle for a trifling error, and, deciding that life was no longer worth living, chose for a method of suicide the eating of an apronful of poison ivy leaves. She suffered no unpleasant symptoms whatever. (Kunze[30].)

Profiting Commercially from Knowledge of *Rhus* Poisoning: It is related that in early days in Virginia a slave wallowed in hay containing poison ivy, broke out all over, and became a repulsive sight. He was treated by the best physician in the county for a year without apparent benefit. Though a young, ablebodied slave, he was sold for $300. The buyer sent to the neighborhood store for five cents' worth of bluestone (copper sulphate) and it cured the negro at once. (Wiseman[53].)

A Traveler's Cure of *Rhus* Poisoning: A cure that many might like, but few have the opportunity to try, is thus recorded: The traveler reports that he was poisoned somewhere in California, obtained his first relief by bathing at the Soda Springs of Mt. Shasta, and was finally cured by a plunge in the hot lake at Mammoth Hot Springs, Yellowstone Park (McKee[54].)

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POISE OR TRANQUILLITY A NECESSARY CONDITION OF ECONOMIC REPAIR.

THE NEGATIVE OR RESTING PHASE OF MOVEMENT, AS A FACTOR IN CURE.

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ONE of the main reasons why medical advice, or any other good counsel, so often fails of its purpose is that the power of the idea or suggestion is negatived by commotion in the receiving cells and structures. The power transmitters often encounter obstacles disturbing the receptors and transformers—they are in positions of disadvantage. Positions of advantage of the apparatus of normal life are frequently jeopardized by commotions, thus the combined functions of adaptation and application fail of their fulfilment.

The state is one of stressful attention or psychic hypertension, of prodigal energizing without the relief of free motion, hence it verges on strain or exhaustion.*

A bridge or viaduct or suitable device is thereupon needed to convey the energy to the points to be energized.

A better simile might be a series of wires well insulated, such as are requird to safely convey the electric or "vital" currents. Poor insulation permits leakage of electric energy, and human energy is a close analogue. Indeed electrophysiology deserves more attention.

The human organism, which resembles a battery, loses a large proportion of its energy content through various sources of divergency, or inadequacy, or nonadaptability.

Or we might picture the situation as a need for suitable synapses, junction areas or fusion points, where energy directed to a group of structures shall merge (energize) into them favorably. Molecular poise is necessary for right receptivity as well as for energy transmission. Overstrained attention is peculiarly disturbing to functional economies; it encourages leakage, makes for mental commotion, confusion, bewilderment, and leads to exhaustion.

Movement in the human body is usually conceived of as active, less or more but not ceasing. Yet movement consists of two phases of equal significance, the active and the negative phase, or the progressive and the resting; also there is an intermediary transition state or poise.

So little attention is accorded this negative or intermediary phase that it deserves remark. Poise is the point of not only morphogenic advantage but equally of functional—mind and body as one (psychosomatic)—advantage.

Poise is an economic necessity; it must be achieved; and since it so rarely is present, deserves to be definitely taught as the primal condition of both health and the repair of health. The most economic means of achieving poise or relaxation, or the zero point from which all movement, mental or physical advances, is by muscle reeducation.

And this training process must begin with a conscious purposive appreciation of the negative phase of movement, the zero mark, as the point of departure for all economic effort. It is not only important to make the right movement but also to cease making the wrong movement. Each should be a clean motor act from nothing to maximum.

All motor energy should be put forth from the phase of complete relaxation, with just enough expended at a time to achieve the purpose—but no more.

In the action of duplex muscle groups, where extensors are balanced by flexors, as in the arm, extension, for example, should begin, proceed gradually and increasingly with no restraint from flexion or the torsion muscles, except to support the limb as required, to the point of fullest tension.

Also in the other movement, flexion, the direction, velocity, force should be exerted with the same careful graduation from zero to maximum, with no extraneous muscle interference. This poise is the necessary condition of exactitude and economy of movement; also, it is the greatest economizer of energy. In a well poised organism, trained spontaneously and with ample varieties of performance, such acts are always thus performed.

Exceedingly few individuals are either so trained or so well poised as to be emancipated from anxiety inhibitions, self-conscious restraint. Hence it becomes of much importance to determine what degree of restraint exists in any instance, and to make due allowance and to supply correctives.

Regulative Movements, Active and Poised as a Tranquilizing, Hence Curative Agency. — The peace, serenity, and comfort which ensues upon mere rest is limited to the release from weari-

*See article by the author, "Psychic-Hypertension; Restoration of Mind Control by Motor Training in Relaxation," International Clinics, 1912.

ness or weakness brought about by too much stress, amounting often to distress. Rest is only desirable or necessary as a compensation or contrast to movement beyond that which is conservative. The equation between movement and rest can be automatically adjusted or compensated only by cellular restitution. After sufficient rest the impulse recurs to move and must be gratified.

Mere inaction is only one phase or degree of restitution; much more is needed to complete energy renewal than mere cessation of movement. So long as one who needs it welcomes the rest, the first stage of renewal is progressing. When inaction is continued beyond the point where weariness no longer persists, another phase of energy renewal begins wherein the need for movement arises imperatively, and this is shown by a desire to stretch, to turn, to perform instinctive or customary movements, also to yawn, and this improves the quality of rest by readjusting the over-stressed parts, by removing pressure on nerves or sensitive areas in muscles and fibrous movement is felt it must be gratified or a state structures. Thus is restitution carried yet one step further. When this instinctive need for of stagnation (stasis) ensues which if carried too far becomes hurtful or damaging.

In order that one shall remain perfectly still, passive, motionless, then must self-repression be consciously exerted. The feelings, the urgings, the tensions demand to be relieved by a motor discharge of the returning tides of energy.

Self-repression (inhibition) when due to any form of anxiety or apprehension is itself a form of wasteful energizing; it is a tiresome effort to keep still and is one of the least agreeable modalities of motion. Anyone can recall how uncomfortable it is to lay upon oneself a mandate to remain perfectly quiet, to make no movement whatsoever. By and by inaction becomes exasperating, produces another kind of stress more difficult to endure, than forcing oneself to the limit of voluntary exertion. In such a case relief by movement is so pronounced as to far outweigh by contrast the extreme of inaction. Hence oftentimes the limitations of movement on the one hand, and of inaction on the other, are followed by an impulse to do the opposite and to a point of inducing an imperative organic need. In each case the secondary effects of over-action in muscles take place, a surcharge of dynamic energy and the formation of sarcolactic acid and other waste products which compels contraction whereby oxidation and release follows.

In a multitude of disordered states the mental and the physical problems are one, or they fuse and urge the reuniting of the common pathways of thought (volition) and movement which these two spheres of effort bring together.

Much useful work has been done of late furnishing explanations of associated mental and physical (psychosomatic) processes and states in terms of organic changes which explain the varying aspects and strivings of mental life.

These researches furnish new light in explaining human behavior, in suggesting and establishing further therapeutic possibilities. Among these aids to understanding are the researches of Jacques Loeb on: "Forced Movements, Tropisims and Animal Conduct." We can only offer a crude restatement of his findings in so far as they bear upon the problems of the urge toward movement and the effects this striving exerts on behavior.

Loeb expresses the opinion that any form of normal conduct is always the result of a series of forced (compelling) movements; that these become the determinants of conduct and that they are not merely present when it is necessary to restore normal position or condition. The author (Jacques Loeb) begins by a survey of the symmetry of animal forms, of phenomena which make it fairly easy to discover the alternation of movement and its significance in animals when this symmetry is interfered with, as well as the variants in the movements which ordinarily tend to preserve the symmetry.

These meager memoranda will serve to show how necessary movement becomes as a means of recovering poise, harmonies, compensations in the actions and reactions of the physical make up (morphology) and the mental functions or attributes (psychology).

So potently do body states influence those of the feelings, emotions, motives, expectant attention or suspense, that we may profitably review some of them. Expression is thus so plainly evidenced by attitudes, positions assumed in lying, sitting, standing, and epecially while in motion. These may be shown locally, confined to some area or part, or on the other hand be writ large on the contours as a whole.

Facial expressions, in particular those of suspense, distress, anxiety, contempt, anger, and the like unlovely phases of emotivity are due to contractures of muscles. Hence the "contorted features," narrowing of the eyebrows, eyeslits, wrinkling of the temporal and cheek muscles, puckering of the lips, drawing down of the corners of the mouth or retraction of lips showing the teeth ("risus sardonicus" *et al.*), also in strained adjustments of the neck and head. So also clutching, clenching, or wringing of the hands, tense raising or lowering of the shoulders, drooping or raising of the chest, and other familiar phenomena indicating suppressed emotion, mental perturbation, or unrest.

These and similar anomalies of attitude when extended to other and larger areas plainly evidence loss of poise; they are the products of contracture and are due to suspense, stress, strained attention.

Upon relief of the contracture there follows release of both physical and also mental stresses. The effect is due to autosuggestion wherein conscious control of the muscles produces mental serenity.

In this connection let me mention some of the occasions when instinctive demands for making active movements arise and we thus give vent to our feelings when in a state of suspense, worry or self-suppression. We then naturally obey the impulsion to do something; almost any outlet to movement brings comfort. We wish to cry out, to scream, or shed tears, or we walk, pace up and down, gesticulate, throw our arms out or about,

or merely make grimaces. The state is one of generalized or poised over-tension, an equalized push and pull, combined flexion and extension, hence a state of contracture. It may be the action is an extreme push or a pull, one or the other. When such a state of poised tension exists the performing of almost any movement relieves. When to push or to pull becomes imperative, ease is afforded by doing the opposite. After long protracted self-suppression there ensues fatigue; comfort, however, is found in quick, purposeless gestures, throwing the body or head backward or forward; when the breath has been suspended relief is found in sighs, yawns, groans or noisy weeping, sobbing, or these are combined in convulsive movements, "hysterics."

Indeed, such relief is not only desirable, but when the emotional strain has been too great, it becomes mandatory. If resolutely suppressed, disaster may follow:

"Home they brought her warrior—dead.
She nor wept nor uttered cry;
All her maidens watching said,
'She must weep or she will die.'"

So indeed death would have come had not at last:

"Rose a dame of ninety years
Set his babe upon her knee,
Like summer tempest came her tears,
'Sweet my child I live for thee.'"

So much for the sudden compulsion to seek easement by action under acute disturbances. Should the stress, suspense, or self-repression be protracted over long periods the bruised spirit —in one who is wise—seeks balm or surcease by setting about any one of a multitude of active occupations and finds tranquillity or surcease in busy enterprises. The muscular movements afford quite as much restitution as does the mental distraction. This state of perturbation in the Oriental is met by creating an atmosphere of quietism.

Now, let us consider some occupations which prove suitable for adults, noting why they induce serenity. There are multitudes to choose from, in accord with taste, previous training or familiarity. First of all is a reverting to primitive free types of movement, of industry or of childhood play, anything which is capable of sustaining interest. Among these may be mentioned domestic or household work, gardening, floriculture, digging, pruning trees or shrubs, playing on musical instruments, caring for domestic animals, riding a horse, a bicycle, rowing a boat (a wide punt on quiet water is no end of a resource), paddling a canoe, especially heading up against a tide or wind. Great are the resources of camping out, the infinitude of pleasing struggles to secure those comforts which thus are made to flow round the now perturbed one like a placid tide, unnoticed and unappreciated during every-day life. So of simple games of competition, croquet, tennis, golf, billiards, bowling, throwing and catching a ball, and the like.

No better agency for sustaining interest is known than carpentry, metal working, any form of construction. Here competition can be with one's-self to produce something increasingly worth while. So of art forms, modelling in clay, carving in wood, sketching, water colors, pastels or mere pencil or charcoal.

Perhaps I can present the topic under consideration no better than by citing some illustrations of the more obvious means of inducing calm by means of motion. Later I will sketch out my ceremonial of relaxation devised as a routine measure to secure a state of mental poise from whence to proceed as the starting point for achieving systematic conscious control.

Voice training has long been used to steady overwrought nerves. The late S. Weir Mitchell frequently directed his more bewildered patients to read aloud to the nurse as a routine procedure for the purpose of achieving a calm, deliberate, well poised enunciation. Headings from an old newspaper, or the Holy Scriptures were often used as being devoid of exciting qualities. Later such interesting subjects were selected as familiar poems. By and by it was urged that efforts be made at elocutionary art, lending expression, emphasis, pathos, or humor to the articulation, also to practise overtones, rhythm, cadences. Similarly a performing on some familiar musical instrument, as the scales on a piano, well-known tunes and the like. Here brain and hand cooperate. Singing is well known to steady the speech of a stammerer, to readjust the dissociated elements involved in the mechanism of speech defects.

It is also well known how restful and restorative is change of scene upon overwrought nerves. This involves some effort, produces a comfortable weariness, due to the agreeable stimulus of planning, travelling, shifting of the point of view to be substituted promptly by another, the unexpected, a sustaining of interest and attention. Many times when acting as Dr. Weir Mitchell's secretary I wrote at his dictation to physicians to send the patient along and not to wait, to put her or him on a train at once. He assured me he had never known harm to follow, always relief. By the same token I have known him to urge a vastly puzzled and over-anxious husband to take a wife, a mass of neurotic distress, upon a long journey, even to cross the continent, stopping here and there. At first it astonished me to learn how marked an improvement would follow.

The problem of the neurotic, the psychopathic, no matter how much false feelings of weakness, of weariness exist is often to be solved by some form of muscular activities carefully adjusted. It demands as much care and skill to prescribe forms of exertions as to select and administer medication. Here we come to the realm of "occupation therapy," a large and important theme.*

The factors here are the imperative needs for motor discharges as agencies for tranquilization. The conditions to be relieved are strained attention, psychic hypertension, often of tonic protective spasm, prodigalities of inhibition and the confusions, the bewilderments of self-imposed, often unconscious restraints.

*Dr. W. A. J. Maloney has elaborated in a masterly fashion systematic movements, first passive then active, to restore confidence in the ataxia of tabes.

What these restorative activities should best be, how to choose them, and what kind of guidance during their performance it is the function of the physician to supply and to carefully and consistently supervise. To omit such supervision, and for a long enough continuity is to court disaster or defeat. The important topic to discuss here is the primary forms of muscle reeducation which most readily and assuredly will supply the element of tranquillity.

Principles of Movement to Govern in Training Muscles to Achieve Tranquillity, Automatic Poise, Economies of Functioning. — These will be sketched out briefly and graphically to represent them in a citation of those movements made by an expert violinist, which, so far as my observation goes, seem to typify the perfection of motor adaptations to the highest productions. Other grouped movements equally exact, skillful, and poised could be used. The performances of a violinist are much more commonly observed, can be studied by anyone who feels enough interest in the subject to make his own selection.

And first let me here repeat the law of economic motor energizing I have formulated which can and should be followed by anyone who is ambitious to get the highest productivity from voluntary motions:

Begin every movement from a condition of perfect relaxation (zero), increase the power gradually to the point of fullest tension (maximum), and then hold this tension for an appreciable time.

This law obtains for extension, flexion, torsion, or any modification or combination, as to velocity and direction, or semi-voluntary (as of the abdominal walls, the thorax and the like). By observing this rule there is achieved not only fullest manifestation of power, of function, in the moving structures, but also when completed the fullest reaction or resting phase.

Note that should there be any contracture or hypertension whatsoever in the group involved, this tension will militate against the perfection of the willed movement; the tension must be relaxed before the movement can be accurately performed.

Should there exist any subtension, the muscles are thereby thrown out of their alignment, the energy expended is side-tracked to some degree, not only wasted but applied uselessly to those performances which can be merely a hindrance to full motor functioning as is then willed.

As illustration of a perfect extension act involving the entire body directed undividedly to reach out the whole concentrated will power upon the neuromuscular mechanisms at one point, let us visualize a fencer's thrust. Here the fencer is first poised to the best advantage attainable upon his hips, legs and feet, his body is resting easily on this base, his arm is in the position to not only thrust but guard, his hand holds the foil with every finger adjusted to not only retain the weapon but to meet any counterthrust of his adversary, and his objective is to strike at a point (which has position without magnitude) aimed at, and so soon as that point is touched to immediately recover, get back to his original attitude and in perfect poise to meet any attack in kind.

The contest may become prolonged, hence his only hope to retain energies which shall outlast those of his opponent is by not squandering one bit uselessly. Hence he must so adjust his acts, his expenditure of force, as to achieve his uttermost and to secure all the rest possible. This can only be done by observing perfect relaxation when possible, and at least to waste no force.

In accord with these principles in achieving purposive control, an over-tense patient should be urged to issue his own specific commands to each part, limb and semi-voluntary muscles, those of the chest, respiratory, the abdominal walls and even to the intestinal walls which can be thus made amenable to domination.

The local evidences of hypertension are pointed out to him, the kinds and degrees of volitional control which when demonstrated often cause surprise. Later these over-tensions are shown to have disappeared—at least for the moment—but he should be warned that they will occasionally return to vex, until by sufficient repetitions they disappear entirely.

Control will become first habitual and later automatic. Until this complete self-mastery is achieved the relaxing ritual should be practised not only as a routine measure but as occasions arise, during states of aggravated suspense, confusion, anxiety, or loss of emotional balance.

The seance can be done at any time or place without attracting attention, in company, under the eyes of the public, in a conveyance, or while kept waiting for some person or event. Of course best effects follow private practisings; a good time is when resting at ease, composed for a nap.

This ceremony serves as an extraordinary means of energy renewal, especially as a preparation for facing some unwonted or difficult or dreaded situation, interview, or duty.

Ceremonial for Inducing Relaxation.—The series of procedures outlined below is the product of much reading and experience, and has been used by me for many years in its present form, subject to such modifications as may seem desirable in the instance. The patient can use this, and is encouraged to do so, more or less frequently, especially on going to bed, since by it sleep is greatly expedited. It does not induce sleep but merely a state which Boris Sidis calls "hypnoidal," one of mental distraction, in which the subject is peculiarly susceptible to suggestion by the physician or by the patient himself, for whatsoever purpose is desirable. The primary object is to achieve complete relaxation. It is especially helpful in securing a state of receptivity for self-suggestions.

I begin by explaining the objectives simply yet fully. The individual is taught to acquire full self-mastery of the entire organism, in so far as parts are subject to volition, to learn how to take charge of all acts so that the whole shall dominate each and every part and how to prevent a disordered part dominating the consciousness. In the process each limb receives specific directions what it can do, and what it should not do, using as much positive suggestion as possible, with only such negative suggestions as are

obviouly needed. Negations are as a rule unnecessary and undesirable, hence should be omitted. The total body and mind is to be freed from subconscious domination and thus to achieve conscious control.

As to details it is better that the patient should lie down, limbs outstretched, on a couch or in an easy chair. The explanations are set forth and the patient is directed to breathe consciously and a little more deeply or fully and slowly than is customary, and is told that this is for the sole purpose of directing attention to respiration as a means of distracting attention from outside happenings capable of diverting the mind and of fixing it upon the problem in hand.

I usually direct five deep breaths to be taken, and then to suggest the coercion of the right arm. This can of course be thrust out, or pulled in, or twisted, etc. All such would be waste effort, hence it is better that none of these things be now done, but direct that the push shall balance the pull by which a masterly inaction or passivity is attained. Then five deep breaths are taken and the left arm is addressed in the same fashion; five more breaths then the right leg, five breaths and the left leg, five breaths and the abdominal muscles, also the intestines. Now the nature of peristalsis is explained, so of noises in the intestines, due to irregularities in the contractions which should be coerced into regular rhythms, etc., etc. Finally five breaths and the neck is considered; most nervous persons and many who "have no idea they have any nerves" are none the less tense in the neck muscles. This is ample cause for local tension, hence of aches, of weariness, a wish for a pillow to support the neck, etc.

After each limb is thus adjured the physician should demonstrate its flaccidity by lifting it, moving it about, and if any subtension persists it should be pointed out and further suggestions given and testings made until all have disappeared.

The patient should be made to clearly grasp the purpose, which is that he shall learn the accomplishment of voluntary letting go at every point, to reach the zero of movement all over, a state of poise through self-direction, to achieve full command of every muscle in this negative or intemediary phase, to release wholly all tension, conscious or subconscious.

The whole ceremony occupies about ten to twelve minutes. The patient has then "boxed the compass," gone the ambit of restraining familiar movements, has "become captain of his own" mechanisms. While the patient is in this peculiarly receptive state other suggestions will prove especially helpful and lasting—the patient is in command of himself, not of another. His sense of personal responsibility is at its highest; he has done all this of his own volition, hence he can and does the more readily understand, appreciate, and make his own any counsel he may accept, any encouragement or explanation offered.

Furthermore, my long experience in the use of this form of mental and physical distraction leads me to believe that this state of complete tranquility forms the most favorable ground for repair of any or all body cells as well as of mental or emotional disorders.

It is my firm belief that this reeducative procedure should prove a boon to clinicians in affording a position of advantage, as a preparation of the body protoplasm to respond most favorably to any remedial measure.

1504 Pine Street.

THE ROLE OF THE NEURONES.

By J. HENRY DOWD, M.D.,

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In speaking of neurasthenia, a purely functional condition arising in the brain cells, Prof. Shaw, in his treatise on nervous diseases, says, "This inherited unstable state of the nervous system depends evidently upon some defect in the power of the neurones to assimilate and store up nutrition and force in sufficient quantities and with sufficient rapidity to carry on fully and easily the work of life."

Drawing somewhat one one's imagination, the neurones can be compared to the storage cells of a battery; they can be charged, thereby retaining their energy for future use.

We fully realize, and accept as proved that hemoglobin is necessary for the life of the red cells, protein for muscles, and calcium for bone; they are the foods of these tissues, so to speak.

From the statement of Prof. Shaw two suggestions loom forth very clearly: (1) The nerve cells must have a food; (2) this nourishment or food is not only absorbed in sufficient quantities to carry on the daily calls for energy, but an excess accumulates in the cells as a reserve for future use, for times of emergency when sufficient food is not taken by mouth to supply the demand, yet functions must be maintained. That such a condition is a wise provision of nature must be clear; it is simply a method of preparedness on the part of the human system.

We fully realize that the brain controls every action, thought, word, or deed of the human being. It also furnishes power for all functions asleep, awake, sick, or well; when the human being is deprived of nerve power, life ceases at once.

As with all other nutritions, the food of the nerve cells is taken from the food we eat, being converted by a process of metabolism into phosphorus compounds, lecithin and nuclein; this may be called the afferent process. Following this, when the aforementioned have performed their functions, we have the throwing off of the waste, or efferent process—the destructive metabolism. These substances appear in the urine in part as phosphates. This process can be well termed metabolism, it bears the same relation to the nervous system that the formation of urea does to the muscular system.

Phosphoric acid occurs in the urine in combination with the alkaline earths as earthly phosphates, in the form of calcium and magnesium, insoluble in water but decomposed by certain acids and soluble salts. Earthy phosphates are found in freshly passed urine, giving it a greenish hue, or they may appear on boiling; both are quickly dissolved by the addition of acid. Under the microscope the earthy

phosphates appear as microscopical sawdust, if this term may be used. It is this variety of phosphates that is found in diseases of bone, as rickets, ostitis, and the like; also following a meal rich in vegetables, which may render the urine alkaline temporarily.

This variety of phosphatic elimination may be dropped from further consideration. When these phosphates occur in the urine in any quantity they must be removed by filtration before the estimation of the alkaline phosphates about to be described.

The alkaline phosphates, which become evident to the naked eye only on precipitation with the ammonio-magnesium mixture, occur as acid sodium and potassium phosphate. These are seen as crystals, fern-like in character, but they vary greatly as to size, shape, and the appearance of their feathery sides.*

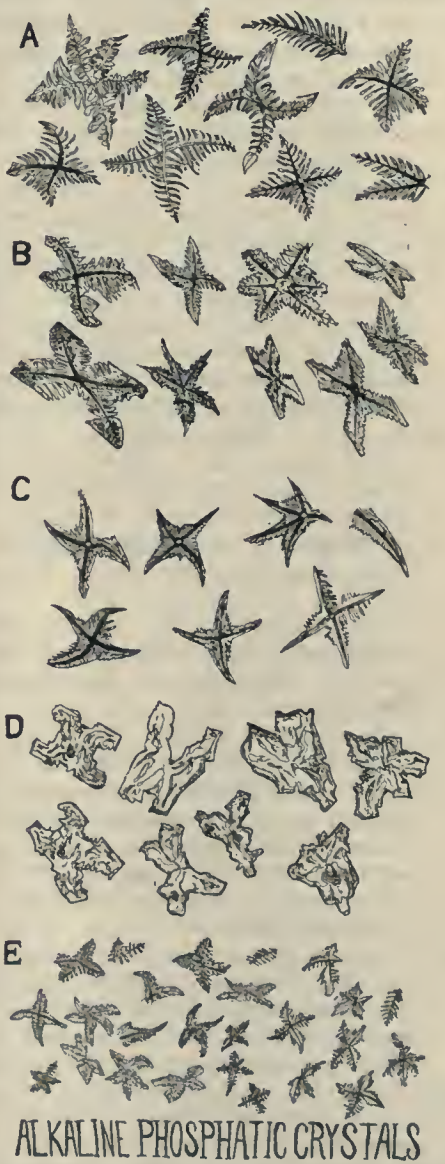
The alkaline phosphates are increased accompanying certain diseases of the lungs, as pulmonary tuberculosis, but mainly in conditions involving the nervous system. Thus, in supersensibility, or excitability of the nerve cells, they are found greatly increased. Let this irritability continue for any length of time, with its increased output of phosphates, and we sooner or later find them greatly decreased, far below normal; the reserve is becoming depleted. Accompanying this condition we will have related systemic manifestations develop, commonly known as neurasthenia.

Normally about 2.5 grams of phosphates are excreted daily. They increase after the mid-day meal until evening, when they fall again until the following day. This phenomenon is easily explained. During sleep the brain is practically at rest, even those functions that are absolutely necessary, namely, breathing, circulation, and elimination are at a low ebb, little or no energy is being called for; it is at this time the neurones are recharging the brain cells in anticipation of coming activity. From mid-forenoon until evening the brain cells are called on for their greatest activity; nerve metabolism is at its highest point, also the elimination of the alkaline phosphates.

This is under normal conditions, but let anything occur that will increase nervous excitement and the elimination will increase in proportion. This increase will take place, even though no food is taken; it is the reserve that is furnishing the excess. Let such a condition continue for any length of time and it will be found the alkaline precipitate is decreasing; registers minus on the phosphatometer; the cause is quite clear: the reserve is becoming depleted. At the same time other changes will be observed, the crystals will change in character (see the illustration).

A definite analogy can scarcely be made between the alkaline crystals and the red cells, because, in the latter case we can see the cell distinctly, whereas, with the former we see but a reflection of the neuronic action. Still, on the other hand, a fairly accurate comparison can be made as far as the crystals go as an aid in diagnosis; clinically they will be found as valuable as blood cells, if not more so.

In the case of a minus phosphatic index, where the crystals may be greatly decreased in number, it cannot be said that destruction of the neurones has taken place, but it may be assumed, with a reasonable amount of sureness, that the neurones are all not functionating normally.



ALKALINE PHOSPHATIC CRYSTALS

(On several occasions I have observed a total absence of alkaline phosphates for several hours. These cases usually occurred in hysterical individuals; valerian brought about elimination.)

*In at least 30,000 examinations of the urine made by the writer, these crystals have never been observed, except after precipitation with the solution mentioned. This statement has been substantiated by Dr. Dewitz, assistant to Dr. Chas. G. Stockton, in 25,000 examinations.

The appearances of the crystals under the microscope can be favorably compared with blood cells, as we view those for hemoglobin; in size, shape, and density they show the amount of nutrition in reserve, how it is being used, and any changes that the nerve cells may be undergoing. Briefly the action of the neurones may be summed up as follows:

A. 1. Normal crystals. Note the almost similar and well-formed feathery sides, resembling the fronds of a fern, also the density of the crystals.

With the phosphatometer registering N. P., using the blood by way of analogy, we would find a normal red cell count with normal hemoglobin. Finding such a condition, no matter what the symptoms may be or the condition present, the nerve cells as a factor in the case may be eliminated.

2. Normal crystals, plus index (solid above N. P.) irritability or supersensibility of the neurones. Sedatives are indicated.

3. Normal crystals, minus index. Neurones are not all functionating. Making a blood comparison, red cells would be found deficient, but hemoglobin normal.

B. Crystals light in weight. In this connection the precipitate will sink very slowly, or not at all (allow but ten minutes). As to the amount registered on the phosphatometer neuroinidia is present. Note the different shape of crystals; the feathery sides which are sawtooth-like in appearance, also the lack of density as compared with the normal. Where this condition is found, no matter what may be the case under consideration, very feeble efforts toward resolution will be forthcoming until nerve-cell nutrition is supplied. Such a condition is practically always present in pain of an indefinite nature, neurasthenia, neuritis, and the like.

C. Disappearance of the feathery sides; this shows pregnancy between the third week and the third month of uterogestation (Year Book, 1906).

D. Amorphous crystals. When the use of alcohol, tobacco, or drugs, as morphine, cocaine, and the like, in excess can be eliminated, a fairly constant appearance of these crystals shows an oncoming nerve-cell degeneration. Crystals of the amorphous variety may be found with a plus or minus index.

E. Normal shape, but very small. These crystals show nerve cell irritation, and are commonly found during or preceding hysterical attacks. The index may be either plus or minus, generally the former.

Ascertaining the phosphatic index, with its resulting formation of the alkaline crystals is a very simple procedure. As with blood cells, casts, and like objects viewed by the microscope, a little care must be used at first before drawing definite conclusions.

Using the second urine passed in the morning (see MEDICAL RECORD, May 2, 1908) fill the phosphatometer to U, add solution (magnesium sulphate, chloride of ammonia, aqua ammoniæ (10 per cent.) of each one ounce, water 8 ounces D to S, shake thoroughly and set aside for ten minutes. The solution should turn milky at once, and in a few minutes commence to settle. The phosphatometer being graduated as to normal precipitate, plus or minus, in ten minutes the amount of alkaline phosphates present will be clearly indicated. The crystals will have a definite and constant appearance at the end of ten minutes, and although they will not change in character, no matter how long they stand, the index showing nerve metabolism must be read at the end of ten minutes.

Briefly reported, the following cases will show the great value of alkaline crystals as an aid in differential diagnosis:

CASE I.—Severe neuritis left brachial plexus; medication gave no relief. Index taken showed N. P. crystals A. Suggested that condition was due to pressure. A surgeon found this to be the case; removing the same gave instant relief.

CASE II.—Brachial neuritis of some eight or nine weeks' standing. Aspirin, bromides, valerian, electricity, and the like gave no relief. Index taken showed 90 per cent. minus, crystals B. Mist. phos. comp. (Dowd), 30 minims, in milk three times daily half an hour after meals, gave relief inside of three days. Three weeks after, index registered 10 per cent. minus, crystals A; there was no return of the condition.

CASE III.—Miss S., no menses for two months. Examination did not show anemia to be present; no pathological condition, but an index 100 per cent. plus (evidently due to the great mental strain she was under), crystals C. At first she denied sexual relations, at least coitus. When apprised of her condition she admitted that seminal fluid had been deposited against the vulva by her fiancé; she was married at once; a child arrived seven months later.

CASE IV.—D. L., January 21, 1919, consulted me for a nervous condition; pronounced neurasthenia at the time. Index 70 per cent. minus, crystals D. His family was apprised of the suspected condition that seemed evident. On November 11, 1919, he was committed to the State Hospital as insane.

CASE V.—Mrs. T., in bed three weeks, claimed she could not stand up and was becoming blind. Good appetite, slept well; the family physician had made no diagnosis. Before seeing her in consultation I requested the urine for examination. No pathological condition was evident, index 15 per cent. minus, crystals E. Valerian and the bromides gave no result in ten days or so. I advised the family to give her no food unless she came to the table for it. She appeared for breakfast the second morning; has had no further trouble. Diagnosis, hysteria.

9 NORTH PEARL STREET.

HYPERCHLORHYDRIA—A FREQUENT CAUSE OF DEFECTIVE APPETITE IN CHILDREN.

BY JAMES HOYT KERLEY, M.D.,

NEW YORK.

AMONG the cases which the pediatrist and general practitioner are called upon to treat no one occurs with greater frequency or claims more attention than that relating to the appetite and diet of the child. This is especially true of older children, for infants may be managed by lengthening the intervals between the nursings or bottles, by shortening the nursing period, or, if on the bottle, by cutting down the fat or sugar content of the milk formula.

The type of patient we are about to consider is the older child, whose appetite is poor in consequence of a condition of hyperchlorhydria or hyperacidity with its accompany-

ing symptoms. The history most frequently obtained here is that in the feeding intervals the desire for food is very marked, in fact at times almost voracious, the child being unable to wait until mealtime. He starts the meal very well, but after taking a small quantity of food his appetite is quickly satisfied, and he turns away thoroughly appeased. This is repeated time and again, with the same intense initial desire, and the same rapid appeasement.

After eating there is complaint of a feeling of fulness in the epigastric region, often accompanied by indefinite pains in the region of the umbilicus, which may radiate to the right inguinal region, simulating a chronic appendicial pain. Accompanying or shortly following this sensation of discomfort are acid eructations of gas, with the resulting heartburn, and burning in the stomach.

The duration of the acute symptoms is variable, disappearing usually in the course of an hour. The breath of these children is usually offensive and the tongue coated. Constipation is the rule. In appearance they are apt to be anemic looking, with sallow complexions. They are moderately underheight and underweight, tiring easily on exertion, and they do not have the ability to withstand physical stress. Examination of the gastric juice reveals an increase of both free hydrochloric acid and total acidity.

The prognosis is very favorable for the relief of the immediate symptoms, and if the proper dietetic and hygienic measures are instituted and followed no subsequent trouble is to be anticipated.

The dietetic history usually obtained from the parents in these cases is that the juice of one or two oranges has been given the first thing in the morning, followed by a breakfast of one or more eggs daily. For the midday meal a highly seasoned soup has been given, or red meat, such as steak or roast beef, has been eaten daily or every other day. In like manner ice-cream has formed a favorite dessert. Oftentimes tea or coffee has constituted an important part of the diet. Between meals candy has been eaten *ad libitum* and ice-cream sodas indulged in frequently.

In the treatment alkalies are given to neutralize the excessive acidity. A prescription such as the following, given in water fifteen minutes before each meal, has been found very effective:

℞ Magnesium carbonate, gr. xxx
Sodium bicarbonate, ʒi
Bismuth subcarbonate, ʒi
M. Ft. Chart No. XXX.

For the constipation a rhubarb and soda mixture combined with aromatic extract of cascara, in one to two dram doses at bedtime, is indicated.

The diet plays a very important part in the prevention and cure of this condition. The mother is to be instructed to see that the child has nothing very hot or cold, very sweet or sour. Everything eaten is to be thoroughly masticated, and the patient must be made to spend the proper amount of time with his food and to avoid any semblance of rush or hurry. Orange juice, if given at all, is to be allowed only with or after the morning meal; never before. At the beginning of treatment it would be well to discontinue it entirely and to substitute prune juice. The albuminous part of the egg only is to be eaten, as the yolk tends to strongly excite acid secretion. Highly seasoned soups should be interdicted and red meat served only once a week. All excessive sugar, also candy, sodas, ice-cream and pastry, are to be avoided. Tea, coffee, and ice-water are harmful. Raw fruit is not permitted until the appetite has become perfectly normal. A diet of farinaceous foods with milk, potatoes, green vegetables, meats (except red meat), stewed fruit, and wheat bread, toast or zwieback, is to be followed. The milk should be limited to one pint a day, with the water taken mainly between meals.

Due attention must be paid to the proper hygienic measures in the treatment of these patients. The right amount of rest is to be insisted upon, especially when the child has been under some mental or physical stress. An entire change of scene is advisable, if possible, for the worst cases, these doing well at either mountains or seashore. For the others, late rising, an afternoon rest period, and a cold sponge bath followed by a brisk rub at night, after a day of healthful out-of-door physical exercise, are valuable aids in the treatment.

Conclusions.—A common cause of defective appetite in children of the runabout age, or older, is hyperchlorhydria, with the resulting symptoms of variable desire for food, indefinite abdominal pains, flatulency, and acid eructations.

In the etiological relationship dietary indiscretions play an important part.

The treatment consists of giving alkalies to neutralize the excess of acids, of substituting an easily digestible, non-irritative diet, and of giving due attention to general hygienic measures.

65 East Ninetieth Street.

THE PHILOSOPHY OF HUMAN SYMPATHY.

By J. C. Bateson, M.D.,
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The term sympathy is derived from the Greek, signifying to suffer with, and has a variety in its phases of meaning according to its various uses; physiologically, it may be an influence produced in any organ by disease or disorder in another part. Or it may be a relation which exists between the mind and the body, causing the one to be affected by the other. It also may be the influence exerted by one individual upon another, or received by one from another.

As examples, we may have pain in the forehead by taking ice cream or ice water into the stomach, or pain in the right shoulder from disease of the liver, or irritation and nausea caused by a tumor of the brain. The close relationship between the phrenic and pneumogastric nerves and the sympathetic nerves, explains the reason why there may be produced a case of hiccough or nausea when the stomach is free from trouble in itself.

A certain specialist rightly declares that the sympathetic nerve system has a mind of its own, and therefore not dependent always on the cerebrospinal system. This perhaps explains why at times the influence afforded by the sympathetic, may

serve to effect a cure independent of the cerebro-spinal.

Mind and matter are both God-given, and inseparable in human life, and the relationship existing between them is of a most delicate and occult nature. Therefore, we may define sympathy, physiologically, as a relation which exists between the mind and the body, causing the one to be affected by the other.

This accounts for the correspondence of various parts or organs of the body in similar sensations, symptoms, or affections of the whole body or some part of it, in consequence of an injury or disease of another or different part, or of a local affection.

Again, sympathy is the influence exerted by one individual upon another, or received by one from another, and the effects thus produced are seen, as for instance, in yawning and more potentially in hypnotism, and in the transfer of hysterical symptoms, which particularly and frequently affect young women.

Yawning, or pandiculation, is a sympathetic habit, produced by a deep involuntary inspiration with the open mouth, and often accompanied by the act of stretching one's self. This is liable to occur when one is confined in a close room where the oxygen of the air is deficient.

The word hysteria is mainly applied to a condition in young women who lack control over their conduct and emotions, through exaggeration of sensory impressions and simulation of various disorders. The principal cause for the prevalence of this nervous disturbance is, in most instances, defective physical and mental training.

It has been noted by experienced observers, that many lives were lost during the recent widespread epidemic of influenza (1918), because of a sympathetic fear and apprehension. This form of sympathy is better known as pity or compassion—the feeling or suffering of one person, excited by the distresses of another, and which, when not kept under control, is liable to result in serious consequences.

According to the late Dr. James McCosh, former President of Princeton University, we put ourselves in the position of others, by calling up the same feelings which go out in the same manifestations. The sight of tears is apt to call forth tears in the beholder, or quite as readily in the listener to the story told which makes us realize the position. It is the same with laughter, which is apt to be echoed back till the noise rings throughout a large assembly. And when an entire company is moved, it is difficult for any member of that company to keep his composure. An alarm of fire will spread through a vast congregation, and many become panic-stricken when they are actually cognizant of no cause of fear.

There is in some measure a reflection of emotion from every person upon every other person, within his or her radius of observation. We call this a kind of contagion; it is, however, a contagion produced by an unconscious influence upon others to cherish the same feelings, and thereby produce the same outward manifestations as are controlling the feelings of the active personality. In like manner, the contagion of disease is made more powerful when persons are afraid of it, and when they dwell and brood much on the threatening infection.

History records sympathetic epidemics, such as the dancing mania which spread over many countries in the Middle Ages. This delusion took on the form of a wild dance, known as that of St. Johns or St. Vitus, after the effects of the "Black Death" had subsided in central Europe. Other examples are furnished by the dervishes of the East, and the "Jumpers" in misguided religious revivals in the West. These affections seem to be produced by persons entering into sympathy with those who manifest that state of feeling.

In genuine feeling, sympathy is rooted and grounded in love, and is a branch of love, and a grace of high order. Love begets sympathy. Even the innate selfish soul may be so ennobled by a true passion, as to find in its own transports the desire to share the joys of a completed life, and in true humility of gratitude, seek to lessen the burdens of the over-burdened.

We are commanded to "rejoice with them that do rejoice and weep with them that weep." In this manifestation, our hearts are responsive to the hearts of others influenced by their emotions. We enter into their feelings; we identify ourselves with them. So when we see others laugh, we are apt to laugh also. We weep with those that weep, if we share their sorrow. Opposed to this is hardness of heart, which is insensible to the wail of misery.

Sympathy governed by a liberal mind knows real generosity, and is capable of reaching the heights of self-sacrifice. It is a mutual feeling, reciprocal to give and receive mutually. While love means a devoted affection or attachment, including sympathy, the latter does not necessarily include love.

Mercy is used in the sense of leniency, but sympathy includes all this with justice and fellow feeling added. And yet it is true, as set forth by a noted writer, that many a poor wife has swallowed her dinner without tasting it, because her inconsiderate husband chose this inopportune time to find fault with her, the children, the servants, and with everything except himself. The beef is too tough, the vegetables underdone, and the soup is cold. He frets and scolds to the great disturbance both of his own and his wife's digestion. Such examples rightly belong to the heathen philosophy which discards all sympathy for those who suffer, because such condition is to be thought of as not being real.

As was reiterated by John B. Gough, there are men who wear smiles on their faces, whose hearts are unprincipled and treacherous; but there are true men with a rough outside, who speak with their hands more than with tongues, with deeds rather than words. There are brutal hard men; but there are many loving friends, who act as a balm to the rankling wounds of humanity.

And this is true with most men in the medical profession. While there are men full of gall and bitterness, hateful and hating one another, and physicians who relieve suffering simply for a livelihood, there are also noble and compassionate spirits, whose "charity thinketh no evil, suffereth long, and is kind."

In the language of Emerson, we have the heroic who cannot be the common, nor the common the heroic. We have a right to expect the sympathy of those people whose actions excel only in that they outrun sympathy by appealing to justice.

But sympathy implies kinship with all the world. It is the yeast that leavens the bread of life, and bulwarks the Adam weakness of finite souls to brave and to endure. Then, if we would serve our brother, because it is fit for us to serve him, we must not take back our words when we find that prudent people do not commend us. We must be true to our own acts, and console ourselves, if we have done strange and extravagant things and broken the monotony of a decorous and conventional age.

One mission of pain, undoubtedly, is to move hearts, says Hugh Black, that otherwise would be hard and selfish, to the noble fellowship of consolation. We have learned that compassion and sympathy will unite men whom no argument would or could bring together; and these sweet graces are called forth by this very suffering which is a phase of this subject and a part of the problem under consideration.

Notwithstanding that so-called Christian Science teaches that "there is no truth in pain and no pain in truth," we know what it is to be compassed about with infirmity, to have compassion on our fellows who suffer and who endure pain, and thus bear gently with them. To such the recognition of nature's bond comes in a flash, a gleam of intuition. It brings sympathy, and sympathy unites men as no written bond can, though it were attested and secured by every legal means.

Similarity of experience will beget sympathy. So that it is not strange that: "He jests at scars who never felt a wound," or that a person who has never had a pain, may try to think that there is no pain. It is natural to become self-centered, and heedless of others. Sir Walter Scott, who had eyes for the great common facts of life, makes Jeanie Deans say in her sore trouble, "Alack! It is not when we sleep soft, and wake merrily, that we think on other people's sufferings, but when the hour of trouble comes."

If we had not known something of pain, our hearts would have been harder and less compassionate and loving than they are. We can feel the force of the beautiful appeal found in Deuteronomy, "Love ye therefore the stranger, for ye were strangers in the land of Egypt," we know the bitterness and the anguish and the loneliness of it. The "Great Physician" gave a striking illustration of human sympathy, in the parable of the "Good Samaritan." So did our Christian organizations and Red Cross workers show a wonderful manifestation of sympathy in the recent world war against autocracy and barbarism.

It was sympathy expressed in love with sacrifice, and a demand for freedom that caused our forebears to starve and freeze at Valley Forge. It was sympathy with an outraged and terror stricken nation that left heroes of the far flung battle line who fought on Flanders field.

This is proof positive, that it is futile work to try to catch grief with proverbs, to "charm aches with air, and agony with empty words." And yet this is believed in by many good people of civilized as well as heathen countries. With them it is thought that pity is akin to contempt. But there is a saying far truer, that pity is akin to love, and without that there is no real and lasting charm in human life.

Compassion is the crown of virtues, because without it we would all degenerate into a more or less selfish condition, for faith without works is dead. Therefore, sympathy can be accepted as an almost universal solvent. Nothing of a noble character is understood without it. The whole civilized world is reaching out a hand of sympathy to the starving and oppressed in war and famine devastated lands; more extended action is being taken and movements are under way to bring about greater and better privileges to greater and larger numbers, for the pursuit of life and happiness. This strongly indicates that there is more sympathy manifested in the world to-day than ever before.

It is sympathy whose "star dust" vision broadens horizons, till all personal or individual gain is merged in the purpose of a worldwide welfare. Whose scope is limitless, and whose possessors care only for a perfect fruition; that compensates for any or all loss to self, in making supreme sacrifice.

Sympathy should not be confused with kindness, a state or quality of being kind or humane; for such manifestation may be performed in a sense of duty rather than through real sympthy.

The very depth of sympathy that is in some people makes them appear unsympathetic. "The heart knoweth its own bitterness and a stranger meddleth not therewith," so that many people shrink from meddling with sorrow. Someone has pointed out that if you wish to do good to a certain class of people, you must get under their skins; they will then feel your sympathy. With the sorrowful and needy is found the "open way" to Heaven's gate.

An invalid will sometimes remark to the attending physician: "I always feel better when you come," and he is better, for "the tongue of the wise is health." The true doctor or nurse should have this soul ingredient in its extreme sense. To say that such professions find more successful exponents in the ones without sympathy and its weakening reactions, is as erroneous as to applaud a lack of tenderness in one whose influence is of moment to a general public.

It was sympathy with poverty and suffering that established free clinics, free hospitals, and prepared the way for missionary service in foreign lands. It is through suffering that we learn how to sympathize. Therefore, it is not becoming to keep our alabaster boxes sealed until our friends are dead. Nor is it very helpful to offer conventional consolations, conventional verses out of the Bible, and conventional prayers to those who are torn with intolerable suffering. To Job's comforters, Job's question is suitable, "How long will ye vex my soul and break me in pieces with words?"

Sympathy is the active principle of the soul; it makes for the stability of man's fellowship with man; it is the foundation of the Christian religion; and in its simple God-given fullness, equips those who recognize its possession, for all the capacities of a complete and beautiful life.

116 Adams Avenue.

COMPULSION NEUROSES (OBSESSIONS, DOUBTS AND PHOBIAS).

By H. LAVESON, M.D.,

NEW YORK.

Compulsion neuroses is one of the most important problems with which abnormal psychology has to deal. The phenomena are psychological and physical. They occur in sporadic form. They may be arranged by gradations in types in which they appear:

A. As purely physical disturbances (tremors).

B. As physical disturbances plus conscious emotion (anxiety neurosis).

C. As physical disturbances plus conscious emotion plus a specific idea of the object of the emotion but without logical meaning (phobias).

D. As physical disturbances plus emotion plus idea plus meaning (unreality syndrome).

The Psychogenesis of the Compulsion Neurosis.—In the first type the physical phenomena can be traced to a functioning subconscious emotional complex of which the phenomena are physical manifestations; in the second to a functioning subconscious complex ejecting its emotion into consciousness; in the third we find by analysis an associated unconscious complex setting which logically would account for the emotion of the obsessing idea, and we infer, by analogy with the first and second type, that it is a dynamic factor in the psychosis; in the fourth we find a similar complex which logically would account for all the physical and conscious phenomena.

Type A. The subject manifests marked tremors in the hands to such an extent that the cup in her hand shakes and rattles in its saucer. She complains that these tremors are annoying her, especially in the presence of another person. At times she gets awfully hot all over and breaks out into perspiration. She has for a long time been absessed with the insistent foolish idea that if people knew she manifested these phenomena they would not care to know her socially. It was a point of view which had been more or less obstinately maintained in spite of all contradictory arguments. The idea had specifically recurred from time to time in particular situations, and had caused considerable emotional disturbance.

Complexes consisting entirely of the physiological manifestations of emotion without conscious emotion undoubtedly occur. The symptom complex may be interpreted as a persisting automatism derived from antecedent fear states that had been outgrown. From our present standpoint and fuller knowledge we must believe that underlying this automatism is probably an unconscious complex of these antecedent experiences, including the fear which takes part in the functioning mechanism. It may then be called a subconscious psychosis.

True hysterical laughter and crying are undoubtedly phenomena of this type and due to the same mechanism. These phenomena are well known to be purely automatic, that is to say, they are emotional manifestations unaccompanied in consciousness by thoughts or even by emotions corresponding to them. The subject laughs and cries without knowing why and without even feeling merry or sad.

Type B. In this class the subject is afflicted with attacks of conscious emotion, most conspicuously and commonly fear, plus the same physical disturbances as in Type A, but without any specific idea in consciousness to which the emotion is related.

A typically perfect example of anxiety neurosis was shown in a patient with recurring attacks of intense anxiety accompanied by a feeling of suffocation and oppression of the chest. Investigation disclosed that the first attack immediately followed a dream which was forgotten but recovered in hypnosis. It appeared that in the dream she was accused by a certain person of certain delinquencies (self-reproach) and threatened with exposure. At this point in the dream she was overcome with fear and anguish as in the after-attacks. It also appeared that previously she had been and still was apprehensive of this person's loyalty. By inference and analogy with the well-established after-phenomena of dreams we must assume that the dream process still functioned subconsciously and produced the anxiety attacks.

This type will be discussed more fully below in a section following the general review of the compulsion neuroses.

Type C. In this type the affect is linked with an idea as its object in consciousness, but without meaning, so that whenever this idea is awakened it is accompanied by the affect alone. Some of the phobias are the most common pathological examples. Nor is there anything in the content of consciousness which gives meaning to the idea as something that should occasion anxiety. The subject, in other words, does not know why he is afraid of the given object. In such cases the restoration of dormant memories will disclose antecedent experiences in which the idea is set and which explains the origin and meaning of the fear. A typically perfect example of phobia is the following case::

B. C. A., who suffers from an intense fear or phobia of cats, particularly white cats, can recall no experience in her life which could have given rise to it. An attempt was made to recover a possible memory in hypnosis. As is well known, the memory often broadens in hypnosis and events which are forgotten when "awake" may be recovered.

"I think I know about the cats. I can remember myself a little child playing on the floor with a kitten, and it began to run about the room and had a fit, I think, and it jumped on me, and I was alone, and I screamed and cried and called my mother, but no one came, and I was very much frightened. I do not believe I ever told anyone. It was a white kitten. It ran out of the room, and after a bit I went on playing."

Although the conserved experience could not be awakened into memory by voluntary processes of the personal consciousness it could be so awakened by an artificial stimulus under artificial conditions.

In this connection I may instance another case:

C. D. suffers from a fixed fear of fainting. She cannot recall, even after two prolonged searching examinations, the first occasion when this fear developed, or why she has it, and is, therefore, ignorant of its genesis. Yet put into light hypnosis she recalls vividly its first occurrence as the effect of an emotional scene of twenty years ago. The details of its psychological content come clearly into consciousness and its meaning, as a fear of death, is remembered as a part of the original episode. That the fixed idea is a recurrence or partial memory of the original complex becomes logically plain and is recognized as such.

Type D. In this type the conscious psychosis consists of idea, meaning, affect, and physical disturbance.

An example of "unreality syndrome" is the following case:

F. E. suffered from attacks of so-called "unreality"

with intense fear. She was unable to give an intelligent explanation as to why she was afraid of the attacks—harmless in themselves—until it was brought out that there was in the background of her mind the thought that the attacks spelled insanity or that she was likely to go insane, and also death. Following the attacks there was amnesia for these thoughts. Her fear really, then, was of insanity and death. The content of consciousness in the attacks contained the perception of herself as an insane person, thoughts which expressed the meaning of her attacks, and fear. No amount of explanation of the harmlessness of the unreality syndrome sufficed to change her point of view, *i. e.* its meaning to her. But going further it was discovered that her self-regarding sentiment and her ideas of insanity and death were organized with a large number of fear-inspiring antecedent experiences which explained why she regarded the attacks as dangerous to her mentality and life; and why the biological instinct of fear was incorporated with the self-regarding sentiment. These experiences had long passed out of mind and there was no conscious association between them and her phobia, but they could be recalled as associative memories.

Anxiety Neuroses.—These manifest themselves by various physiological reactions upon the organism. Disturbances of the respiration and vasomotor apparatus induced by sensory stimulation are very common. Modifications of the peripheral circulation, manifested through pallor or turgescence of the skin are also common phenomena. A great number of cases show alterations in the rate and rhythm and force of the heart-beat, also temporary dilatation of the heart. This dilatation in some cases is sufficient to lead to incompetency of the mitral valve and to give rise to murmurs.

The respiratory apparatus is markedly affected, as shown by alteration of the rate and depth of respiration. Increase of sweat, sometimes amounting to an outpour, and alterations in the amount of the various glandular secretions (salivary, gastric, etc.), and rigor are important phenomena. The remarkable researches of Pawlow and his coworkers in Russia on the work of the digestive glands revealed that these functions are influenced in an astonishing degree by psychical factors. In hungry dogs a large quantity of gastric juice, rich in ferment, is poured out when food is swallowed, and even at the sight of food, and it was proved that this outpouring was due to psychical influences. Simply teasing and tempting the animal with food cause secretions, and food associations in the environment may have the same effect.

Most of the viscera are innervated by the sympathetic system, and the visceral manifestations of emotion indicate the dominance of sympathetic impulses. When, for example, a cat becomes frightened, the pupils dilate, the stomach and intestines are inhibited, the heart beats rapidly, the hairs of the back and tail stand erect—all signs of nervous discharge along sympathetic paths.

On the sensory side, nausea, dizziness, headache, pains of different kinds are common accompaniments.

Pallor of the skin, increased perspiration, cardiac palpitation, respiratory disturbances, tremors, muscular weakness, gastric and intestinal disturbances —one or more of these physiological disturbances may be so obtrusive as to be the predominant feature of the syndrome and to mask the psychical element which may then be overlooked. Gastric and intestinal disturbances, for instance, or cardiac distress may be so marked as not to be recognized as simply manifestations of anxiety neurosis, but may be mistaken for true gastric, intestinal, or heart disease.

A person, we will say, has acquired—owing to no matter what psychogenetic factor—a recurrent attack of anxiety. This anxiety or apprehension recurs from time to time when awakened by some thought or stimulus from the environment. At once there is an outburst of physiological, *i.e.* functional disturbances, in the form of an "attack." There may be violent cardiac and respiratory disease, tremor, flushing, perspiration, diarrhea, sensory disturbances, etc., followed by more or less lasting exhaustion. Disease of the heart, or of the stomach, or of the nervous system is frequently diagnosed when the symptoms are simply the product of a complex. Quite commonly, when the symptoms are less related to particular organs, but more conspicuously embrace vasomotor, sensory, digestive disturbances and fatigue, the syndrome is mistaken for so-called neurasthenia.

511 East Eleventh Street.

Medicolegal Notes.

Physician's Deposition as Evidence.—The California Supreme Court holds that the deposition of a physician as to an employee's injuries, for which compensation is being sought under the Workmen's Compensation Act, although hearsay as to the employer and the insurance carrier, who were not parties to the proceeding in which the deposition was taken, is admissible under section 60, subd. a of the act, providing that no award shall be invalidated because of the admission of evidence inadmissible under common law or statutory rules.—Ocean Accident & G. Co. v. Industrial Accident Com. (Cal.) 182 Pac. 35.

Testimony as to Health of Insured Person.—In an action on a life insurance policy, testimony of the widow of the deceased that her husband "was not sick" before the date of the policy, "never had any trouble for five years, as far as she knew, except to get a cold," was held insufficient to raise a jury question in contradiction of the attending physician that he had at a specified time treated the deceased for chronic bronchitis and that he was affected by that disease. The deceased could have had chronic bronchitis without being characterized as "sick," by which his widow apparently meant sick in bed, or at least unable to work.—McAuliffe v. Metropolitan Life Ins. Co. (N. J.) 107 Atl. 258.

Expert Testimony—Hypothetical Questions and Personal Knowledge.—An instruction to the jury in an injury case gave the usual instruction properly given in cases where hypothetical questions have been propounded to expert witnesses, and contained the usual caution to the jury that before they could give effect to the opinions expressed by experts upon hypothetical questions, they must be able to find that the facts upon which the opinions were based appearing in the hypothetical questions were supported by the evidence, and said to the jury: "If the facts are not found to be as stated in the hypothetical question, the answers thereto or the opinion of the witness based upon said question is of no value, and cannot be considered." It was rightly claimed that no hypothetical questions had been propounded in the case. No expert witness was called upon to give an opinion based upon a hypothetical question. All the experts who gave opinions (as to whether the injury would result in permanent pain and disability) based their opinions on matters acquired from a personal examination of the plaintiff. While the part of the instruction objected to might well have been omitted, it was held not prejudicial in this case, as the court followed this charge by instructing that if an expert witness testified as to matters of fact from personal knowledge, his testimony should be considered the same as that of any other witness.—Collinson v. Cutter, Iowa Supreme Court, 170 N. W. 420.

MEDICAL RECORD.

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PASSIVE HEPATIC CONGESTION ASSOCIATED WITH HIGH BLOOD-PRESSURE.

FROM what is now known there is no doubt that the cardiac liver is frequent in patients presenting a very high maximum arterial tension. It is made manifest either by a painful hepatic paroxysm or by an increase in the size of the liver, which may be very considerable. The production of this venous congestion of the liver is due to the fact that the maximum tension, although it may have dropped several degrees, remains very high, while the minimum tension remains what it was before or may even increase slightly. If the observer is not warned of the possibility or even the frequency of these accidents in individuals having a high maximum tension, surprise might be forthcoming by the appearance of such symptoms; hence the very likely possibility of a mistaken diagnosis, such as hepatic colic, if the phenomena are of a very painful nature, or hypertrophic cirrhosis without ascites, if the liver is moderately increased in size, while cancer of the liver might be suspected in the massive forms.

If, on the other hand, the possibility of these asystolic accidents is known, the diagnosis should be rather easily made, by consideration of the two following facts: First, when the patient with a painful or painless hepatomegaly shows but a slight difference between the maximum and minimum tension—although the latter may be very high—the presence of a cardiac liver is to be suspected and not cancer, ascitic cirrhosis, or simple hepatic colic. To have a proof of this all that is necessary is to put the patient under treatment for asystoly; if the hepatomegaly disappears or simply diminishes to a very considerable degree, a precise diagnosis will be made and the indications of a proper treatment will be evident. If, on the contrary, the size of the liver does not change it will then be logical to conclude that the hepatomegaly is due to some cause other than passive congestion.

The knowledge of these facts leads to another practical conclusion, namely, that the size of the liver should be studied in all cases of high blood-pressure. When the liver becomes painful, when it increases in size, even when no particular attention has been given to the blood pressure, it will be quite logical to infer that the heart has a tendency to dilate and as a practical conclusion these patients should be advised to follow a diet and the kind of life permitting the heart to rest, while cardiac tonics should be exhibited. Briefly speaking, in cases of high blood-pressure the liver is the place in which to look for the initial symptoms of hyposystole and if this notion is constantly present in the clinician's mind many diagnostic errors will be avoided and a proper treatment given in time to prevent the advent of dangerous cardiac insufficiency which always is a menace in such patients.

NEW METHOD OF MARKING THE SKIN TO SHOW LOCATION OF VARICOSE VEINS AT OPERATION.

WHEN silver nitrate solutions are used to mark the position of varicose veins, the marks are often nearly or quite obliterated when iodine is used to sterilize the field. Besides, many surgeons have had the same unfortunate experience as that reported by Coopernail (*Surgery, Gynecology and Obstetrics*, October, 1919) when silver nitrate marking has been left to the house staff; for, as he says, internes, forgetting that the solution does not blacken the tissue at once, have sometimes used a nitrate of silver pencil, and a nasty burn has resulted. Coopernail has found brilliant green, an aniline dye, in aqueous solution most satisfactory. The course of the veins should be marked out with this the day before operation and the solution should be allowed to dry before the clothing touches it. The stain is not removed by alcohol or ether, and shows beautifully through the iodine. Coopernail credits Captain T. D. Buchanan with the suggestion that this would also be a good agent for marking the scalp in proposed intracranial operations.

We cannot agree with the author when he says that the operation for varicose veins most commonly performed to-day probably is the Mayo stripping operation and resection of veins that cannot be stripped; nor can we unqualifiedly agree with the statement that the Schede operation at the present time has become obsolete. Unquestionably the Mayo operation has a certain following, perhaps a large one; but it is by no means universally used, and it is an operation in which there is a considerable element of unnecessary danger, as is proven by the fact that a number of deaths from embolism have followed this type of operation, and this accident is said to have occurred even at the Mayo Clinic.

Regarding the Schede operation, possibly the original Schede, in which an incision entirely encircled the leg, has become obsolete, for there are almost always certain areas where no dilatation of veins occurs and bridges of normal skin and other tissues superficial to the deep fascia may be left, thus allowing passage of cutaneous nerves and avoiding the production of a complete circular scar;

but there are many cases in which the Schede, modified as suggested above, may be used to advantage, sometimes alone and sometimes in combination with the Trendelenburg, Mayo, Babcock, or some other type of operation above the knee.

THE PLAGUE AT AVIGNON IN 1721.

A MANUSCRIPT has recently come to light which represents the journal of an eye witness (the town almoner) of this visitation. Raymond gives a brief digest of it in *Le Progrès Médical* for April 3, xlviii, 14. During the previous year Marseilles had been ravaged and as the contagion neared Avignon prophylactic measures were taken. All of the gates were closed but three which were vigilantly watched. An alleged "first victim" had choked while eating, but this fact was not known and it was thought that he had been instantly stricken dead by the disease. The truth was soon discovered and everything done to calm the people. Certain articles of import in warehouses were suspected, as cotton from the Levant; and as Marseilles had blamed cotton for its visitation these bales inspired terror. All sea food was kept out of the city and beggars about the walls were chased away. Sewers were covered. The sanitary cordon naturally put an end to all business and the workers were thrown out of employment and congregated in the streets, clamoring for aid. Some were put to work mending the streets and others unable to do this, were given alms. The Jews were not admitted to State aid; as they were allowed only a single occupation, the dealing in cast-off clothing, this had to be proscribed for fear of inviting the contagion. Among the numerous prophylactic measures dogs and cats, believed to spread the infection, were slaughtered after having been taken to an old monastery.

These measures were begun late in 1720 and it is interesting to note that the disease did not actually reach the town until September, 1721. Long before that period the funds had been exhausted and the town valuables had to be pledged to get more. Dr. Manne, Jr., physician to the hospital appointed for plague patients, reported the first case but his colleagues disputed his diagnosis—openly in the interest of averting a panic. There was a counter rumor that cases had been concealed since August. Immunes from plague ridden towns came to serve as nurses in the hope of good financial returns.

When the plague had spared the city for about nine months, probably as a result of the vigorous prophylaxis, once gained a foothold it spread rapidly and by September 30 the temporary infirmary was filled with patients, so that two more were opened—religious institutions. The first attendants died from the contagion so that orderlies became scarce. Each new focus of disease required special quarantine and individual activities often clashed. An old leper asylum, long disused, was opened to receive newborn children. The general hospital of Avignon did not want the plague victims, yet could not refuse aid to doubtful cases. An observation ward was installed for suspects and in the meantime the alleged disinfectants which, it is to be inferred, were selected for their agreeable odor, caught fire and destroyed a valuable library belonging to the Augustine monks.

The plague had lasted a full month when it was thought that conditions were on the mend. Renewed efforts were made to speed the day and on the next February a final quarantine preparatory to a clean bill of health was begun. Every doctor who had treated a plague patient had to be interned for 20 days. It is to be regretted that the profession had not taken due interest in prophylaxis and was also accused of looking out too keenly for the honoraria. This attitude by the town authorities led to the taxation of physician's fees under a system intended to discourage exploiting the situation. The attendants and the inhumers who buried the plague victims were also keen after their stipends and to defray all of these charges the Pope sent a contribution of 10,000 crowns. The cotton believed to have introduced the contagion, was burned to allay the popular fear. Of 146 orderlies who attended the sick 87 contracted the disease and of this number 40 succumbed. Nine medical men were attacked and 5 died. A census taken before the malady appeared showed a population of 24,000. Over 6,000 are known to have died, while many other inhabitants disappeared; the census after the visitation showed but 16,000 people.

THE WASSERMANN REACTION IN PRIMARY SYPHILIS.

AN important original study of this subject by Grönroos appears in the *Acta Societatis Medicorum Fennicæ*, 1920, i, 2, in which the author's own conclusions are in part as follows: The positive Wassermann appears at the earliest at the close of the six weeks period which follows the day of infection, although traces of a positive may, rarely, be seen a week earlier. The usual time of appearance is during the seventh week in traces and the full reaction during the eighth or ninth week. The latest period of the appearance of the positive reaction is the twelfth week. If we reckon not from the date of infection but the date of the chancre the earliest appearance of the reaction is between the first and second weeks which follow the first appearance of the lesion; the full positive appears at the end of the second week. The average is an incomplete reaction three weeks after and a complete positive during the fourth week of the chancre. Not rarely the appearance is delayed until the fifth or sixth week, and even later. The interval between the first trace and the complete positive is about ten or twelve days. There are, however, a rapid or one week type (or less) and a slow type which requires two or three weeks. Some weakly positive cases die away to negative without maturing or remain at a low level indefi-

nitely. They form a transition between a sluggish type and an irregular type of reaction, in the latter of which after long delay the reaction finally becomes positive.

Not infrequently cases of positive reaction become negative and remain so for several weeks —so-called early latency, afterwards becoming positive with the appearance of secondary syphilis, the latter being usually delayed. The reappearance of the positive reaction may be very rapid in such cases. Other types of irregular reaction are seen and it may be falsely concluded that this behavior is due to treatment. As a rule when the initial reaction has become fully positive secondary syphilis appears—either at once or after a short interval. Rarely the roseola may appear while the reaction is still negative, but no further symptoms. In such cases the reaction suddenly becomes positive after a few days at most. All the foregoing statements imply that no treatment has been used. Treatment, even calomel by the mouth, may promptly bring the reaction to the negative phase.

The New Medical Poland.

Some years ago after the Germans had, as they believed, permanently conquered Poland from the Russians, the Medical Record published an editorial article on the Germanized Polish medical schools. Since then the fortunes of war have given Poland its independence and the resulting changes in the medical faculties and teaching should prove of interest. These have recently been outlined in an editorial in *La Presse Médicale* for January 31, 1920, xxviii, 9. There are at present in Poland two completely organized faculties of medicine, one being that of the University of Cracow, founded five hundred years ago, and the other that of Warsaw. In addition the first year studies of medicine are taught at Posen and Vilna, the latter school having been a great scientific center in which the Latin culture once flourished, until closed by the Russian conquest of Poland. The University of Vilna has recently undergone a striking renaissance. Finally there is a medical faculty at Lemberg or Lvov, but at present it does not function; and there is to be a new medical school in Lubin. To retrace our steps the present University of Warsaw goes back only to 1905, for it was in that year that some of the restrictions of Russian dominance were relaxed so that from a Russian institution it became quasi-Polish. This movement in fact extended through all of the Polish institutions of learning. There is at present no lack of students (Warsaw has 1,400 enrolled), but a marked shortage of teachers. The aim of the faculties is to combine the excellences of the French and German schools. The former Austrian Poland may be the slowest to recover from the war. Warsaw is splendidly equipped with hospitals and laboratories and the Medical Society of Warsaw has a fine library. The writer apparently is not informed as to exact conditions in the other medical centers. There is a Franco-Polish commission which functions in both Paris and Warsaw to maintain an *entente* between the medical men in the two countries. Leaders of the profession in France are of this commission, which includes such well known Poles as Babinski, Danysz, and Okinczyc.

Permanent Celialgia Following Dysentery.

This condition presents three forms, namely, (1) the flatulent, which is at the same time gastric and intestinal, with meteorism beginning soon after meals; (2) the coprostatic form, with difficulty at stool, which, although not bloody, takes place only every two or three days; (3) intestinal cramps, arising in either the left colic angle or sigmoid flexure in the morning or sometimes within five hours after meals. These disturbances are due either to reflex irritation or to a neuritic inflammation of the celiac plexus. Colitis of one or another type may likewise be present, particularly in the amebic form of dysentery. But when a colitis is present, the permanence or the frequent return to activity of the intestinal lesions is combined with the neuritis. This syndrome exists in a number of other pathological processes, such as locomotor ataxia, saturnism, oxalemia, alcoholism, and pneumococcia. Palpation over the so-called nodal points of Loeper and Esmonet is extremely distressing for the patient. The initial lesion and in particular the lesions of the intestine in bacillary dysentery are recovered from easily and rather quickly. The lesions of the solar plexus resist and may continue for weeks or months. As in the case of neuralgia of the trigeminus, which does not subside after removal of the offending tooth, the abdominal neuralgia will not disappear after the intestinal lesions have retrogressed, so that dyspeptic states, spasm, and pain continue. The treatment does not consist merely of rectal irrigation and a strict diet, but should also include antispasmodic and nervine therapeutics. Perhaps a small dose of antidysenteric serum might be given every three days, after the analogy of the treatment of diphtheritic paralysis. Loeper of Paris has resorted to this therapeutic measure in some cases with happy results. Belladonna, oily laxatives, and enemata of liquid vaseline often are sufficient for controlling the spasm and pain. Strychnine is contraindicated, as it awakens muscular reactions and its ill-effects are almost a positive proof of the spasmodic nature of the pain. Electrization has given good results. The high frequency current also renders real service and hot applications to the abdomen are always indicated.

Nervous and Mental Complications of Grippe.

Under this caption Courbon, who is at the head of an insane asylum, mentions (*La Médecine*, February, 1920, i, 5) as a complication of the pandemic of 1918, a special lesion of the mesencephalon located beneath the third and fourth ventricles in the gray nucleus and locus niger, which gave rise to a syndrome of fever, somnolence, and motor disturbances of the ocular muscles. This was the encephalitis lethargica of Netter. The fact that it was known before the pandemic is admitted, but the author's opinion is not thereby altered that lethargic encephalitis is grippal mesencephalitis. Among postgrippal psychoses the chief in the author's experience is a pseudoparesis which differs from

meningoencephalitis of syphilitic origin by its benign tendency. One sees a syndrome of forgetfulness, tremor of the tongue and fingers, embarrassment of speech and exaggeration of reflexes. The condition appears during convalescence without antecedent mental disturbance with the picture of asthenia, mental confusion, stupor, and more or less complete suspension of ideation and motricity.

News of the Week.

Medical School of the University of Alabama.—It is announced that on June 1 the Medical School of the University of Alabama, now in Mobile, will be removed to Tuscaloosa, where it will be reorganized as a preclinical college with a two-year course of study. This change was decided upon following the action of the Council on Medical Education of the American Medical Association in degrading the school to Class B.

New York Hospital Campaign.—The campaign for a new building and improvement fund for the Society of the New York Hospital, which operates the New York Hospital, the Bloomingdale Hospital, and the Campbell Cottages for Convalescent Children at White Plains, has been renewed, and a fund of $100,000 will be sought to meet a current deficit.

The Walter Reed General Hospital.—Plans have been made for the development of the Walter Reed Hospital in Washington into one of the main hospitals of the army and a nucleus of a medical center on the modern group or team system. Two additions to the main hospital building will be made to accommodate additional medical and surgical wards, a dental department, laboratories, an eye, ear, and throat department, and a dispensary. Some of these departments are now housed in temporary buildings.

Dr. J. J. Kindred of Astoria, L. I., has been appointed highway commissioner of Queens by the borough president.

Dr. John F. Ferguson of Brooklyn has been appointed a member of the New York Board of Elections by Mayor Hylan.

Maternity Hospitals Must Be Licensed in Ohio.—According to a definition recently made by the Ohio State Commissioner of Health, any institution in the State which admits maternity cases will hereafter be required to obtain a license. The definition given is that any place receiving women for care during childbirth is a maternity hospital, this including not only hospitals operated exclusively for maternity cases, but also a general hospital having a lying-in department or ward and private institutions accepting the case and management of women in childbirth.

The University of Vienna has been closed on account of anti-Semitic riots, which took place during the final week in April. The leader of the German student party has issued a statement to the effect that it is uncertain whether the students will permit the reopening of the institution, except upon condition of the exclusion of the Jews.

Dr. Markoe's Age.—In the obituary of Dr. James W. Markoe, published two weeks ago, it was stated that he was born in 1882. This was, of course, a misprint, as was evident from the context. He was born in 1862.

American Public Health Association.—The date of the annual meeting of this Association in San Francisco has been changed to September 13-17. The change was necessitated by the occurrence of a California State election on August 30.

A Life Cut Short by Prohibition.—It is reported in *The Sun and Herald* that Thomas Morris of Grand Island, Neb., died there recently at the age of 126 years. It is asserted that the statement as to his age is absolutely authenticated by the old family Bible which contains the record of his birth in North Wales on January 15, 1794. His death is attributed to the fact that he was no longer able to get his daily modicum of whiskey.

Asks $25,000 for a Ducking.—A German physician has brought suit against a number of his former neighbors in Osage County, Kansas, to recover $25,000 damages for alleged indignities suffered during the summer of 1918. It is stated that a number of citizens, outraged by his utterances, which were disloyal and pro-German, threw him into a water trough and otherwise hurt his feelings.

Changes in the Insanity Law Suggested.—Dr. J. F. M. Meagher, president of the Brooklyn Neurological Society, has issued a letter to the medical staff of the various State hospitals advocating a readjustment of the New York State insanity laws, not only for the welfare of patients, but for the protection of society. Insanity, as it is usually termed, is a medical, and not a legal problem. As the laws now stand, a judge or a jury has the deciding opinion as to whether a man is sane or insane; safe to be at large, or unsafe; and neither by education nor by training is either competent to decide. Not infrequently Dr. Meagher says, persons suffering from dangerous paranoid conditions are usually asked in court whether they are insane, and on replying in the negative are discharged forthwith! Some hope of relief from this deplorable state of affairs is afforded by the April additional Grand Jury which recently handed up to Judge Joseph F. Mulqueen in the Court of General Sessions a presentment expressing its regret over the death of Dr. James Wright Markoe, who was killed in St. George's Church, April 18, and recommending changes in the insanity law. The jury suggests that a petty jury at a trial be permitted to find a defendant "guilty, but insane." At present the verdict must be worded "not guilty, but insane." It suggests also that the law be amended so that a corps of physicians or neurologists be appointed as the only competent authority to certify to the court on insanity cases. These suggestions, if carried out, mean that hereafter neither lawyers nor laymen can qualify on a commission in lunacy. At present the law provides a commission composed of a physician, a lawyer and a layman appointed by the court.

Intestinal Pathology in the Functional Psychoses.—In the article with this title published last week, the caption for Fig. 4 on page 722 should read: Roentgenogram, taken after a barium enema, showing leakage at the ileocecal sphincter.

Bequests to Charities.—The will of the late Dr.

Wallace H. Dean of Springfield, Mass., gives $10,000 each to the Old Men's Home and the Good Will Home. It also gives 25 acres of land in the town of Blandford for a public park, and $20,000 for the erection of a town school building.

Public Health Poster Contest.—As previously announced, a prize of $100 is offered by the New York State Department of Health, through the bureau of venereal diseases, to the person who offers the best colored drawing which can be reproduced as a poster for use in the public health work of the bureau. The rules of the contest are the following: Drawings should be colored and may be made any size desired, but must not be smaller than 12 x 18 in. The winner will be chosen from among those whose drawings are received at the New York State Department of Health, Albany, N. Y., before 5 p.m., June 1, 1920, this being an extension of time of one month, made because of the intervention of the Easter vacation and examination time in many of the schools. Drawings will be returned if the artist will submit postage. It may be desired to purchase for use elsewhere certain of those drawings not winning the prize. The bureau reserves the right to reject all drawings if in the minds of the judging committee none satisfactorily meets the requirements.

Medical Society Elections.—The ECLECTIC MEDICAL SOCIETY OF THE STATE OF NEW YORK at its sixtieth annual meeting held in Albany, April 21 and 22, 1920, elected the following officers: *President*, Lewis B. Dawley, Westtown; *First Vice-President*, L. B. Gardner, Geneva; *Second Vice-President*, A. B. Wolf, Queens; *Third Vice-President*, E. G. Padgham, Geneva; *Secretary*, T. D. Adlerman, Brooklyn.

The WINDHAM COUNTY (CONN.) MEDICAL SOCIETY at its 127th annual meeting, held in Willimantic on April 16, elected the following officers: *President*, Dr. J. M. Perreault, Danielson; *Vice-President*, Dr. Fred M. Smith, Willimantic; *Secretary*, Dr. R. C. Paine, Thompson; *State Delegates*, Dr. A. D. Marsh, Hampton, and Dr. E. F. Perry, Putnam; *Councilor*, Dr. S. B. Overlook, Pomfret; *Censors*, Dr. T. R. Parker, Willimantic; Dr. C. E. Hill, Killingly, and Dr. W. H. Judson, Danielson.

The HILLSBOROUGH COUNTY (N. H.) MEDICAL ASSOCIATION, at its 15th annual meeting held in Manchester on April 20, elected the following officers: *President*, Dr. Clarence O. Coburn, of Manchester; *Vice-President*, Dr. C. E. Smith, of Grasmere; *Secretary-Treasurer*, Dr. P. F. Rock, of Nashua; *Executive Committee*, Drs. John C. O'Connor and George V. Fiske, of Manchester, and Clarence W. Milliken, of Goffstown.

Obituary Notes.—Dr. CLARENCE EMMETT PFEIFER of Columbus, O., died April 23 at the age of 46 years. He was born in Galion, O., and was graduated from the School of Medicine of the Ohio State University in the class of 1904. He served during the war in the medical corps of the army with the rank of captain.

Dr. WILLIAM HENDERSON RUDDICK of Boston, Mass., died from cardiac disease April 8, at the age of seventy-five. He was graduated from the Medical School of Harvard University in 1868. Dr. Ruddick was a veteran of the Civil War and of the Spanish-American War, and was a member of various state and local organizations.

Dr. WILLIAM DAWSON ROBINSON of East Orange, N. J., died April 13 in his 78th year. He was graduated from Bellevue Hospital Medical College in 1879.

Dr. P. W. F. CORNING, of Londonderry and Manchester, N. H., died April 13 aboard a Manchester-Boston train as a result of injuries received when the automobile in which he was riding was struck by that train at a crossing. Dr. Corning, who was born in 1872, was graduated from the Baltimore Medical College in 1906.

Dr. C. P. LINHART, of Columbus, Ohio, died at his home in that city, of pneumonia, on April 15, at the age of 59 years. He was a graduate of the Western Reserve University Medical Department in the class of 1882.

Dr. CALVIN WEIDNER, of Hartford, Conn., died at Sarasota, Fla., on April 12 after a long illness. He was born in 1867 and was graduated from Medical College of Indiana in 1893. After a period of study in Vienna he settled in Hartford, where he devoted his attention chiefly to otolaryngology.

Dr. LOUIS NOTT LANEHART, of Hempstead, L. I., died of heart disease on Sunday of this week. He was born in 1859 and was graduated from the Albany Medical College in the class of 1883. He was one of the organizers of the Nassau Hospital and was later one of the attending physicians of the Belmont Hospital of Hempstead. He was also health officer of Hempstead.

Dr. ARTHUR JUDSON BENEDICT of Newburgh, N. Y., died April 17. He was graduated from the University of Buffalo Medical Department in 1876, specializing in otolaryngology. He was a member of the American Medical Association.

Dr. HENRY SHERMAN KILBY, of North Attleboro, Mass., died suddenly April 10, at the age of sixty-eight. He was graduated from the Medical School of Harvard University in 1878.

Dr. E. L. EBERHARD, of South Whitley, Ind., died recently at the age of sixty-two. He was graduated from the Medical College of Ohio, Cincinnati, in 1880. He was a member of the American Medical Association.

Dr. SIDNEY FREEMAN WILCOX, of New York City, died April 19, Middletown, N. Y., while performing an operation in the Thrall Hospital. He had just removed a tumor from the patient when he dropped to the floor dead. The operation was completed by Dr. Moses A. Spivers, of Middletown. Dr. Wilcox, who was graduated from the New York Homeopathic College and Flower Hospital in 1880, was professor of clinical surgery in the New York Medical College and Hospital for Women. He was a Fellow of the American College of Surgeons, the New York Academy of Pathological Science, and other organization.

Dr. JOHN F. CANAVAN died in Bridgeport, Conn., on April 20, after a brief illness. He was born in Clyde, R. I., in 1888 and was a graduate of the Eclectic Medical College, Cincinnati, in 1913.

Dr. EZRA C. HARRIS of Springfield, O., died of heart disease on April 17, at the age of 75 years. He was graduated from the Sterling Medical College, Columbus, in 1876, and practised first in Clifton, going to Springfield in 1890.

Dr. BUFORD N. DUNAVANT of Memphis, died suddenly April 11. He was born in 1882 and was a graduate of the Memphis Hospital Medical College in 1906. He was formerly surgeon with the rank of major in the 115th Field Artillery.

Dr. DON D. GROUT of Waterbury, Vt., for eleven years head of the State Hospital for the Insane, died suddenly of angina pectoris on April 16. He was 71 years old and was a graduate of the University of Vermont College of Medicine in 1872.

Dr. GEORGE M. HOEHN of Cincinnati, died on April 21 after a long illness. He was born in 1852 and was a graduate of the Medical College of Ohio in 1885.

Dr. RICHARD J. P. GOODWIN of Malden, Mass., died April 19, after a long illness in his 83d year. He was born in Boston and was a graduate of the Harvard Medical School in the class of 1865. He served in the medical corps of the United States Army throughout the Civil War.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, April 15, 1920.

Ex-Service Tuberculous Patients.—The subcommittee of the Norfolk Insurance Committee at a meeting held in Norwich on April 10, reported with regard to discharged sailors and soldiers that they had recently had before them several cases of discharged soldiers who were demobilized as fit, but were subsequently found by their panel doctors to be suffering from tuberculosis. In each case Dr. Burton Fanning of Norwich, an authority on tuberculosis, had certified that, in his opinion the disease was attributable to war service, and his certificate, together with the evidence on which he relied, had been forwarded to the Minister of Pensions, with a view to establishing the committee's claim to a refund of the cost of institutional treatment. The medical advisers of the Ministry of Pensions, however, without disclosing any evidence in support of their conclusions, had declared that the disease could not be attributed to war service. The subcommittee felt that an important question of principle was involved in this procedure, which enabled the deliberate conclusions of an expert as Dr. Fanning was, who was in personal touch with the case, to be overridden by officials in London, who had not personally examined the patient, and who made no disclosure of the evidence on which the adverse decision was based. The subcommittee had made strong representations to the Minister of Health, in the hope not only that the specific cases referred to would be reconsidered, but that the present procedure would be radically amended.

A point with respect to panel practice of some importance to panel practitioners was also discussed at this meeting. The subcommittee reported with reference to panel druggists that, under the amended Insurance Act, so far as remuneration was concerned, the panel druggist would receive a considerable advance on the dispensing fees. The arrangements in connection with the dispensing in rural areas had been greatly modified. Under the old regulations a panel practitioner had the right to elect to dispense for insured persons who resided more than one mile from the nearest panel druggist. Under the new regulations, in effect, the practitioner has no choice, the decision resting either with the committee or the insured person. When the committee was satisfied that insured persons, by reason of distance or inadequacy of means of communication, would have "serious difficulty" in obtaining drugs and appliances from the druggist, the committee must require the practitioner to dispense. The subcommittee had decided on general principles that, *prima facie*, "serious difficulty" might be assumed to exist where a doctor and a druggist were not in the same locality. The committee therefore formally required the medical men in such localities to dispense for their insured patients. This, in effect, maintained the *status quo ante*. On the other hand, where there were a doctor and a druggist in the same locality, "serious difficulty" obviously did not exist, and the insured persons residing more than one mile from the nearest panel druggist must themselves decide to obtain drugs and appliances either from their panel practitioner or from a panel druggist. In the conduct of a Ministry of Health and of a Ministry of Pensions bureaucratic methods are necessarily in vogue, and it follows that the panel practitioner has to cope with a multitude of regulations which is by no means the least repugnant feature to him of the National Insurance Act. The panel practitioner loses a good deal of his independence, but if this is for the common weal, it matters little. However, it has yet to be clearly proved that the Act is in the interests of the general public. As for its benefit to the medical profession opinions among medical men differ. Indeed, it is a debatable point.

Sir James Mackenzie at St. Andrews.—Probably, in fact assuredly, no medical specialist, if so able an all around physician may be termed a specialist, has of recent years enjoyed a greater reputation in the Old and New Worlds than Sir James Mackenzie. Without exaggeration, his investigations into the cause of heart disease and the results thereof may be called epoch-making. When then this man in the heyday of his fame and success left London and betook himself to the "wee gray toon by the sea," St. Andrews, all who knew him personally or by reputation were amazed. However, astonishment has given place to comprehension and admiration, for he has a message to give to the world and great work to do on behalf of British medicine. His book, brought out a year and a half ago, "Future of Medicine," explains his views. He is a hard and fast advocate of the practice of preventive medicine and his means of prevention are to track down disease to its source and to attack it before it has gained a hold on the system. His theory is that, as every disease has early symptoms, if the earliest and lightest symptoms can be interpreted in terms of future danger the patient may be saved while others are waiting for the disease proper to manifest itself. This is one phase of the matter. The

other is concerned with the after histories of people examined. It is obvious that, in order to understand the significance of any symptom, one must know what happens to the people who show it. This may be the reason why St. Andrews was chosen for the work. As the medical correspondent of the London *Times*, April 9, points out, the old city is self-contained and its inhabitants tend to remain for generation after generation within its walls. Consequently, it should be possible in process of time to discover the ultimate significance of the so-called trivial signs of ill-health. As Sir James Mackenzie says: "It will take us many years to complete our survey, but when it is complete we shall have such a knowledge of the early processes of disease and the means of detecting them as must prove of infinite value. Knowledge of this kind simply does not exist today. The man who sees the earliest signs of disease is not the great consultant but the general practitioner." The outstanding feature of the entire scheme is that the work is founded on the general practitioner, and is essentially of a preventive medicine character. The general practitioner is enlisted in it and it is he who is carrying it on. The object at St. Andrews is to trace disease to its sources, to search for and find out the small hidden springs, those earliest subtle symptoms which are so difficult to detect and to which, up to the present time, little attention has been paid. In some respects, the endeavor may seem Utopian, but its principles are based on sound common sense. There are few diseases which come like "a bolt from the blue," or "a thief by night"—practically all, even in their most incipient stages, show some slight symptoms which if detected might be prevented from progressing. When men have learned what these symptoms are and have been trained to detect them, successful preventive treatment will be possible. It is interesting to recall that Sir James Mackenzie spent some of the busiest and probably the most fruitful years of his life in general practice. No one, therefore, is better able to place a correct estimate on the value of the general practitioner and his opportunities for investigating into the very beginnings of disease.

Next Year's Census in Great Britain.—Under the direction of the Minister of Health, the Registrar General is perfecting the machinery for the decennial census of the United Kingdom in 1921. Following precedent the enumeration will take place on the first Sunday in April, but for the first time it will proceed on lines which will enable easy comparison to be made with the statistics of the whole of the British Empire. Dr. Addison, the Minister of Health, is preparing the measures necessary for obtaining the authority of Parliament in the matter. Two bills are needed, one relating to Great Britain and the other to Ireland. As in 1911, so in 1921 the officials acting on behalf of the Registrar General will want to know the sex, age and occupation of everyone within their jurisdiction. The first general census of the United Kingdom was taken in 1801, and since then there has been a fresh numbering of the people every ten years with the following results:

	Population
1801	16,345,646
1811	18,509,116
1821	21,272,187
1831	24,392,485
1841	27,036,450
1851	27,724,056
1861	29,321,288
1871	31,845,379
1881	35,241,482
1891	38,104,975
1901	41,976,827
1911	45,365,599

The subjoined table shows what was the population of the various parts of the United Kingdom in 1911.

England and Wales.—Males, 17,448,476; females, 18,626,793. Total, 36,075,269.

Scotland.—Males, 2,307,603; females, 2,451,842. Total 4,759,455.

Ireland.—Males, 2,186,804; females, 2,195,147. Total, 4,381,951.

Thus there were 1,339,855 more females than males in the United Kingdom in 1911. From 1901 to 1911 the population increased by 3,756,508 persons.

Some Pathological Aspects of Tuberculosis.—Dr. W. E. Carnegie Dickson, lecturing recently at the Royal Institute of Public Health, mentioned the various opportunities which had come his way for studying tuberculosis. He laid stress on the need for reliance upon clinical examination quite as much as upon pathological tests, because a positive result in a sputum test for instance denoted an advanced case and clinical diagnosis should generally give a diagnosis much sooner. Pathologists should have a short clinical history of each case, because otherwise the value of results when they came to be compiled was lessened. Syphilis of the lungs is a condition more prevalent than generally recognized and this fact should be remembered. Clinically it often resembled tuberculosis. The affection of the lower lobes, spread from the root in a downward direction, is most usual, and *x*-ray plates may show fibrosis very similar to that of tuberculosis. Judging from his experience the approximate number of bacilli present in a sputum is a rough indication of the severity of a case, but this is a rule with many exceptions. His own figures for the last two years showed that pathologically there were more tuberculous cases among the out-patients of the chest hospital than among the dispensary out-patients in the same district. As for bovine tuberculosis, Dickson epitomized some of the pioneer work done at Edinburgh on the bovine bacillus. This work showed that in children the tonsils were frequently the site of infection, but such tonsils were not usually enlarged or clinically recognizable. The gastrointestinal mucous membrane and respiratory tract could be infected anywhere, but his autopsies on children showed that the glands of the ileocecal angle were most often infected, and in many cases were so large as to be palpable. This might aid in diagnosis. So far as mass infection is concerned, the milk supply of a district is most important. The

tuberculin reaction for cows is very fallacious. Sometimes the animals are too ill to react, in other instances unscrupulous farmers give a previous injection and so forestall any reaction. Questioned as to the theory of early infection producing immunity, Dickson considers this theory most dangerous. He thinks a patient more likely to be sensitized thereby. With regard to opinions recently expressed concerning the "flaring up" of old infections, he is more inclined to believe that reinfection is the cause of a new outbreak.

Cancer Research.—The decision to amalgamate the Cancer Research Department of the Middlesex Hospital and the Bland Sutton Institute of Pathology with the medical school of the hospital has been confirmed recently at a meeting of the Court of Governors of the hospital. It is of interest to note that the Cancer Research Department of Middlesex Hospital has been established for thirty years, but the hospital has had a cancer charity attached to it since 1792. The medical school dates from 1774, the hospital having been founded in 1745. The Bland Sutton Institute was erected in 1913. With regard to the amalgamation the secretary of the hospital says: "We are getting together a body of scientists of great reputation and, having regard to the value of the close connection between the research and the clinical side, the prospects of fruitful results from their work will be greatly increased by them acting together. That is the sole purpose of the amalgamation. The hospital funds will not be encroached upon in any way, each of the institutions having its separate income. Instead of the research work being done in watertight compartments it will now be all coordinated." The war gave a great impetus to medical research work and it is as a sign of the accelerated public interest in such investigation that the activity evinced at the Middlesex Hospital in cancer research may be regarded.

Obituary.—A very well-known medical scientific man has just passed away suddenly in the person of Dr. Albert J. Chalmers. Dr. Chalmers devoted his brains and all the energy of his adult life to research work in tropical medicine. He lived for some years in Africa, but in 1901 was appointed by the Ceylon Government to the post of Registrar to the Ceylon Medical College. In 1912 he left Ceylon and in 1913 accepted the Directorship of the Wellcome Research Institute at Khartoum in succession to Dr. Andrew Balfour. He worked there successfully and without cessation, until a few weeks ago, when he left the Soudan for a holiday accompanied by Mrs. Chalmers. They intended to return to England by way of India, Japan and America, but at Calcutta Dr. Chalmers was taken suddenly ill and died there on April 6. In the *Medical Press*, April 14, is an eloquent tribute to the deceased scientist over the signature "A. C.," which no doubt are the initials of Dr. Aldo Castellani, a coworker with him in tropical medicine and joint author with him of the well-known and most excellent "Manual of Tropical Medicine."* This obituary directs especial attention to one of Dr. Chalmers' investigations, "the paramount importance of which will be recognized in the future, and which will certainly become a classic." His original work on mycetoma is that referred to. Dr. Chalmers died from infective jaundice at the comparatively early age of fifty.

*A Manual of Tropical Medicine. 3d Edition. London: Ballière, Tindall and Cox; New York: William Wood & Company.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 22, 1920, clxxxii, 17.

1. Helen Homans. Frederic A. Washburn.
2. Intestinal Obstruction. E. A. Codman.
3. Supporting the Pelvic Floor to Prevent and Overcome Uterine Prolapse. De Witt G. Wilcox.
4. Loss of Both Eyes from the Exophthalmos of Hyperthyroidism. Frank H. Lahey.

4. Loss of Both Eyes from the Exophthalmos of Hyperthyroidism.—Frank H. Lahey reports the case of a woman admitted to the ophthalmological service of the Boston City Hospital with a past history of admission as an out-patient to another hospital a year previously, where she had been treated for hyperthyroidism by means of *x*-rays. Following this treatment, her pulse came down, she gained in weight, and her general condition improved, but the exophthalmos continued to progress until edema and ulceration of her right cornea was such that she came to the Boston City Hospital, and enucleation of the eye was done. The author was asked to see her a month later on account of increasing exophthalmos and edema of the left eye, and it was decided to attempt by surgical measures to preserve her remaining eye. Because of the belief that recession of the protruding eye occurs after removal of the sympathetic ganglion on the affected side, the operation of removal of the superior cervical sympathetic ganglion was carried out, and at the same time the external canthus was incised to relieve the pressure of the lid edges. Progress of the edema continued in spite of these procedures, whereupon two days later the lids were sutured together, and still edema and ulceration continued until enucleation of the remaining eye became necessary.

New York Medical Journal.

April 24, 1920, cxi, 17.

1. Incidence of the Malignancy in Diseases of the Gall Bladder. John F. Erdmann.
2. Drainage and the Mercury Ion in Cystic Goiter. G. Betton Massey.
3. Diffuse Vascular Goiters. J. Christopher O'Day.
4. Surgery in Chronic Diarrhea and Local Anesthesia in Anorectal Operation. Samuel Goodwin Gant.
5. The Scope and Limitation of Local Anesthesia in Inguinal Hernia Operation. Albert S. Morrow.
6. Industrial Inguinal Hernia. Albert E. Sellenings.
7. Relation of Rectal Diseases to Other Pelvic Disease. Charles J. Drueck.
8. The Relation of Focal Infections to Mental Diseases. Henry A. Cotton.
9. A Case of Simple Hypertrophy of the Prostate. John F. X. Jones.

2. Drainage and the Mercury Ion in Cystic Goiter.—G. Betton Massey describes this method of treatment, which he has employed for a number of years with uniform success, without setback of any kind. The method is the establishment of free drainage of the cyst by a small opening into the sac through the skin, converted into a temporary sinus by cathodic electrolysis, through which cauterant and antiseptic ions are subsequently diffused from a conductor acting as anode. The sac walls and cavity are obliterated gradually by repeated small diffusions of the ions by the direct current at intervals of three days, final healing of the cavity showing a minute, solid scar at the end of about seven weeks. This apparently bold procedure is made entirely safe from septic or other infection by the development of the mercury ion within the sac every third day, an ion that possesses great antiseptic value. There has been no rise of temperature or untoward incident of any kind, the author says, in any of the cases treated.

Journal of the American Medical Association.

April 24, 1920, lxxiv, 17.

1. The Somatic Causes of Psychoneuroses. Charles L. Dana.
2. The Physician and Prohibition. Bernard Fantus.
3. Typhoid Fever in the American Expeditionary Forces. Victor Clarence Vaughan, Jr.
4. Industrial Blood Poisons. C. R. Newton.
5. Paraplegia After Arsphenamin in a Case of Retrobulbar Optic Neuritis. T. J. Dimitry.
6. Epidemic Acute Hemorrhagic Jaundice of Toxic Origin. Douglas Symmers.
7. Occlusion of the Right Postero-Inferior Cerebellar Artery. George W. Hall.
8. Venereal Campaign in Paris District of the American Expeditionary Forces. Joseph Earle Moore.
9. Nerve Deafness Due to Congenital Syphilis in Three Children. M. B. Kay.
10. Severe Mercurial Stomatitis Caused by the Administration of Calomel. Archie Ewing Gordin.
11. Cancer of the Cervix and Its Treatment. Robert M. Lewis.

1. The Somatic Causes of Psychoneuroses.—Charles L. Dana takes exception to the purely psychogenetic theory of the psychoneuroses, as, for example, the assumption that the war neuroses were nothing more than defense states aroused by the subconscious desire to get away from the front. He believes that there are always physical as well as psychic factors in the causation of the psychoneuroses and that pathological reactions do not occur in anatomically and physiologically sound bodies. He supports his theorem by both experimental and clinical evidence, among the latter being the case of a lad of nineteen years who had suffered for five years from attacks of a nervous, hysterical nature and was thoroughly incapacitated for the duties of life. Within two weeks after beginning thyroid treatment he was practically well. He still has occasional relapses, but these are subdued by a return to the use of thyroid extract. Dana admits that there must have been behind the gland defect in this case some instability of the nervous centers, for there always is in such cases. But the case does demonstrate that sometimes a gland defect is present in the psychoses and that no amount of attention paid to mental conflicts, conversions, condensations, complexes, sense of inferiority or any other phases of the psychanalytic and therapeutic effort would be of much use as long as his internal secretions were working defectively. In discussing the physical changes that occur with more or less completeness in the psychoneuroses, the author refers to the explanation of certain brain functions based upon the hypothesis of the dendrites and their ameboid movements. It may be assumed, he says, that since the synapsis is a point at which the traveling nerve impulse has to pass over a break in anatomical continuity, it here meets its highest resistance. Some neural phenomena, therefore, might be expected to develop here just as light or heat develops when an electric current meets a specially great resistance. The synapses of the cerebral cortex are thought to be the seat of consciousness, and we know that the seat of the mental activities is not so much in the cell as in the conducting fibrillæ, and it is those that are most disturbed in functional psychoses. The functions of the cerebral nerve cell are trophic and perhaps mnemonic. The cell rapidly deteriorates and changes its content and form, but the nerve fibers are practically unfatigable, although they have as active metabolism as that of gray matter. These fibers are so persistently active because they are supplied with nourishment as well as with protection by the medullary sheath, except at the dendritic and peripheral endings; so we ought to expect exhaustion at the synaptic points sooner than in the cell or in the nerve itself. They would be also more exposed to the influences of toxins and fatigue products. When a person has a great emotional shock, and there follow tremors, speech defects, paralyses or anesthesias, it may well be because the synapses of certain groups of neurons functionally selected and embryologically of similar development are blocked by the torrent of impulses aroused by fright or pain combined with excess of epinephrin or other toxic material thrown into the blood. The elaborate psychologic mechanism or the psychoneurosis with its theories of conflict, repression, conversions, compromise formations, condensation - inversion, uncompensated feeling of inferiority, may exist, but all these are not always necessary, and they are always agencies which have to act through a neural mechanism. If this is sound we shall rarely if ever get any psychosis. One of the most obvious objections to this assumption of the somatic origin of psychoneuroses would be that if a monoplegia, for example, or other form of neurosis has an organic cause, how can it be cured by a single mental effort or by suggestion? To which one might reply that the organic change is in more than a majority of cases biochemical, yet as real as a sclerosis, brought on by a shifting of neural changes through attention or concentration on a certain object. In certain emotional and exhaustion states the stomach does not secrete juice, and in the same way the neurons do not transmit their currents. In emotional states the total of neutral or cerebral energies is massed in certain minor and major association groups connected with the particular form of apprehension or terror. By effort or volition or by a counteremotion the equilibrium may in certain cases be restored.

The Lancet.

April 3, 1920, cxcviii, 14.

1. The Schorstein Lecture on the Diagnosis of Disease of the Pancreas. Sir Archibald E. Garrod.
2. Radiology in Chronic Intestinal Stasis. Alfred C. Jordan.
3. The Electrical Stimulation of Nerves at Operation. Noel H. M. Burke.
4. Fatal Anaphylaxis Following the Prophylactic Administration of Antitetanic Serum. Fraser B. Gurd and E. Embrys-Roberts.
5. Oxygen and Air Replacement of Fluid in the Pleural Cavity. F. G. Chandler.
6. The Income-tax Report. John Burns.
7. Poultry Farming: An Occupation Suitable for Consumptives. P. C. Varrier-Jones.

1. The Diagnosis of Disease of the Pancreas.—Sir Archibald Garrod, in this Schorstein Lecture, delivered at the London Hospital Medical College on February 20, placed the diagnostic indications of disease of the pancreas in three main groups. In the first are the clinical signs and symptoms, such as tumor, pain, tenderness, vomiting, cyanosis, and the like, and the signs of pressure upon neighboring structures. Secondly, one may detect signs of failure of external secretion, defective digestion of proteins, fats, and carbohydrates. Thirdly, indications of failure of internal secretion, of which glycosuria is at the same time the most important and the best known. Lastly, there are certain syndromes which clinical and pathological experience has taught one to associate with lesions of the pancreas. Thus the diagnosis of carcinoma of the head of the gland is often correctly made upon purely clinical evidence, and in cases of bronzed diabetes, with the enlarged cirrhotic liver and peculiar pigmentation of the skin, the pancreas is always implicated. Many ingenious tests of pancreatic efficiency have been devised, and each test has its adherents and each its critics who question its utility. From a consideration of these it is evident that practically every sign, symptom, or test may fail at times, and that in each individual case one needs to balance the quantity and quality of the evidence for and against a lesion of the pancreas.

3. The Electrical Stimulation of Nerves at Operation.—Noel H. M. Burke gives the results obtained and the lessons gained from observations during the years 1915 to 1917 at the Horton and Manor War Hospitals at Epsom in a series of some eighty cases. The conclusions and lessons drawn are as follows: (1) Every case should be tested, as a fair number of decisions are made easier by the information obtained and an unnecessary section of an undivided nerve may be thereby avoided. This was strongly brought home in a recent case, not included in the series, where the median nerve had been exposed high in the axilla. The surgeon, his assistants, and the writer all felt the mass of scar tissue into which the nerve was traced, and all thought they detected a definite end to the nerve course. On stimulation, however, contraction was obtained. Without this demonstration it is quite probable that the nerve would have been divided at its apparent cut end in order to make further dissection simpler. (2) Conductivity is conclusive evidence of physiological continuity of nerve fibers, as also is excitability below the lesion. (3) Improvement in conductivity or in peripheral excitability following imme-

diately after neurolysis is suggestive of only slight compression and possibly chemical nerve-block. (4) Absence of conductivity and of excitability, even after neurolysis, is not conclusive evidence of division, but is probably an indication of fairly severe nerve disturbance.

British Medical Journal.

April 3, 1920, i, 3092.

1. The Schorstein Lecture on the Diagnosis of Disease of the Pancreas. Sir Archibald E. Garrod.
2. Influenza Among the Lapps. A. H. Macklin.
3. Clinical Analysis of 100 Cases of Early Beriberi. H. H. Hepburn.
4. A Lesson of the War: Suppurative Middle-ear Disease. A Plea for Treatment in Its Earliest Stages. H. Smurthwaite.
5. Strangulated Umbilical Hernia: Resection of Gangrenous Ileum at the Age of Sixty-nine. C. M. Kennedy.
6. Shingles and Chicken-pox. A. Ingram Cooke.
7. Acute Oedema of the Lungs. Cecil Musgrave.
8. The Path of the Eclamptic Toxin. J. F. D. Hunter.

4. A Lesson of the War: Suppurative Middle-ear Disease.—H. Smurthwaite says that out of 5,000 odd cases under his care in the Throat, Nose, and Ear Department of the Military Hospital, Tidworth, during the year ending October 31, 1917, 890 were suffering from chronic suppurative ear disease. They all suffered from more or less deafness and were not fit for the firing line, but most if not all of them would have been "A" men, as far as their ears were concerned, had systematic and energetic treatment been carried out in the early stages of their disease. Every person with acute middle-ear inflammation should be put to bed and given a brisk calomel purge. If there is any nose or throat trouble this should have appropriate attention. Should the drum membrane be bulging, the external auditory canal should be thoroughly disinfected by swabbing with 1 in 4,000 flavine or 1 in 20 carbolic, and the membrane freely incised under general anesthesia; the incision should be made in the posterior quadrant just behind the handle of the malleus and running crescentically down to below the tip. Gentle use of the Politzer bag will open the Eustachian tube and force the fluid out of the middle ear. This fluid is then mopped out of the canal; a pledget of cotton-wool soaked in flavine is placed close up to the drum, but must cause no pressure. It should be changed every few hours. The writer has sometimes plugged the canal lightly with wool soaked in 50 per cent. rectified spirit, which can be increased in strength if it causes no excoriation. At each dressing politzerization should be carried out or the fluid extracted from the middle ear by gentle suction. For the pain, which is sometimes very acute, glycerin of carbolic, 10 grains to 1 oz., is useful; a few drops warmed in a teaspoon and instilled into the ear, or a few drops of chloroform, will give relief; hot fomentation over the mastoid and auricle is always very soothing to the patient. There is always some postnasal catarrh, and a warm inhalation of compound tincture of benzoin every two hours will relieve the congestion of the lining of the mouth of the Eustachian tube and help the necessary drainage. Pain in the ear should never be passed over. It may only have its origin in a carious molar tooth or hard cerumen in the external auditory canal, but it is Nature's danger signal, and should ever be regarded. The object of the paper, Smurthwaite says, is to call attention to the great prevalence of chronic suppurative otitis and to urge the prompt treatment of acute ear disease in order to prevent the disabling chronic suppuration.

Southern Medical Journal.

March, 1920, xiii, 3.

1. Military Medicine as a Profession. William C. Braisted.
2. Chronic Appendicitis in Children, with Report of Cases. McGuire Newton.
3. Conditions that Simulate Pulmonary Tuberculosis. W. H. Witt.
4. Serum Therapy in Lobar Pneumonia, with Report of Sixty-seven Cases. Graham E. Henson.
5. Calcification of Thyroid Gland. James J. Clark.
6. The Early Diagnosis of General Paralysis of the Insane. Egbert W. Fell.
7. Venereal Disease Control. J. J. P. Bowdoin.
8. The Treatment of Empyema. Duncan Eve.
9. The Surgical Treatment of Empyema. W. W. Grant.
10. Empyema: Recent Experiences. Frank K. Boland.
11. Therapy in Obstetrics. James R. Garber.
12. Congenital Absence of Uterus, Both Tubes, and Right Ovary. B. O. Robertson.
13. Displacement of the Eye in Association with Chronic Frontal Sinusitis, with a History of Five Cases. R. C. Lynch.
14. A Consideration of Atypical Mastoiditis. S. MacCuen Smith.

2. Chronic Appendicitis in Children.—McGuire Newton cites four cases which emphasize the point that one may find an adherent appendix, with other evidences of previous inflammation, in children in whom it is impossible to obtain a history of an acute attack of appendicitis. This condition may be associated with continued digestive disturbances which may seriously interfere with the child's growth and development, and an *x*-ray examination of the gastrointestinal tract by a competent radiologist offers the best means of recognizing this condition.

The Canadian Medical Association Journal.

March, 1920, x, 3.

1. Abstract of Presidential Address, Manitoba Medical Association. G. D. Shortreed.
2. Presidential Address, Alberta Medical Association. G. A. Anderson.
3. Plasmoma of the Naso-Pharynx. J. T. Rogers.
4. Tuberculosis of the Urinary System. J. E. Palmer.
5. Pyloric Stenosis of Infancy. F. W. Stockton.
6. A Case of Chronic Middle Ear Suppurations, Cholesteatoma, and Mastoiditis, Complicated by Labyrinthitis, Sinus Thrombosis and Meningitis. J. K. Milne Dickie.
7. Treatment of Obstructive Dysmenorrhea. E. V. Frederick.
8. Demonstrations: Preparations Illustrating the Cause of the Tick Paralysis of British Columbia, Rocky Mountain Fever, Infective Jaundice, and Yellow Fever. John L. Todd.
9. Renal Calculus. William Hutchinson.
10. Some of the Severer Forms of Chronic Headaches. W. J. Chambers.
11. Cases of Ectopic Pregnancy. F. W. Gershaw.
12. Chronic Intussusception with Polypus. L. G. Pinault.
13. A Case of Endothelioma of the Pleura with Multiple Metastases. A. Vallee.

5. Pyloric Stenosis of Infancy.—F. W. Stockton emphasizes the importance of early and more exact diagnosis of infantile pyloric stenosis, and advocates the treatment of the condition by the Rammstedt operation (merely incising the muscular coat down to, but not through, the mucous membrane). He urges that the operation be done by a competent surgeon who has taken the trouble to familiarize himself with its technic. Success will depend in no small degree on the after-treatment.

Bulletin of the Johns Hopkins Hospital.

February, 1920, xxxi, 3481.

1. Experimental Pneumectomy. (Illustrated.) George J. Heuer and George R. Dunn.
2. The Effect of Arteriovenous Fistula upon the Heart and Blood Vessels. An Experimental and Clinical Study. (Illustrated.) Mont R. Reid.
3. The Biological Classification of Influenza Bacilli. T. M. Rivers.
4. Titles of Papers Appearing During the Year, Elsewhere Than in the *Bulletin*, by Present and Former Members of the Hospital and Medical School Staff.

2. The Effect of Arteriovenous Fistula upon the Heart and Blood-Vessels.—Mont R. Reid reports the continuation of experimental and clinical studies begun in 1914 with Professor William S. Halsted. The animal experiments are summarized in tabular form. Fourteen clinical cases are briefly reported and also tabulated. From these observations the following summary is drawn: 1. An arteriovenous fistula of long duration usually causes dilatation of the artery proximal to the fistula. This dilatation may extend as far as the heart. 2. Marked cardiac disturbances may result from an acquired arteriovenous fistula of long standing. They are hypertrophy and dilatation, with eventual cardiac decompensation. 3. The wall of the vein involved in an arteriovenous fistula becomes hypertrophied. Although the vein on the proximal side of the fistula does not increase markedly in size, its wall shows a greater increase of elastic tissue than the wall of the vein distal to the fistula. 4. The venous blood pressure is increased in the part of the body distal to an arteriovenous fistula. When the fistula is cured the pressure returns to normal.

Le Caducée.

April 1, 1920, xx, 7.

Rats and the Plague in Senegal.—It may be recalled that when the plague appeared in Dakar in 1914 it first assumed the lung form and seems to have been imported only as plague pneumonia. Only later did the rodents suffer and cases of the bubonic type become conspicuous. Since that period there has been no known importation, but according to Laveau an occasional recrudescence of the disease *in loco* attributed to the rats; in fact, the plague may now be regarded as endemic. In order to determine the part played by this animal 354 of them captured in a plague focus were examined and found intact with the exception of one great field rat which harbored a bacillus, beyond doubt *B. pestis*. The rat is doubtless both the reservoir and carrier of the disease to man. Recrudescence of the disease, endemicity of the disease in man, are dependent on fluctuations of the bacillus in the rats. At present the Danysz virus is doing much to exterminate them, but it must be used more extensively. The subject of the flea as the exact agent of transmission is hardly mentioned, being evidently taken for granted. No special measures against the insect are mentioned, for it is deemed sufficient to wage war against the rat. One member of the Society of Exotic Pathology before which Laveau's paper was read believed that the rat fleas should also be studied and classified.

La Presse Médicale.

February 25, 1920, xxviii, 16.

Acute Poisoning from Bismuth Subnitrate.—Constantinesco and Jonescu mention as preliminary that bismuth poisoning due purely to bismuth is commonly called an impossibility. Given bismuth salts of guaranteed purity and there is no limit to the quantity which may be ingested with impunity in *x*-ray work. In apparent bismuth poisoning one must of course find the true motivation of the symptoms, whether these are due to an impurity like arsenic or to some other and extrinsic cause. In a case in point a young man with severe and persistent pain referred to the stomach, of long duration and appearing two hours after meals, subnitrate of bismuth for *x*-raying was used in the absence of the subcarbonate and of barium salts. Three teaspoonfuls of the subnitrate were swallowed in a half pint of milk. Nothing developed after the experience until Epsom salts were given by oversight in the evening. When these acted some time in the morning there was much nausea and prostration and the patient collapsed at stool. The *x*-ray examination had been negative. The stools were black with bismuth. At nine a. m. the patient was seen by the visiting physician to be in a state of collapse, cyanotic and algid with subnormal temperature. Theobromine was given but the condition became aggravated with the development of tonic convulsions and fixed pupils. Venesection was practiced and the blood showed cyanosis but coagulability was normal. Serum, adrenaline, camphor and caffein were given and next day the condition of the patient was nearly normal. The blood was subjected to a spectroscopic examination and chemical tests. The bismuth was analyzed and found pure. There was no obstacle in the gastroenteric tract which could have led to stagnation. The spectroscope showed a special band between the two absorption bands characteristic of oxyhemoglobin which was put in association with the toxic manifestations. The blood was positively free from bismuth but contained nitrous acid. But nitrite poisoning should have caused the formation of methemoglobin and this was not found. Instead apparently the oxyhemoglobin had been transformed to nitrohemoglobin and reduced hemoglobin. In any case bismuth subnitrate may be toxic if anything occurs to change the nitric to nitrous acid. In this case the dose of salts may have been responsible, although the mechanism is obscure.

Gazette des Hôpitaux.

March 16-18, 1920, xciii, 27.

Historical Beginnings of Psychopathology.—Cabanès quotes the historian Littré extensively on the history of medicine. The latter claimed that science is the "child of the age" and that all knowledge must be tested in the light of the past. Littré himself was a medical man and once refused the chair of medical history at Paris. He threw much light on the nature of apparitions as related in past centuries and of the choreomania or dancing madness which occurred in epidemics. Only the hypercritical fail to agree with him in his views of these subjects. False accusation in connection with demonology and witchcraft was another of his favorite studies and he showed the connection of these phenomena with modern hysteria. He foretold accurately that the history of medicine would receive its dues in the twentieth century. The history of psychopathology is barely seventy-five years old.

In 1836 Lelut wrote an article on the "demon" of Socrates which initiated our modern knowledge. According to Littré, the greater subject of the psychology of history which comprehends the lesser was also touched on by Lelut. Both individual and collective psychology are necessary for the comprehension of history. Studied by the light of modern knowledge we can understand that the alleged victims of the Furies were victims of one or another type of psychosis, perhaps sensorial (hallucinatory), or simply maniacal or motor. The visions of Swedenborg, the terrors of Pascal, find their counterparts in all ages among psychotic subjects. Brierre de Boismont, who published his celebrated work on hallucinations in 1845, acknowledged his indebtedness to Lelut. A contemporary, Calmeil, wrote on the psychology of the religious movements of the XV-XVIII centuries. Moreau of Tours then advanced the view that genius is a neurosis—a sort of acme of intellectual power which is supernormal. Lamartine stated that genius contains the element of self-destruction and madness "as the fruit carries the worm." Moreau was the first to understand the insanity of certain historical characters, but today, so marked and so satisfactory has been the progress in psychopathology, the author says, that the greater part of the mad geniuses have been correctly labeled and we know the precise kind and degree of their alienation.

Gazette des Hôpitaux.

March 23, 1920, xciii, 29.

Is Diabetes Curable?—Laumonier gives a joint review of recent articles on the cure of diabetes. The question, he states, is embarrassing, for there are numerous types of the malady and it may not be possible to control the cause of some of them. In the absence of causal therapy cure must be relative. It has been stated of late that glycosuria may be a defense reaction which should not be antagonized directly. To suppress the diet-carbohydrate is a method which goes back to Bouchardat, but this can hardly be called curative. It is a prophylactic of acidosis and to that extent should be practised to a certain degree. The danger of reduction of the forces from underfeeding has been checked by determining the carbohydrate tolerance in certain special plans of diet, as in the oatmeal cure, but the tolerance of the individual is not a constant but a variable. The idea of fasting outright originated with Guelpa, but he has received little credit for it which has gone to Allen and Joslin. Guelpa added purgatives and his idea was really to combat autointoxication rather than glycosuria. The principle involves several days of fasting and purging followed by a vegetable diet in the beginning. The Americans do not use purgatives and allow alcohol as a substitute for carbohydrate. He speaks of the results attained by Allen and Joslin as "mediocre," which appears to show that he is unaware of the showing obtained under favorable conditions. He also seems unaware of the fact that Kellogg of the United States gives full and ample credit to Guelpa for having been the first to introduce the fasting cure into therapeutics in connection with personal experience at Battle Creek.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventy-first Annual Session, Held in New Orleans, April 26-30, 1920.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 764.*)

SECTION ON MEDICINE.

First Day—Wednesday, April 28, 1920.

DR. JAMES S. MCLESTER OF BIRMINGHAM, ALA., IN THE CHAIR.

Chairman's Address.—Dr. JAMES S. MCLESTER delivered this address which consisted in a discussion of clearness in medical speech. He said that when Polonius asked Hamlet "What are you reading, my lord?" Hamlet replied, "Words, words, words." Anyone who had been an officer of this section for five years could not fail to recall many splendidly conceived and brilliantly presented papers, but many things that he recalled, if his memory was good, were little more than words. There could be but one valid reason for appearing before the section and that was if a man had something worth while to say. He must be able to tell of some carefully planned and executed original investigation, must be able to establish some new facts, or must give some such complete summary in some particular field as would justify deductions of value. Yet the fulfillment of these requirements was insufficient to give an appreciative audience. The presentation should be clear and easy to follow, requiring the least amount of effort on the part of the hearers. It should be brief. It had been shown that a carefully written article could present an amazing amount of material in an exceedingly brief space of time. In writing a paper there should be few preliminaries; the writer should come to the point, omitting unnecessary details and repetition. He should awaken an interest in his subject else it would be difficult to follow his arguments, his ideas would not be grasped, and his conclusions would soon be forgotten. Medical literature to be followed with sustained interest required that superabundance of detail be avoided. There should be a striving for unity, clearness and coherence of thought. Clearness of composition depended upon clearness of thought. Attention should, of course, be given to the careful construction of sentences and paragraphs. For fear of being misunderstood Dr. McLester said he hesitated to compare the medical writer to the advertisement writer, but the advertisement writer knew how to put a great deal in a few words, to put the emphasis at the right point, and adhered to the main idea in order to hold his reader's interest and be really understood. Many medical writers did not succeed in these points because they did not try. It should be remembered that genius has an infinite capacity for taking pains. Lines that ran easily and smoothly and apparently without effort were often the ones over which the writer had worked most laboriously. A summary embodying the author's conclusions was always most valuable for it enabled his audience to grasp in one concept all that had been said, and when published it told the busy reader whether the article contained the information for which he sought. The title would be accurate, expressive, and brief, and in choosing a title one should remember that it would have to be indexed. Many a well prepared paper had failed to elicit interest because of poor enunciation or too rapid speaking. Speaking rather than reading should be encouraged. The value of illustrations and charts was recognized, but charts and tables should not be too complex to be readily grasped. Illustrations should be graphic and well arranged and unnecessary detail omitted. Discussions should be confined to the subject dealt with in the paper, should be brief, go directly to the point, and should avoid repetition. A man, no matter how much he might be interested, should limit his discussion to two, or at most three papers at a session.

The Clinical Interpretation of Basal Metabolic Rate Estimations.—Dr. HENRY S. PLUMMER of Rochester, Minn., read this paper in which he defined basal metabolism, showing that it was in fact the rate at which we lived. The rate of metabolism was largely due to the amount of thyroxin which was acting on the cells of the tissues. The thyroid under normal conditions regulated the production of energy through the action of thyroxin on the tissue cells, that was, the thyroid controlled metabolism, and the basal metabolism rate of the individual depended upon its activity. Early in 1917 they had begun to study the respiratory exchange under Boothby and Irene Sanford, and 10,000 basal metabolism estimations had been made. The fluctations of the basal metabolism from the normal had not up to that time much clinical significance. Variations of plus 10 and minus 10 were considered as within normal range. Among conditions which showed metabolism rates above normal were hyperthyroidism, adenomatous thyroid, exophthalmic goiter, hyperpituitarism, and beginning cardiac decompensation with edema and high blood pressure. The administration of thyroxin was always followed by increase in basal metabolism. A clearly established group of cases in which the basal metabolism was below normal were myxedema, cretinism, idiopathic and postoperative disturbances of nutrition, inanition and certain forms of psychoneuroses. The basal metabolism rate was particularly useful in differentiating exophthalmic goiter from psychoneurosis. In exophthalmic goiter the basal metabolism did not remain below 20 for any great length of time. In psychoneuroses the rate fluctuated greatly. In adenomatous thyroid cases a rate of plus 20 might persist for months and yet there might be no clear cut definite physical symptoms of hyperthyroidism. Few of such cases came under observation under thirty years of age, a fact of great help in arriving at a diagnosis. The basal metabolism estimations were of the greatest value in differentiating a cardiac syndrome and hyperthyroidism associated with adenomatous thyroid tissue.

Dr. EMIL GOETSCH of Brooklyn, N. Y., said that Dr. Plummer's results were based on an extensive experience and for that reason must carry great weight. The basal metabolism rate was a test *at one time* of the degree of thyroid intoxication. In other words one might have a thyroid intoxication that was not in one of its active phases and then it would be impossible to detect the fundamental disease by means of the basal metabolism test. Epinephrin hypersensitiveness served to indicate hyperthyroidism in cases in which the basal metabolism was normal. Epinephrin hypersensitiveness was persistent whether the patient was in an active state of hyperthyroidism or was passing through an inactive phase. In some cases of exophthalmic goiter the degree of thyroid activity was not demonstrated by the metabolic rate. Other ductless gland disturbances might also affect the metabolic rate.

Dr. L. G. ROWNTREE of Rochester, Minn., said the chief factors affecting basal metabolism were the extrinsic ones, such as food and exercise, and the intrinsic ones, the endocrine system and chiefly the thyroid gland. Since the thyroid gland was the particular regulator of metabolism it was evident that to get fundamental information regarding it one must study the basal metabolism. Their studies of 300 or 400 cases gave results identical with those of Dr. Plummer, although their series was much smaller. The epinephrin test was introduced ten years ago by Eppinger and Hess and was an index to the balance of vagus and sympathetic tone in the organism, and since disease of the thyroid might depend upon the balance of the vagus and sympathetic there was no conflict between these two tests; these should not be rivals but should complement each other. In some of their work they had found changes in the basal metabolism during menstruation and this should be taken into consideration in the study of basal metabolism rates in women. In the future the basal metabolism rate would be of tremendous value in the diagnosis, prognosis, and treatment. It was now of the greatest value in hyperthyroidism, myxedema, Graves' disease and toxic adenoma.

Dr. NELSON W. JANNEY of Santa Barbara, Cal., said their experience coincided in a small degree with that

of Dr. Plummer, in regard to the great advantage of this laboratory method in certain cases of the thyroid type. This method was in medicine to stay. It would be used in clinics and offices. It was the best gage of thyroid function we had. It was much more valuable than blood sugar estimations and certainly better than the adrenalin tests. One could not use it as an absolute guide as there were certain incipient cases of hyperthyroidism and Graves' disease that did not show a definite rise in metabolic rate. In certain cases of cretinism in which the basal metabolism rate had been brought to normal a corresponding disappearence of clinical symptoms had not occurred, so it was not an absolute criterion as to thyroid treatment. The study of basal metabolism would in the future probably be of greater interest in connection with treatment of diabetes.

Dr. PLUMMER, in closing, said he had been forced to use generalities but there were many exceptions. He did not think there was such a thing as an exophthalmic goiter without a basal metabolism rate above normal. They had found no case of hyperthyroidism in which the rate was not above normal.

The Nature of Fever.—Dr. ROLLIN T. WOODYATT and Dr. WILLIAM D. SANSUM of Chicago presented this contribution which was read by Dr. Woodyatt, who described experiments in dogs in which dehydration fever was produced. The injection of three or four grams of glucose per kilo body weight in animals or man produced glycosuria of high degree together with heavy diuresis. If glucose was injected in concentrated solution there was a loss of water and a loss in weight. After dehydration to a certain degree there was an increase in frequency and depth in respiration, chills, and fever. In one animal a rectal temperature of 125.6° F. was produced and in a number of animals the temperature reached 113° to 115° F. In attempting to explain the phenomena it was suggested that glucose tended to increase metabolism. The experiments were then repeated with salts and as dehydration proceeded the temperature rose as when the glucose was used. It was also found that fever was not produced unless there was dehydration. Experimental fever might be produced by changing the state of the water in the body without reducing the total quantity. These dehydration fevers were comparable with ordinary toxic fevers in the clinic. To find whether sugar and salt bore any relation to the fever centers in the brain, these centers were cut off; this made no difference in the production of the dehydration fever. The practical deduction was to prevent the patient from becoming dehydrated. In order to retain the body at a normal temperature a certain water reserve was necessary.

Dr. ALEXANDER LAMBERT of New York recalled cases of sunstroke that occurred during very hot weather in New York and cited one case in which the temperature rose to 122.4° F., the patient living four hours. He had seen patients with a temperature of 115° F. in sunstroke recover. At this time they had 800 cases of sunstroke. Among 200 of these possibly 50 per cent. had a temperature of 110° or 112° F. It was a curious fact that many of these patients were taken with sunstroke after a hearty meal and it was a question whether protein absorption was a factor. It was interesting in these cases that they did better when the temperature was brought down to 102° F. than when it was brought down to normal.

Dr. L. G. ROWNTREE of Rochester Minn., referred to work they were doing in relation to diabetes insipidus and water balance. In some patients with diabetes insipidus who might be passing ten or twelve liters of water a day the amount might be reduced to one and one-half or two, the water having been changed in some way so that the patient did not excrete it and as a result there was edema and headache. It seemed that there was some endocrine influence that interfered with the availability of water.

Dr. FRANCIS M. POTTENGER of Monrovia, Cal., said he was interested in the cause of the temperature and called attention to the fact that there was a peripheral mechanism active in producing temperature, namely, the lateral ganglia, and he wondered if dehydration might not produce an influence on these ganglia.

Dr. WOODYATT, in closing, said that dogs had recovered after a temperature of 108° F. He was glad Dr. Lambert had mentioned the temperature of 122° for he had hesitated to mention the experiment in which the dog had a temperature of 125° lest it be thought erroneous. With respect to the possible peripheral action on the nervous system, there was no question but that the vasomotor mechanism might be disturbed by various substances, but that had been a non-productive theory and it had not been possible to subject it to experiment. The one thing that was definitely brought out was that the fever came and went with the fluctations of the water balance.

Types and Treatment of Pellagra.—Dr. STEWART R. ROBERTS of Atlanta, Ga., presented this paper in which he said that two cases of pellagra were reported in America in 1864 and one by an Italian in 1883. Since that time the disease had been increasingly studied and reported until it was now practically found in every state in the Union and from Canada to Chili. There were as clear cut cases of pellagra in Maine and Massachusetts as in Texas. The practitioner everywhere should be on his guard to recognize this disease when he met it. From 1902 to 1920 statistics showed about 500,000 cases of this disease and 50,000 deaths in the United States alone. Among causes of death in 1916, it ranked fourth in Mississippi and third in Alabama. It showed years of increase, years of great severity, and years of decrease. In 1919 it had shown an increase in only one State and that was Kentucky. The disease was on the wane as regarded the number of cases and this was explained by the early widespread knowledge of the disease and Dr. Goldberger's work emphasizing the importance of improper and unbalanced diet as its cause, and of a proper and balanced diet as its cure. There was no evidence of insect infection or transmission. Severe types of the disease were becoming rare. It was not advisable to depend too much on a symmetrical dermatitis to make a diagnosis; they were coming to depend more upon constitutional symptoms. There was some question as to whether the disease was due to vitamine deficiency, protein deficiency, or deficiency of mineral ash. It was no longer believed that the disease was caused by corn. The diet that had been found effective was one composed of lean meat, eggs, butter, milk, and vegetable proteins. The disease was not only found among poor people but among the better class of people who had an abundance of food within their reach but had an antipathy to a well rounded diet. Of 25 private patients coming under the writer's observation only four were men. Drugs were of minor importance in the treatment of this condition. In order to carry out the proper dietic treatment it was essential to get the cooperation of the patient.

Dr. MARVIL L. GRAVES of Galveston said Dr. Goldberger's work was the best yet produced on the subject of pellagra. Dr. Goldberger had produced a certain form of dermatitis in persons on a limited protein and high carbohydrate diet but that did not prove that this was the cause of pellagra. While he was in accord with the reader of the paper, he did not feel sure that types of pellagra had changed, but they had diminished in intensity. A decade ago there was the tripod of symptoms, the symmetrical dermatitis, the gastrointestinal syndrome, including stomatitis and the nervous phenomena, particularly insomnia with depression. The number of cases of that form of the disease was decreasing and they were seeing at the present time two types of cases, namely those presenting gastrointestinal and those presenting nervous symptoms.

Dr. ALLAN EUSTIS of New Orleans said he had probably produced the first case of experimental symmetrical dermatitis in 1912 in a patient on a limited protein diet for the treatment of asthma. This patient had neglected to take green vegetables though they had been included in the prescribed diet. In this case there was no stomatitis and no diarrhea but there was evident undernutrition and a cure was effected by dietetic measures. Dr. Eustis cited the case of a woman under his care at the present time who had developed pellagra on a low protein diet, having adhered to a diet of hominy and coffee though she had abundant means. It was a question whether one was justified in making a diagnosis of pellagra on the basis of a symmetrical dermatitis, even if there was stomatitis, without ner-

vous manifestations and gastrointestinal symptoms.

Dr. Henry S. Plummer of Rochester, Minn., stated that he had seen a number of characteristic cases of pellagra but was not familiar with the milder type of the disease. The cases he had seen had had basal metabolism rates of 20 and 24 below normal. In a series of cases that he had never reported there was a group of hysterical dysphagias who simply would not swallow and who strained their food through cheesecloth, and as a consequence of the unbalanced diet taken in this way had developed pellagra. He found that by slipping a filiform down the throat of these patients and telling them they would be able to swallow the next day he had succeeded in getting them back on a mixed diet and they had recovered.

Dr. George Dock of St. Louis said that in a pellagra colony in the Austrian Tyrol one saw no skin eruptions. If one waited for a skin lesion he would never make the diagnosis of pellagra in many cases. The diagnosis might be made on the condition of the mucous membrane of the mouth and the general cachectic condition of the patient. It was well to remember that there were many varieties of skin disease; some were deficiency diseases and some were not.

Dr. Sheridan of Columbia, Tenn., called attention to the fact that pellagra was not a modern disease as we had been taught. He recalled cases thirty and thirty-five years ago in his work. One-half of his cases showed no dermatitis; the symptoms were usually nervous and mental, the original pathology being in the central nervous system, and the gastrointestinal symptoms came next. He felt sure many cases of pellagra were overlooked.

Dr. Stewart R. Roberts of Atlanta said that the fact that the basal metabolism in pellagra was low was to be expected because these patients were weak, had been taking little food and had low blood pressures. If at present we waited for a dermatitis to make the diagnosis of pellagra many cases would be missed. The greatest science was common sense and the greatest test was clinical judgment and clinical results. Through the work of Goldberger the time had come when we could look a pellagrian in the face and give him some encouragement of improvement on the basis of a mixed diet of 3,000 or 4,000 calories daily.

The End Results of Focal Infections.—Dr. Bryce W. Fontaine of Memphis, Tenn., presented this contribution in which he gave a brief history of the literature of focal infection and described his personal experience with 100 cases during the past two years. In the past there had been a failure to recognize focal infection and remove the focus; now the pendulum had swung too far the other way. All other possible causative factors should be excluded before concluding that a given condition was due to focal infection. The conclusion that the cause of the symptoms complained of in the series of cases reported was due to focal infection seemed demonstrated by the fact that the removal of the supposed focus of infection was followed by relief of the symptoms which was not followed by their recurrence. In the writer's series of cases the most common location of the focus of infection was the teeth, affected with such conditions as pyorrhea, granulomas, apical abscesses, etc. The tonsils were second in importance as the seat of infection. The sinuses were less frequently the seat of infection, but of the sinuses, the maxillary was most frequently involved owing to its proximity to the teeth. Pain in the muscles of the shoulders and chest was the most frequent symptom. Fever, seldom over 101° F., was secondary in importance, occurring in 18 per cent. of the cases and not often accompanied by chills. A few cases complained of night sweats. Chronic headache was present in four per cent. of these cases and anemia in four per cent. The blood in a large percentage of the cases showed a moderate reduction in hemoglobin and in the erythrocytes with a normal leucocyte count. Six cases showed achylia gastrica estimated by the fractional method.

Dr. Frank Billings of Chicago commended the common-sense rational viewpoint of the writer. He said he hoped he would not be obliged to carry the sins of commission practised on the people of this country because he had had something to say about focal infections. Focal infection was a principle which had come to stay because it contained a truth, but like every truth in medicine it had its limitations. Those who had not thought what the term meant had failed to grasp the fact that a focus of infection was different from focal infection. A focus of infection might give rise to focal infection or intoxication. By infection was meant the invasion of the body by microorganisms that had the power of reproduction and the power of producing reactions which produced abnormal phenomena which produced the clinical manifestations of disease. Most of the failure in the treatment and management of patients who suffered from what might prove to be focal infection was due to the fact that the operating surgeon or the physician in charge removed the focus, which might be the right one, and then neglected further management of the patient. If what he had said was true, namely, that focal infection meant invasion of the body by microorganisms in the tissues of the body, the operation had simply prevented more organisms from entering. As to results, focal infection was usually an invasion of the tissues and blood stream and produced results dependent upon the character and virulence of the organisms. They remained there if the defenses of the host were not sufficient to kill or drive them from the body. This being true, the removal of the focus in chronic infective arthritis would not greatly benefit the patient or would not benefit the majority of them. The duty here was to build up the resistance against the invaders by methods employed for the restoration of the blood vessels and for this purpose the methods of physiotherapy were suitable. The use of antigens in the form of dead bacteria had not proven satisfactory. He had used them controlling the work with all the knowledge at our disposal; he had used autogenous and non-autogenous, activated and non-activated antigens and those who did not receive them did as well as those who did. Foreign protein antigen injected intravenously appeared in the hands of some to have given success, but immunologists could not tell anything about this procedure. When one employed foreign protein antigens he was taking the health and possibly the life of his patient in his hands. He would not say that they should not be used but they should be approached with rare judgment and discretion.

Dr. Joseph H. Pratt of Boston said this subject was a complex one upon which there were no careful clinical studies. Dr. Fontaine's paper was a distinct contribution to our knowledge of the subject, since it was made by a man who was a careful clinician. The special value of that paper lay in the fact that the end results were given after the writer had followed the cases for a year or more; too often only the immediate results were given. The practice of sending patients to the dentist to have their teeth removed for the purpose of eliminating a focus of infection and then turning them adrift without further care or treatment was to be condemned. Dr. Pratt cited cases in which, owing to mistaken diagnoses, patients were subjected to unnecessary operation for the removal of a supposed focus of infection, and others in which failure to recognize the relation of symptoms to a focus of infection had led to very serious results.

Dr. Frank C. Wynne of Indianapolis said that in the older days it was the custom to blame the liver for every ailment for which the cause was unknown; later malaria was used as the cloak to cover the sins of ignorance, and now the term of focal infection was being used in the same way. The blame for obscure conditions should not be placed on the tonsils or teeth until after a careful clinical investigation. The habit of blaming everything the cause of which we did not know upon the tonsils or teeth was the sin of clinical medicine today. In searching for a focus of infection one should not be content to look only at the tonsils or teeth but should search the body critically.

Dr. William S. Thayer of Baltimore urged care in the selection of the specialist called upon to perform operations for the removal of foci of infection. Delicate surgical operations were being practised for the removal of foci of infection which were not common a few years ago and which required a high degree of surgical skill such as only the best trained men possessed. There were many surgeons. Dr. Thayer said, whom he would be willing to have take out his appendix

but few that he would trust to take out his tonsils or operate on ethmoid disease. Patients from whom foci of infection were removed should be carefully followed afterward. The common practice of removing all teeth supposed to be responsible for focal infection was barbarous in the extreme. The reckless manner in which teeth were extracted was a scandal to the profession. Gingivitis and pyorrhea were not properly treated as a rule; the cure of these conditions often required hours of work over long periods of time. Teeth should not be extracted simply because they were dead. Where apical sclerosis was present the teeth could be treated by opening and curetting; in this way many teeth that were now sacrificed could be saved in young and well-preserved people. If a tooth was extracted and the patient received no further care the suppurating cavity closed and the focus remained.

Dr. SOLOMAN of St. Louis emphasized the importance of searching the lower part of the gastrointestinal tract the colon, the sigmoid, and the rectum, for foci of infection.

Dr. CARLETON DEDERER of Bay City, Mich., declared himself on the side of the enthusiasts on the question of focal infection and described the work being done in a clinic in Bay City where they made it a routine practice to search for the focus of infection in the teeth and tonsils and to remove such foci before removing other supposed foci of infection.

Dr. FONTAINE, in closing the discussion, emphasized the fact that he made the diagnosis of focal infection with great reluctance and only after every other means of arriving at a diagnosis had been exhausted, and after consultation with those skilled in their special lines of work. There had been no recurrence in any of the cases he had reported.

The Clinical Diagnosis of Obstruction of the Hepatic Veins.—Dr. CHARLES W. HOOVER of Cleveland presented this paper in which he related the case of a man in whom marked enlargement of the liver occurred over night, with typical iced liver, peritonitis, and local phlebitis. He made the diagnosis of obstruction of the hepatic veins. He became interested in the condition and had collected several other cases. He stated that obstructive lesions of the hepatic veins were described by Budd in 1857 and by Frerichs in 1861, but the first clearly formulated conception of the lesion was given by Chiari of Prague in 1899. The largest experience with the condition described in the literature was that of Nishigawa (*Mitt. a.d. med. Fakultät d. Kais. Univ.*, Tokyo, August 20, 1919) who described ten cases, which were reviewed quite in detail. In the entire literature only 30 cases had been reported. In these ten cases there was not only obstruction of the hepatic veins but of the vena cava as well. In these cases cirrhosis and ascites had been ruled out. Obstructions of the hepatic veins were rarely sought for by either clinical or pathological examinations. The clinical symptoms were those of blood stasis within the liver without any evidence of cardiac incompetence. There was a total want of evidence of any disease of the hepatic parenchyma. All the objective signs were explicable by the single factor of stasis within the radicles of the hepatic veins. When one found enlargement of the liver which could not be accounted for on the basis of hepatic or interstitial disease it might be well to pay attention to the hepatic veins as they might afford the explanation of a number of cases of supposed cirrhosis.

Sir HUMPHRY DAVY ROLLESTON of London said he had studied this subject and that there were only about 30 cases reported in the literature aside from the case reported by Dr. Hoover. There might be an acute thrombosis such as described in Dr. Hoover's case or the process might be a slow one with dense cicatricial contraction of the orifices of the veins. He cited one case occurring in a child two years of age. In some the condition was a syndrome rather than a disease. The condition was associated with narrowing of the vena cava. Dr. Turner and Theodore Thompson thought that it might be due to trauma, to a certain amount of tearing at the point where the liver was attached to the vena cava, as the result of a fall or jar, and as a result a gradual cicatrization of the vessel walls took place. It was remarkable that Dr. Hoover had succeeded in making the diagnosis of the conditions for he felt convinced that it never had been diagnosed before.

Dr. FRANK WYNNE of Indianapolis related a case of phlebitis occurring in a young adult which, after several acute attacks and remissions, finally came to autopsy which showed extreme thrombosis and phlebitis of the portal vein.

Dr. HOOVER, in closing, said it was surprising to note for how many years a man with complete obstruction of the vena cava below the opening of the portal vein could go along without symptoms or with but transient symptoms. Some cases would have acute attacks and there would be a reopening of the lumen of the vessel or an anastomosis might be established which gave relief. Other cases gave symptoms lasting only a few hours.

Phlebectasis of the Diaphragmatic Area and of the Lower Thoracic and Upper Abdominal Regions.—Dr. WILLIAM GERRY MORGAN of Washington, D. C., read this paper in which he stated that in the routine examination of patients during the past twenty years he had noted occasionally an individual with marked dilatation of the cutaneous veins of the diaphragmatic area, chest and upper abdomen, and occasionally of the splenic area as well. There was an important pathological significance attached to this condition denoting some serious interference in the deeper circulation of the thoracic or abdominal cavities. In all except a few cases the author had found it associated with grave pathological changes in the body. An analysis of 100 cases taken from over 5,000 patients brought out certain interesting facts. This dilatation of the superficial capillaries over the diaphragmatic area was found almost exclusively in males over thirty years of age. It was found most frequently associated with the following conditions: disturbed arterial tension, syphilis, heart disease, aortitis, diseases of the gallbladder and liver, organic diseases of the nervous system, oral infection and severe constipation. Of the 100 cases, 95 per cent. were males and 5 per cent. females. The ages of the patients ranged from 24 to 82 years. The past history was negative in nearly all the cases.

Dr. J. RUSSELL VERBRYCKE, JR., of Washington, D. C., said they had probably all noted these marked capillary enlargements; he had observed them but had paid little attention to them and thought them accidental until Dr. Morgan had aroused his interest in them, when he began to observe them more carefully. He found the condition, as the writer had stated, almost exclusively in males of middle life. The distribution seemed to appear most commonly over the liver and next in frequency over the spleen or over both. There was not enough enlargement of the capillaries to indicate gross obstruction. The condition seemed somewhat analogous to acne rosacea and it had occurred to him that possibly the same cause was operative in both conditions. No one factor was found so frequently associated with the condition as to be considered the cause.

Dr. HOOVER called attention to a description of the condition published by Bismarck's physician in the late eighties. The condition seemed to have no relation to any known disturbance in the tributaries of the vena cava or portal system.

Dr. GENELLA said an Italian physician had described the condition and claimed that these abdominal varicosities were all a slow form of malignancy.

Dr. FRANK BILLINGS of Chicago recalled that twenty years ago Sir William Osler had visited a clinic in Chicago where a case of this kind was shown. He said he had been interested in the condition and had noted it frequently in children, and that it was characteristic of the tissues of some people. The condition was apparently not due to obstruction of the vena cava. It was found so often in children and young people without evidence of associated disease that he felt it might be assumed to be an abnormality of the individual.

Dr. WILLIAM S. THAYER asked Dr. Morgan if he had ever seen these enlarged venules running up on the chest. He had seen one case in which they extended up to the clavicle.

Dr. MORGAN stated that he had studied five or six thousand cases and had never seen the condition in a person under thirty years of age. He had seen only

one case in which the dilated venules extended up over the chest on the left side and this patient had a widespread thickening of the lung on that side.

Second Day—Thursday, April 29.

Change in Type of Disease.—Sir Humphry Davy Rolleston of London delivered this address, in which he discussed from various angles the question of the change in type of clinical disease. He stated that his subject was an old one, and quoted liberally from Sydenham to show the views formerly held on this subject. Many had held that the idea that types of disease had undergone a change was not proven and that the supposed changes were rather in the mind of the physician than in the condition or symptoms exhibited by the patient. Clifford Albutt, on the other hand, long ago said that disease was not a fixed entity. In considering this question certain facts stood out plainly. Scarlet fever, though perhaps not less frequent, was less fatal than formerly. Pneumonia had certainly undergone an increase in virulence. The type of the disease called influenza had certainly changed since 1889. On this point of change in type in influenza the British had some statistics which though small were striking. There were two waves of influenza in 1918. In the first wave but 4 per cent. of the cases in the navy had complications and the mortality was 1.03 per cent. During the second wave, occurring in October, 1918, the incidence of complications was 7 per cent. and the mortality 3 per cent. It must be admitted that this was a rather remarkable difference, and that it went to show that at least in this instance disease was not a fixed entity. Alterations in clinical features usually regarded as typical might be due to several causes: (1) to differences in the virulence of the bacteria, and (2) to changes as regarded the resistance of the patient. It seemed reasonable that a highly virulent bacteria in a patient with low resistance might produce a fulminating type of disease, whereas an attenuated virus in the same patient or in an individual with good resistance might produce a very mild type of the disease or have no effect at all. The question was whether bacteriological changes and the changes in the resistance of the individual changed the type of disease or whether some mysterious factor was responsible which we did not know about. Bacteria, we knew, might vary as the result of external influences. Temperature, concentration of carriers and of hosts, and conditions of passage might influence the virulence and vitality of organisms. There was evidence that there were cycles of activity for certain bacteria; there were cycles of activity followed by periods of rest. Certainly secondary infection was a powerful factor in changing the type of disease. This was well illustrated by the difference in influenza during the first wave and later when there were secondary invasions by the streptococcus hemolyticus and the pneumococcus. Then there was also the question of different strains of the same organism. It had been suggested that cerebrospinal fever, acute poliomyelitis, encephalitis, and influenza were variants of the same morbid process. We had learned that what we formerly recognized as typhoid fever had at times been paratyphoid and that the paratyphoid might be either paratyphoid A or B. Likewise we had learned that there were different types of pneumococci and that the difference in the type of the organism explained the difference in clinical manifestation that we observed. Furthermore certain organisms seemed capable of modification so that they had what might be termed an epidemic constitution. Prophylactic vaccination in smallpox and antitoxin inoculation in diphtheria may have had an influence in diminishing the virulence of epidemics of these diseases. War nephritis, the essayist believed, was not a distinct entity but only an acute nephritis occurring upon a large scale among young men previously healthy. Many difficulties arose when one came to consider the changes in resistance of individuals at different times and changes in resistance of the race. Changes in manner of living from primitive conditions to those of modern civilization might have had a very definite effect in altering racial resistance. Then again there seemed to be such a thing as acquired racial immunity. As illustrating this, Sir Humphry cited instances of epidemics of measles among people in the South Sea Islands where measles before the outbreak of these epidemics was unknown. Epidemics of that kind had been characterized by an exceedingly high mortality, making it seem that there was such a thing as a certain amount of acquired racial immunity to measles. The same was thought to be true of syphilis, this disease being by no means as virulent as it formerly was. Certain specific organisms might give rise to clinical symptoms of widely different character. As instances of this, influenza might produce the symptoms of common cold; pneumonia, meningitis or enteric fever.

Abscess of the Lung.—Dr. U. J. W. Peters of Birmingham, Ala., presented this paper which was illustrated by lantern slides. He stated that a few years ago abscess of the lung was considered a relatively rare condition, but during the past few years an increasing number of cases were being reported. Abscess of the lung occurred most frequently after pneumonia or tonsillectomy or because of the presence of a foreign body in the lungs. When it occurred following tonsillectomy it was supposed to be due to the inhalation of septic material from the tonsils during or following operation. Abscess of the lung might be accompanied with little or no temperature, though occasionally there was a considerable rise in temperature. Frequently there was expectoration of large quantities of purulent fluid, more or less pain, and frequently hemorrhage. Leucocytosis was the rule though it was not always present. The *x*-ray was of great assistance in the diagnosis of abscess of the lung, and stereoptic examination was even more valuable. There were times, however, when the *x*-ray plates were rather confusing. The treatment was resection of the rib under local anesthesia, or if not under local anesthesia then gas oxygen was the second choice. Sometimes a fistula remained which did well if treated with bismuth paste. Clubbing of the fingers was almost uniformly present in cases of lung abcess.

Dr. Charles H. Hoover of Cleveland, Ohio, called attention to the fact that nothing was said in the paper about auscultation in the diagnosis of lung abscess. Frequently when nothing could be heard with the stethoscope the ear applied directly to the chest would be able to detect a rather loud bronchial respiration. Another point of importance was anoxemia, which was helpful in making the diagnosis between intrapulmonic abscess and an abscess between the lung and the chest wall.

Dr. Oscar M. Gilbert of Boulder, Col., spoke of the need of differentiating bronchiectasis from lung abscess; this was important because in bronchiectasis surgery was not successful. Another point was the production of slight adhesions to the chest wall by means of artificial pneumothorax. He had first attempted the production of artificial pneumothorax in a case of chronic lung abscess with extensive infiltration throughout the affected lobe of the lung and found this very successful in limiting the process so that a surgical operation could be more easily performed. Following this experience he had made use of artificial pneumothorax in other cases and found that following artificial pneumothorax surgery was easier.

Dr. Allan Custis of New Orleans called attention to a type of lung abscess that came to their clinic which followed amebic abscess of the liver when such an abscess pointed up and ruptured through a bronchus. When this occurred bronchophony and pectoriloquy would be found low down in the chest. In making the examination, it was well to bear this in mind and to listen over the lower right chest.

Oxycephaly: Its Occurrence in Negroes.—Dr. George Dock of St. Louis made this presentation which was illustrated by lantern slides. He said that owing to the relation of oxycephaly to exophthalmos most of the descriptions of the condition were confined to ophthalmic literature. These cases were usually seen first by the pediatrician or the ophthalmologist. Other names had been applied to the condition, such as tower skull hypsicephalia. Osler had used the term ocycephaly, and he thought this most appropriate, as the condition was due to a cranial defect associated with impairment of vision. It was supposed to be caused by the premature closure of the sagittal, coronal, and lambdoid sutures. Not only were there changes in the upper part of the cranium but in the base of the skull as well.

The defects occurring in the shape of the skull varied enormously and affected the shape of the orbits of the eyes as, for instance, when the vertical axis of the skull was too high the orbits were high and narrow. These deformities had been attributed to rickets, to syphilis, and to endocrine disturbance, but the true etiology remained unknown. The pathology was that of premature closure of the sutures. The symptoms varied in different individuals and at different times in the same individual. Among the most common symptoms were papillitis, choked disc, and exophthalmos. If the children were not born with this condition it was usually observed from the third to the tenth year of life, when eye symptoms manifested themselves. Exophthalmos occurred in about one-half of the cases, while in others such conditions as keratitis, papillitis and choked disc were noted. The exophthalmos occurred in those cases having changes in the base of the skull, as when the wings of the sphenoid were too short and too oblique. The diagnosis depended chiefly on the skiagram of the skull and especially upon the stereoscopic skiagram. All the landmarks of the skull were likely to be altered and all sorts of deformities occurred. It was important to detect the condition as early as possible by the finding of convolutional atrophy which was supposed to be the result of increased intracranial pressure, though the true cause of the atrophy was not readily understood. In order to find if there was increased fluid recourse must be had to surgery. The simplest operation was lumbar puncture, but this should be used very carefully, as there was danger that a portion of the cerebellum might be sucked into the spinal canal. Ventricular puncture was to be preferred. One point to be brought out was that exophthalmos in negroes was not always due to endocrine disturbance since oxycephaly was very frequent in the negro race, and some of these cases of oxycephaly had tachycardia.

Dr. STEWART ROBERTS of Atlanta, Ga., declared that it was not generally recognized that there was a great deal of pathology in the full-blooded American negro. Another name applied to this condition was acrocephaly, which was probably more description than oxycephaly. There was unquestionably in the Southern negro a natural exophthalmos, and he had also been impressed with the frequency of exophthalmic goiter in the full-blooded negro. He thought, however, that this natural exophthalmos had been overlooked. These people with natural exophthalmos often complained of headache and visual disturbances. Mothers frequently brought children who were inactive, listless and rather thinner than they should be, who were apparently suffering from this condition. So far as he had observed, this condition interfered in no way with whatever Ethiopian intellect was present. Often children having this condition were supposed to be suffering from the effects of enlarged tonsils or adenoids, and the possibility of acrocephaly overlooked.

Clinical Experience with a Standardized Dried Aqueous Extract of Digitalis.—Dr. JOSEPH H. PRATT and HOWARD F. WEST of Boston made this contribution which was presented by Dr. West. He described the preparation of a dried aqueous extract of digitalis, in which the active principles of digitalis were in more concentrated form than they occurred in the leaf, and which was made to conform to the U. S. P. standard by mixing with lactose. A freshly prepared infusion was evaporated to dryness. This gave a fine brown powder which had maintained its activity for a year. Each lot was assayed and mixed with equal parts of anhydrous sodium sulphate, which aided in protecting the powder from moisture. It was put up in capsules containing 5.5 frog units each. The digitalis was grown in Virginia and Oregon. This preparation had been used in a considerable number of cases in the Peter Bent Brigham Hospital with uniformly satisfactory results. It was found that 39 mg. of standard leaf per kilo body weight, discounting edema, was the average physiological dose. When given rapidly, largely as single doses, to patients with auricular fibrillation, an initial effect as judged by the slowing of the heart rate was noted in from three to six hours—a complete effect in from twelve to twenty-four hours. Marked diuresis was frequently seen after large doses. When used in patients with regular rhythm who had obvious symptoms of heart failure the effects were quite satisfactory as in those with auricular fibrillation. After large single doses they showed rapid clinical improvement, and the vital capacity of the lungs showed prompt and striking increases, amounting to as much as 15 to 20 per cent. in twenty-four hours. The vital capacity offered a valuable measure of improvement, and in patients with regular hearts was the best graphic indication of the therapeutic effect of the drug, since there was usually much less change of the heart rate than in patients with auricular fibrillation. The physiological dose was found to be practically identical with that found by Eggleston, that was, 0.145 cat units per pound body weight when the patient had become free of edema. Careful observations were made showing the effect of this preparation on pulse rate, urine output, weight, and vital capacity.

Dr. CANBY ROBINSON of St. Louis said that recent advances in our knowledge of the action of digitalis might be spoken of under three heads: (1) They had learned to use sufficient quantities of digitalis; it might be used in quantities sufficient to get therapeutic results or even early toxic symptoms; (2) they had learned to recognize the early toxic symptoms by the use of the electrocardiagram, the estimation of the vital capacity, and by toxic symptoms, such as nausea and vomiting; (3) they had learned the importance of a standardized preparation of digitalis. They were therefore in a better position to treat heart disease than they previously were and they had learned to differentiate their cases better than they formerly did. They knew that digitalis was valuable in cases of great irregularity of the heart, but where the heart was regular digitalis did not produce such striking effects. He was glad Dr. West had told them of the effects of digitalis on hearts beating normally and on the normal vital capacity. Peabody had shown that the vital capacity bore a constant relation to the state of the circulation and diminished as the circulation became deficient. The aqueous extract was valuable in that it could be standardized and it was a definite help to have a drug that would act rapidly.

Dr. C. F. WAHRER of Fort Madison, Iowa, deplored the fact that the general practitioner was at the mercy of the commercial houses when it came to procuring digitalis and condemned the many worthless preparations on the market. The general practitioner was at a disadvantage as he did not have at his disposal the laboratory facilities to make a reliable preparation of digitalis such as Dr. West had been able to make. He had heard Sir James Mackenzie say that he had the same trouble in getting a reliable preparation of digitalis. It was most unfortunate that the bulk of practitioners had to depend upon therapeutic houses for the digitalis they prescribed.

The Study of Bile Pigments in Pernicious Anemia.—Dr. JOHN P. SCHNEIDER of Minneapolis, Minn., read this paper, in which he reviewed his work on the quantitative estimation of bilirubin, urobilin, and urobiligen as determined by a duodenal method of estimating hemolysis with the aid of the spectroscope, which was published in 1916. In securing the duodenal contents the Einhorn duodenal tube was used, and one might be sure that he had obtained duodenal contents when the reaction was alkaline to litmus and there was no free hydrochloric acid. This method was simple, reliable, and reasonably accurate. The stool method was subject to certain errors. Of prime importance was the fact that urobiligen was never found in health. In pernicious anemia the finding of urobiligen was so uniformly in accord with the clinical symptoms that it was a most valuable diagnostic aid. In 84 per cent. of 100 cases of pernicious anemia studied, the bile pigments were far above normal and showed a constant increase proportional to the severity of the anemia. Observations were made on normal individuals placed successively on carbohydrate, milk, mixed, and high protein diet for three or four days prior to the examination of the duodenal contents. It was found that the total bile pigments in normal individuals never exceeded 1000 units and usually ranged between 400 and 800 units. The effect of purging, constipation, and quinine sulphate or the value of bile pigments was also studied. In this series of observations urobiligen occurred only once and that was in a case of lacunar

tonsillitis. Quinine sulphate in large doses produced an increase in bile pigments, which remained high for as long as thirteen days after the administration of the drug, this probably being due to the hemolytic effect of quinine. It was noted particularly that high values for bile pigment were associated with ringing of the ears produced by quinine. Studies were being made to determine whether quinine acted directly upon the red blood cells or upon the parenchyma of the liver and spleen. In the series of cases of pernicious anemia the average total of bile pigments was 3,330 units, the highest being 6,800 and the lowest 800. This test was of great value in the diagnosis of pernicious anemia when the blood or clinical picture was not decisive.

Dr. L. G. ROWNTREE of Minneapolis said he had been interested in this subject ever since Wilbur and Addis published their work with reference to the estimation of bile pigments. He had seen these cases of pernicious anemia that Dr. Schneider described and they had shown constantly high values of bile pigment, so that one could not help being convinced of the value of this test. He felt that the method of estimating bile pigments as described by Dr. Schneider should receive much more attention than was being given to it. He discussed the effect of quinine on hemolysis and suggested a possible relationship between quinine and the hemolysis seen in blackwater fever.

Dr. SCHNEIDER, in closing the discussion, said there was constantly an excess of bile pigments in icterus and in a variety of infections. In an examination of 4,800 miscellaneous cases there was an excess of bile pigments in 1,600, but the highest values were obtained in pernicious anemia.

Spondylitis and Abdominal Pain.—Dr. DOUGLAS VANDERHOOF of Richmond, Va., read this paper, in which he said that spondylitis, familiar to the orthopedist, was not generally recognized by the internist and surgeon. Involvement of nerve roots in arthritis of the spine might give rise to referred pains, not only in the shoulders, hips, and extremities, but also in the chest and abdomen. Symptoms referred to the abdomen might simulate visceral disease and might vary from vague discomfort to paroxysms of acute pain. In a series of 87 cases of spondylitis observed by the writer, abdominal pain occurred in 23 patients in whom visceral disease could apparently be excluded. Errors in diagnosis led to needless operations on the gallbladder and urinary tract. Spondylitis with referred pain was much more frequent than tabetic crises. Relief of the nerve root pain was secured by proper orthopedic treatment with removal of responsible foci of infection. Four illustrative cases were cited.

Dr. WILLIAM S. THAYER of Baltimore confirmed what Dr. Vanderhoof said regarding the possibility of making an incorrect diagnosis in spondylitis on the basis of referred pain. There were instances of hypertrophic arthritis of the spine which produced symptoms such as had been described and which might be confused with abdominal disturbances; that fact needed emphasis. Another condition which affected the posterior root ganglia and sometimes gave symptoms resembling those of renal calculi was herpes zoster.

The Influence of Quantitative Methods in the Advance of Clinical Medicine.—Dr. EUGENE S. KILGORE of San Francisco, Cal., made this presentation, in which he emphasized the fact that medicine following the precedent of other sciences was seeking to advance through the use of quantitative methods of research. The ordinary medical writer tried to present his observations in tabular or graphic form. This undertaking involved much more than the mere presentation of figures. The multiplicity of variables inherent in laboratory and clinical material required statistical methods of analysis and interpretation. Medical writers generally had relied purely on intuition in their interpretation of figures. This practice led very frequently to gross misstatements of results and had thereby brought unmerited discredit on statistical methods. The elementary theory of probabilities, almost never employed by medical writers—dealt scientifically with these methods, was a comparatively simple branch of mathematics, and should be required in the premedical curriculum. A portion of the time devoted to higher algebra, trigonometry, and conic sections might better be applied to the study of statistical methods which would afford just as much mental training and would be of practical value to the student in his daily work.

Dr. HENRY A. CHRISTIAN of Boston said it was undoubtedly true that there was a false security in figures and that nothing lied like statistics. If with insufficient knowledge one attempted to utilize figures he would make mistakes. One very common error was that of drawing conclusions from a small group of cases where there were all sorts of chances of error. Another common error was to figure our percentages on some symptoms or finding; for instance, if one found 30 per cent. of patients having a certain condition to have bad teeth he might conclude that bad teeth were the cause of that condition, without stopping to get the figures as to how often bad teeth were found in individuals who were well, or how often bad teeth might be found in patients with an entirely different disease. There was also another class of error. The statistician might fall into the error of assuming that he was dealing with accurately collected data, whereas the data upon which statistics were based might be inaccurate. For instance, the relative number of deaths due to influenza and to influenza complicated by pneumonia. During the epidemic physicians were often so busy that they did not know definitely whether a patient did or did not have pneumonia. Frequently there were very few signs of pneumonia in these cases, and yet when they came to autopsy extensive pneumonia would be found. There were errors that occurred when statisticians juggled accurately with data that was inaccurate. The medical man should take all these things into account before he got into a statistical discussion.

Dr. KILGORE, in closing the discussion, said the important point he wished to leave with his hearers was that those interested in education should see that the next generation was qualified to use statistical methods in their work.

Frozen Sections from Two Cases of Aneurysm of the Thoracic Aorta.—Drs. GEORGE W. NORRIS and GEORGE FETTEROLF of Philadelphia gave this presentation, which consisted of a lantern slide demonstration of the findings in two cases of thoracic aneurysm. The bodies were injected with formalin, frozen, and then cut in serial sections. These sections demonstrated the size, position, shape, and anatomical relations of the aneurysm as seen from different points of view. The site of the rupture was clearly demonstrated, being in the left bronchus in one case and into the trachea in the other. Pulmonary complications, such as pleural adhesions, pleural effusion, etc., were also demonstrated.

Third Day, Friday, April 30.

Gout: A Clinical Study of 116 Cases.—Dr. CHARLES SPENCER WILLIAMSON presented this paper in which he analyzed this series of cases of gout collected in two large charity hospitals in Chicago. He said the first striking fact brought out by this study was that gout was much more frequent in this country than was usually supposed. It was probably the type of joint lesion most frequently unrecognized, whether in acute or chronic form. The cases were analyzed in reference to incidence by age decades and race. A study of the influence of lead and alcohol as etiological factors yielded no evidence that lead had any relation to gout. Alcohol, on the other hand, seemed to have an exceedingly striking relation to the disease, most of the patients being heavy drinkers. It seemed to make no difference whether the alcohol consumed was in the form of whiskey or beer. Traumatism did not seem to be an element in the etiology. Of 101 cases studied with reference to nutrition, 92 were found to be well nourished. Of the 116 cases, 45 per cent. showed albuminuria, and a queer thing was that in spite of the presence of albuminaria there was relatively little nephritis. The onset was usually characterized by pain in a joint, intense, and sometimes agonizing; the joint became swollen, red and hot. A remarkable feature in connection with attacks of gout was the similarity of symptoms in the first and subsequent attacks. There was usually an interval of some years between the first and subsequent attacks, the average interval being ten years. The average age incidence was forty-eight years. The great toe was involved more often than any

other joint in first attacks, and if not involved in the first attack it usually became involved later. In 95 per cent. of cases of gout the great toe became involved sooner or later. When the first attack came on in the day time, as a rule subsequent attcks occurred in the day time, and if the first attack came on at night, so did subsequent attacks. Most cases that began as a monoarthritis later became polyarthritic. It was remarkable how little elevation of temperature occurred and how slight were the clinical symptoms even when half a dozen joints were involved. Even in the most skilful hands the *x*-ray was of little value in the early diagnosis of gout, and not only was it of little help but it might be actually misleading. In the later stages the condition was easily recognized without the help of the *x*-ray. Severe sore-throat preceded the first attack in five instances. The point particularly to be stressed was that gout was much more frequent than had been supposed and that there was often a failure to make the diagnosis because of its supposed rarity.

Dr. WALTER L. BIERRING of Des Moines, Iowa,said that when one considered that these cases came from two large charity hospitals it did not seem at first glance that they demonstrated such a very large increase in the incidence of the disease, but when one took into consideration the better nutrition of people elsewhere in comparison with that in the poorer sections of a large city it would seem that there not only was an increase in the incidence of the disease but that there was some other factor besides nutrition at work in the large cities. The frequency with which alcohol had been used by those who came to the clinics in the city was at least suggestive. The symptoms of gout were so well marked that it was rather striking that the disease should be overlooked. He thought this was because attention had been so centered on the various forms of arthritis in relation to focal infection that gout as a possible cause of joint affection was likely to be overlooked. He thought the *x*-ray of considerable importance in the early diagnosis of gout in a negative way, because of the fact that early in the course of the disease no definite bone or joint changes were shown. The most reliable point in the diagnosis of gout was the existence of tophi; when these were present there was no doubt as to the existence of gout.

Dr. ALEXANDER LAMBERT of New York stated that gout was not infrequent in New York. Among those of English and Irish ancestry it seemed to be more frequent than among others; but this might not be a safe conclusion. There were often other idiosyncrasies of gouty people, which might run differently in the same family. He knew of one family in which one brother could not touch red wine, while another could not touch white wine, and still another member of the family could not touch alcohol at all. Food idiosyncrasies also had much to do with it. One point of diagnostic significance was that in a gouty joint the maximal point of tenderness was almost invariably on the side. As to the etiology, the dry skin, dry hair, dry, chipping nails and sometimes other evidences of hypothyroidism together with the fact that iodine was one of the best remedies in gout and that it also stimulated thyroid activity was suggestive. Dr. Lambert said that while recognizing the dangers of the *post hoc propter hoc* conclusion, he was inclined to think that the thyroid had a great deal more to do with gout than we had hitherto supposed. A few cases treated on the basis of a lack of thyroid had responded more satisfactorily than when treated in other ways.

Dr. WILLIAMSON, in closing the discussion, recalled that Garrett had said that in any arthritis involving the great toe one should be suspicious of gout. He thought the fact of the great acuity of local symptoms together with the very slight fever was an important diagnostic point in reference to gout which had not worked itself into the consciousness of the average physician. The fact that attention had been centered on focal infection had perhaps been responsible for some of the failures to recognize gout. Dr. Williamson cited cases treated as arthritis, as fracture of the metacarpal bones, etc., when there were tophi in the ears, and tophi came only after the disease had been present for years and were of no help in the early diagnosis. He was glad to hear Dr. Lambert say the pain was on the side of the great toe, for so far as he knew that was true, but he had not had the courage to take that into consideration in making the diagnosis. The point brought out in regard to the thyroid was very suggestive. Gout was a common disease in America, a fact not generally recognized, while it had been overestimated in England.

Renal Glycosuria.—Dr. JAMES E. PAULLIN of Atlanta, Ga., read this paper and reported a case with studies to determine effects of various diets on the sugar content of blood and urine. He states that his object was to call attention to a condition of renal glycosuria in which the sugar content of the blood was normal and the tissues were utilizing a normal amount of carbohydrate, and yet there was a constant glycosuria very slightly influenced by diet and the usual symptoms of diabetes mellitus were absent. This condition was not common, but some patients were treated as mild diabetics who had renal glycosuria. Simple methods for the estimation of blood sugar would be helpful in the study of this group. He had found three cases of renal glycosuria among forty cases of supposed diabetes mellitus. These cases, however, were usually discovered in the course of routine physical examination or in patients rejected for life insurance because of sugar in the urine. Dr. Paullin cited in detail the case of a young man, 23 years of age, who was first seen in August, 1915. His family history was negative and his past history uninteresting except that he had had typhoid fever and recovered completely without complications, and at the age of 18 a mild attack of measles, also without complications. His general health had always been excellent and he had always been interested in athletic sports. His diet had never been restricted, and he gave no history of polyuria or other symptoms of diabetes. His lungs and heart were normal; his blood pressure was 120 systolic and 80 diastolic. The blood count was normal and the Wassermann reaction negative. The urine showed a specific gravity of 1023; a marked trace of albumin; heavy sugar; no acetic or diacetic acid. On further investigation it was thought that this was a case of orthostatic albuminuria. The phthalein test gave 65 per cent. A number of examinations were made over months and all showed sugar varying from 0.5 to 2.1 which was the highest ever found. He was tried on various diets, carbohydrate and protein, but was never sugar-free even on very restricted diet, and in fact there was almost as much sugar on the low diet as on the unrestricted diet.. They were finally convinced that this was not a case of true diabetes but one of renal glycosuria. Now, after three years, the glycosuria was no greater, possibly less, than when he was first seen, and he was in excellent health. Sugar tolerance tests gave practically normal results. Too few cases had been observed to say that these individuals did not develop true diabetes later on, although it would seem that the existence of such a condition was not incompatible with normal existence. There had been no progress toward diabetes in this case.

Dr. NELSON W. JANNEY of Santa Barbara, Cal., called attention to the fact that it was in just such cases as this that the glucose tolerance test was of the greatest value. He had on record a number of similar cases in which a perfectly normal curve for glucose tolerance was found. It seemed as if in typical cases of renal glycosuria we should expect a fairly normal blood tolerance glucose curve, but one must not be deceived by the blood sugar or the sugar tolerance curve for there were typical cases of diabetes that gave a fairly normal glucose tolerance test. Cases in which the blood sugar tolerance tests have high values were unquestionably true diabetes, even though they did not give definite symptoms of diabetes.

Dr. ALLAN EUSTIS of New Orleans pointed out that in cases in which there was liver disturbance or in cases of intestinal toxemia the urine might reduce Fehling's solution, but it did not ferment or react to polarized light. In those cases of intestinal toxemia in which these reducing substances were found in the urine, if the toxemia was overcome the reducing substances would disappear from the urine. He had a patient under treatment for chronic gallbladder trouble and deficiency of liver function on a low protein diet whose urine showed these reducing substances. This patient had gained twelve pounds in two weeks on the

low protein diet. He thought this question of the presence of reducing substances in cases not truly renal should be studied. If there was poor liver function the giving of coffee would produce a substance in the urine which would reduce Fehling's and he wondered if this was the effect of the caffeine.

The Treatment of Diabetes Complicated by Pulmonary Tuberculosis.—Dr. NELSON W. JANNEY of Santa Barbara and Dr. ROBERT R. NEWELL of San Francisco made this presentation which was read by Dr. Janney. He stated that the treatment of diabetes complicated by tuberculosis presented great difficulties, inasmuch as diabetes was treated by undernutrition and exercise while pulmonary tuberculosis was treated by hypernutrition and rest. A representative series of cases of diabetes complicated by tuberculosis was accordingly studied with the object of determining what modifications of modern methods of treatment were advisable when these two diseases occurred together. It was interesting that Montgomery, in reviewing 31,834 cases, failed to find a single active case of tuberculosis that developed diabetes, while pulmonary tuberculosis developed quite frequently in diabetes. All the statistics indicated that it developed in 15 to 25 per cent. of the cases. Dr. Joselin reported that 3 per cent. of his diabetic patients developed tuberculosis before the use of the Allen method, but that this percentage had been reduced since using the Allen treatment. It was noted that at autopsy tuberculosis was found much oftener than it was recognized during life by the physician. With regard to the symptoms of tuberculosis complicating diabetes, they were very insidious. The emaciation frequently shown by the patient was attributed to the diabetes in many instances so that the tuberculosis made considerable progress before it was recognized. There were the usual symptoms of tuberculosis, fever, and hemoptysis, and the lesions were much more extensive than in uncomplicated tuberculosis. The prognosis was that of either disease made worse by association with the other. Prognosis also depended upon treatment which was particularly difficult to carry out, inasmuch as the tuberculosis sanitarium was not fitted with the laboratory facilities and diet kitchen necessary for the proper treatment of the diabetic and the care of the tuberculosis patient was certainly not in keeping with the plans of the diabetic clinic to say nothing of the danger of exposing other diabetics to infection by tuberculosis. We had not at present an ideal place for the handling of this combination of diseases. Dr. Janney reported in detail data concerning 16 cases of diabetes complicated by tuberculosis, two of whom died of diabetes while five succumbed to tuberculosis. With regard to the question whether it was permissible to permit a patient having diabetes complicated by tuberculosis to exhibit glycosuria, Dr. Janney said they had found that the large majority of these cases had developed tuberculosis when on a high diet. Only five developed diabetes when sugar-free, and only one of these was taking less than 30 calories per kilo. Lowered resistance due to upset metabolism was an etiological factor in the development of tuberculosis in diabetics. In connection with the question of undernutrition as an etiological factor in the tuberculosis of diabetics, it might be observed that in other wasting diseases, such as leucemia, exophthalmic goiter, Graves' disease, etc., tuberculosis developed with comparative rarity. It seemed that undernutrition was not as much a factor in the development of tuberculosis as lack of treatment of the diabetes. Undernutrition sufficient to control the diabetes was justifiable. Before using the Allen treatment 1.7 per cent. of Joselin's cases died of tuberculosis; since adopting the Allen treatment only one case died of pulmonary tuberculosis out of 748 cases of diabetes. Control of the diabetes might be followed by immediate improvement of the tuberculous process. Fasting was unnecessary to obtain good results. Rest was at least as necessary as in the treatment of uncomplicated tuberculosis. Every patient was kept in bed until it could be shown that the effect of undernutrition was not injuring him, for there was distinct danger of carrying the undernutrition too far. Practically all the cases in this series became sugar-free in three days, and in all cases the acidosis disappeared. Twelve of these sixteen patients showed definite improvement under institutional treatment. In the treatment of the diabetic whose case was complicated by tuberculosis the greatest discretion was imperative, and his proper treatment was difficult to carry out in the home.

Dr. FRANCIS M. POTTENGER of Monrovia, Cal., congratulated Dr. Janney on his paper, which he said showed, first, that you must not allow the diabetic to develop tuberculosis and, secondly, that if he did develop tuberculosis his tuberculosis must be cared for in its early stage otherwise there was little help for him. It was natural in true diabetes that tuberculosis should develop, owing to the undernutrition and lowered resistance of the patient. Recognizing that quiescent tuberculosis was present in many people, one could readily see why its effect would be greatly increased in diabetes, and it was not surprising that a larger number of untreated diabetics developed tuberculosis than of those treated. He believed that if the diabetic were treated and kept in good condition a very small percentage would develop tuberculosis, or if tuberculosis did develop and was immediately treated many patients would recover. The treatment was a particularly serious problem, hence prevention was better than cure. We must adhere to rest in tuberculosis and particularly if it was complicated by diabetes. The question of recovery in tuberculosis was one of saving the patient's resisting powers. Since emphasizing rest in the treatment of tuberculosis they were getting much better results than before this was done. Lying in bed, the patient lived with the least possible expenditure of energy. It required two or three times as much energy if the individual was up and about. If the tuberculosis was active the toxemia became greater and the diabetes became worse. If there was an acute type of tuberculosis the diabetes progressed rapidly unless it was helped.

Dr. FREDERICK M. ALLEN of New York said that coma was the most frequent cause of death in diabetes; tuberculosis ranked second in frequency as a cause of death, and gangrene came third. Coma could almost always be prevented, gangrene could always be prevented, and likwise other complications. He had never seen a complication develop in a diabetic perfectly treated. Dr. Allen said he could not disagree in any way from the reader of the paper. Fasting might be avoided in some cases, but the tuberculosis diabetic should be fasted as long as was necessary. It was seldom that the untreated diabetic with tuberculosis lived over six months. The tuberculosis was a secondary infection and advanced rapidly. It was striking, however, to see how rapidly a secondary infection did improve as a result of the treatment of the diabetic condition. But we should not be either too optimistic or too pessimistic, for if either disease was severe the prognosis was absolutely hopeless. In the milder cases a great deal more could be accomplished. That meant they should not be entirely pessimistic. The goal that could be reached was the prolongation of life from several months to several years with comfort and usefulness by means of a careful diet. It was pitiful to see these patients wasting away with a combination of tuberculosis and diabetes, but the tuberculosis progressed more rapidly if the diet was unrestricted. Dr. Allen emphasized what Dr. Janney had said with reference to the impossibility of treating the diabetic with tuberculosis satisfactorily either in a metabolic clinic or a tuberculosis sanitarium. He pointed out that in the series of cases reported, Dr. Janney had had the advantages of climate and constant supervision of his patients under the most favorable surroundings. There was great need of an institution properly equipped to care for this particular class of patients. Diabetics treated thoroughly from the start seldom developed coma, gangrene, or tuberculosis.

Dr. ROBERT R. NEWELL of San Francisco said that while the combination of tuberculosis with diabetes was becoming comparatively rare, they saw a considerable number of cases, and he was seldom without one or more patients of this class. Although the cure of the diabetes was the primary object, if this were carried out the tuberculosis benefited as well. Dr. Newell also urged the need of an institution for the treatment of this complication of diseases. It would be a wonderful thing if they could have an institution where patients could receive appropriate treatment for

diabetes and at the same time the rest required in the treatment of pulmonary tuberculosis; better results could then be obtained than were possible either in the metabolic clinic or the tuberculosis sanitarium.

Dr. L. T. GENELLA of New Orleans held that it was very easy to recognize tuberculosis in the diabetic because expectoration was usually very profuse so that there was an abundance for making a bacteriological examination.

Dr. JANNEY, in closing the discussion, did not agree that it was always an easy matter to recognize early tuberculosis in the diabetic. In many cases he had found that the sputum was not positive. The thing that had impressed him had been the failure to study these cases carefully. A special institution for their treatment was most important, not only for the patient with these conditions in acute form but in order to teach patients with these conditions diabetic cooking and all the things they should know in order to care for themselves properly if they had these diseases in a mild form, so that they could leave the institution prepared to carry out these measures so necessary for the prolongation of life. He felt that it was only fair to pay a tribute to Dr. Allen who had given them a method of treatment which was not only effectual in the treatment of diabetes but which was so helpful in the treatment of this combination of diseases.

Arterial Hypertension Associated with Endocrine Dyscrasia.—Dr. WILLIAM ENGELBACH of St. Louis made this contribution, in which he stated that the purpose of his paper was to furnish additional evidence to the recent literature which attempted to associate a certain selected group of cases having arterial tension with disturbances of the internal secretions. To do this it was first necessary to select cases with positive glandular disturbances and to exclude those with cardiorenal conditions which might be causing the hypertension. Five hundred cases with definite glandular disturbances were selected for this purpose in whom accurate blood pressure and all other determinations were made. Of this number 40 had systolic blood pressures over 160, and a surprisingly high number of endocrine cases treated for their glandular disorders were relieved of their hypertension. Some of these patients had lived for a number of years disregarding their high blood pressure. Dr. Engelbach said he had no intention in his paper to discount arterial hypertension from arteriosclerosis or renal lesions, and he wished to state that he believed the problem of hypertension was still unsolved. A great many theories had been advanced which propounded changes other than those in the arterial and cardiovascular systems. His thesis was that many cases heretofore described under such terms as the prealbuminuric stage of Bright's disease, latent arteriosclerosis, pre-arteriosclerotic hypertension, pure hypertension, benign hypertension, etc., had a relation to the ductless gland dyscrasias. Of these cases of hypertension the highest percentage was found among the polyglandular cases, 30 per cent. having been classified as having more than one gland involved. In 12 per cent. of these cases the pituitary and thyroid were differentiated as being most frequently associated with hypertension. A considerable number of cases of hypertension occurring at the menopause were due to glandular disturbance. Treatment was directed entirely to the glandular state, and to this treatment the great majority of these cases had responded.

Dr. FRANCIS M. POTTENGER of Monrovia, Cal., spoke on the subject of the physiology underlying hypertension. He said we had studied disease and we had studied the results of disease but we had neglected to study this bridge over which the cause operated to produce the effect. Every smooth muscle and every secreting gland had some nerve controlling it and all were influenced by the internal secretions. We had two ways through which stimuli operated and the results were seldom due to one thing. A symptom was the result of all the stimuli that were acting. If we found a slow pulse or a rapid pulse it was because something acted to make it slow or rapid. For example, ordinary tension, where there was not only constriction of the arteries but vaso-constriction and we knew that adrenalin acted upon the glands and blood vessels. Then, in addition, here were psychical stimuli and the psychical stimuli might disappear through the nervous system or the endocrine system, consequently a hypo- or a hyper-condition would simply be the result of all the factors which were acting.

Dr. GUSTAV ROUSSY of Paris, France, spoke of the relationship of arteriosclerosis to disorders of the adrenals and other internal glands. In order to investigate this relationship they had performed a great many autopsies to determine whether, after all, the adrenals were the primary element in clinical hypertension and arteriosclerosis. They had studied the glands of internal secretion in 200 cases of arteriosclerosis and hypertension. In many instances definite changes could be made out in the adrenals and particularly in the cortical area. Sometimes there were changes in the pituitary, particularly in chromaffin element, and an augmentation in the number of chromaffin bodies. There were changes in the thyroid and parathyroid in some instances. In other instances of well-marked arteriosclerosis, changes in the glands could not be made out. In studying this question one should study not only the anatomical condition but the interpretation of this condition. Lesions of the glands of internal secretion associated with arteriosclerosis might be interpreted in the sense that the arteriosclerosis was purely secondary or it might be that the converse was true, that the changes in the glands of internal secretion were secondary to the changes in the vessels, and possibly they might both depend upon some other condition which as yet we did not know. Dr. Roussy pointed out the importance in all instances of arteriosclerosis of studying the actual anatomical relations between the arteriosclerosis and the glands of internal secretion, since at the present moment the relationship was hypothetical.

Dr. FISHMAN said he thought that we had a right to say that the glands of internal secretion were affected where there was a high blood pressure and a high glycosuris for a glycosuria might be produced by adrenalin substance and adrenalin also produced clinical high blood pressure. These cases should be treated by a lack of carbohydrates until the glycosuria came down to normal. He believed from his observation in these cases that increase in adrenalism or increase in chromaffin secretion might be responsible for high blood pressure, and also for glycosuria.

Dr. FREDERICK M. ALLEN of New York said it must be remembered that was not a disturbance of the glandular system. It had been brought out very definitely that hypertension yielded to a salt-free diet. There were very few cases that would not yield to a diet that was absolutely salt-free; the difficulty was that the majority of patients did not get an absolutely salt-free diet. If such a diet was instituted it would be found that many supposed endocrine disorders would respond. Hypertension at the time of the menopause was of that type. Many elderly women who had hypertension improved on a salt-free diet. Also in diabetes there were a good many patients with hypertension and the hypertension would come down to normal when the glycosuria was controlled, though all did not come to normal.

Dr. W. S. THAYER of Baltimore reminded them that it was one thing to note an association and another thing to jump at a conclusion. The actual physiological cause of hypertension in most instances was by no means clear. We knew that a spasm of the peripheral vessels would cause hypertension, and there was fairly good evidence that thickening of the small peripheral vessels was followed by hypertension, and that was very nearly all we knew about hypertension except certain associations. Dr. Thayer said he would like to know what the figures were in reference to the results of treatment of hypertension that the writer believed were due to glandular disturbance and how long the cases had been observed. Dr. Allen had had most remarkable results with the salt-free diet, and he was interested in knowing how long Dr. Allen had followed the cases in which he had limited the salt; he also would like to know how they stood this diet for a long time.

Dr. ALLEN replied that the longest observation was fifteen months, and the results were permanent where results were obtained. The salt-free diet was borne differently by different individuals. If the chloride

threshold was high the sudden deprivation of salt would not be felt, but if the chloride threshold was low the patient became weak, the chloride might not be borne so well. It would be necessary to determine the normal chloride threshold and the salt ration for each individual patient.

Dr. ENGELBACH, in closing the discussion, said it must be admitted that there was no definite relationship established histologically or pathologically between these conditions. Dr. Fishman had spoken of the involvement of the adrenals; the point brought out in the paper was that there were very few cases in which one gland alone was involved. The majority of the cases were polyglandular. He felt sure Dr. Allen was right about the chlorides. They had the same results in some cases, yet other cases that did not receive the salt-free diet responded to endocrine treatment.

Syphilis of the Kidney.—Dr. LOYD THOMPSON of Hot Springs, Ark., presented this contribution in which he claimed that the importance of this subject had been often overlooked; even Osler had paid little attention to it. Cabot in his urology gave quite a complete description. Statistics were difficult to obtain though Spiess, Warthin, and others had given some figures. Morgagni was the first to point out that the kidney could be involved in a syphilitic process. Early writers of the eighteenth century did not recognize the condition. Rayer was the first to describe syphilis of the kidney clinically. Lancereaux, in 1861, wrote a fairly accurate account. After describing the pathology, the essayist stated that there were two types: (1) Early involvement, which might consist in a transient albuminuria, or acute or subacute nephritis. (2) Later involvement, which might be (*a*) chronic interstitial and parenchymatous nephritis; (*b*) amyloid kidney, or (*c*) gumma. In the transient albuminuria of early syphilis of the kidney there was little or no symptomatology. Acute syphilitic nephritis might occur even before the skin eruption of syphilis appeared, or it might occur three years after; the average time, however, was five months after the infection, and it rarely occurred after the first year. The first symptom was usually edema, which might go on to general anasarca, ascites, and hydrothorax. In some instances there was pain in the lumbar region, fever, and vomiting. The most striking feature, however, was the albuminuria, there being an enormous quantity of albumen in the urine. In the writer's case it was 3.2 per cent. Casts of all kinds were present but were not so striking as the albuminuria. If the urine was examined with the polaroscope double refractal lipoids would be found more abundantly in syphilis of the kidneys than in other kidney conditions. Renal function was less impaired than in other forms of nephritis. The writer gave a picture of the macroscopic and microscopic findings, and stated that they were not different from similar kidney conditions having a different etiology. It was important to differentiate syphilitic nephritis from that of other etiology. The prognosis of the early transient form was good. The prognosis was fairly favorable in the acute and chronic forms; unfavorable in amyloid kidney; favorably if recognized clinically in gumma. The treatment was both specific and general. Care should be taken in administering the specific because of its possible effect on the kidney. Frequent urinalysis and real function tests were imperative.

Dr. J. H. WITHERSPOON of Nashville, Tenn., cited the case of a man with kidney trouble and large amounts of albumin, who gave a history of having had syphilis twenty years before. There seemed to be a growth at the lower pole of the kidney. Catheterization of the kidneys separately showed that the largest amount of albumin was excreted by the right kidney but that the left was also involved. The question that came up was whether this was a late manifestation of syphilis whether a gumma was present and whether it was right to remove the right kidney when the left was also somewhat involved. The man gave a negative Wassermann and did not respond to specific treatment.

Dr. WILLIAM H. MERCUR of Pittsburgh confirmed what the reader of the paper had said with reference to the finding of very high degree of albuminuria in syphilitic nephritis without any other bad symptoms.

Dr. J. B. MCELROY of Memphis, Tenn., said he had seen several cases similar to the one described by Dr. Thompson. He thought there was nothing specific so far as the syphilis was concerned; that was, the cases when the condition was due to other causes. They were just like degeneration nephropathies in other conditions, as in tuberculosis and chronic suppurative proc- exhibited the same kind of nephropathies as were seen esses. He thought the entire group of nephropathies should be studied from a different standpoint and that it was time they dropped the classification of parenchymatous, interstitial and a great many other things in connection with nephritis.

The Effect of Tonsillectomy on the Recurrence of Acute Rheumatic Fever.—Dr. WILLIAM P. ST. LAWRENCE of New York presented this study which consisted in the analysis of scientific data concerning 75 children subject to recurring attacks of acute rheumatic fever and chorea, and others subject to attacks of tonsillitis, "growing pains," and myositis, making a total of 94 cases. The children comprised members of both sexes and ranged in age from four to fourteen years at the time of the operation. Tonsillectomy was performed from two to six years ago, at an average of three and one-quarter years ago. The tonsillectomies had been performed by the Sluder method and the adenoids removed by the adenotome. Since the operation these children had been seen at intervals of four or five weeks. They had been careful to see that there had been a complete removal of the tonsils. In one-fifth of the cases the tonsils had to be reoperated upon because a great deal of tonsillar tissue remained. Since the operation the condition in the throat had been studied particularly from the standpoint of infection, and observation had been made concerning the severity and recurrence of the so-called rheumatic manifestations. Many of the cases presented cardiac lesions, and observations had been made concerning the effect of the operation on the cardiac disease and on the occurrence of cardiac failure. In many cases in this series the tonsillar nodes were enlarged and following the operation the nodes had disappeared. In only one-third of the cases did palpable nodes remain and then they were greatly reduced in size. At times these nodes disappeared within three or four days of the operation. In 84 per cent. of the cases having rheumatic manifestations there had been no recurrence of the rheumatic attacks since the operation. Two-thirds of these cases had had the last attack of so called rheumatism within one month of the operation, and one-half of them had had recurring attacks for a period of two years previous to the operation. There was no better factor in the management of children with cardiac disease than the tonsillectomy. Whether this was the result of removing a toxemia he could not say, but the effect had been beneficial to these children. In cases of undernutrition the results of removal of the tonsils was equally striking. Pains in muscles, joints, and bones did not recur in 77 per cent. of the cases; in 50 per cent. of those having chorea there was no recurrence. In twelve children who had been in the ward with decompensation since the removal of their tonsils, at the end of three and one-half years only one had returned with decompensation, and these children had been watched every week. There were some few recurrences of rheumatism following tonsillectomy, so that while tonsillectomy had been the decisive factor in the improvement or cure of these children he would not say that it was the whole thing, but he felt convinced that it had an important bearing.

Dr. LEWIS A. CONNOR of New York said the tonsils were an important factor in the conditions mentioned and that their removal was an important weapon in the prevention of the recurrence of rheumatic manifestations. But this work of Dr. St. Lawrence's was valuable not because it concerned a great number of cases but because of the thoroughness with which the cases it did concern were studied. He had made close, careful, accurate observations. He had taken pains to see that the tonsillar tissue had been removed completely and he had waited patiently for sufficient time to elapse before drawing conclusions. He knew of no other statistical study that covered the ground in anything like the careful way in which he had covered it.

That was the reason why his figures were of such value. The work pointed a lesson of much wider significance than he had intended. It should serve as a model for statistical studies. Rheumatic fever we might take as the prototype of systematic infection and we seemed to be ready to accept the focus of infection as the origin of such general infections. It was therefore important that we should be able to give definite demonstrable proof of the relationship between the focus of infection and certain conditions; if we were ever to be rescued from the confusion and uncertainty that now surrounded the subject, it would be through just such examples of thorough discriminating statistical study.

Dr. Alexander Lambert of New York congratulated Dr. Lawrence heartily on his very excellent piece of work and referred to an investigation of the incidence of rheumatic fever at Bellevue Hospital published in the *Journal of the American Medical Association*, April 10, 1920, that investigation was undertaken to see whether there had been an actual diminution of the number of acute cases of rheumatism admitted to Bellevue Hospital and to see whether any deductions could be drawn from them as to the effect of dental hygiene and the spread among the profession of the realization of the relation of focal infection to general disease. A few of the statistics presented in that article were quoted which seemed to indicate that the striking diminution in the number of cases of rheumatic fever within the past two years was more than accidental for which dental hygiene more than any other one factor was responsible though it seemed that tonsillectomy had also made its impression. To settle the question as to the part played by the teeth and that played by the tonsils they would have to remove one thing only and note the result on the morbid process and in that way they would not get into a haze such as they were in at present. Dr. St. Lawrence had followed this plan and had done an excellent piece of work.

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

The Principles of Anatomy as Seen in the Hand. By Dr. Frederic Wood Jones. 325 pages. 123 text figures. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

Regional Anesthesia. By B. Sherwood-Dunn, M.D. 294 pages, with 224 figures. Published by F. A. Davis Co., Philadelphia, Pa.

Manual of Surgery. By Dr. Albert Carless. 1558 pages. Published by William Wood & Co., New York.

Manual of Diseases of Children. By James Burnet, M.D. 416 pages. Published by William Wood & Co., New York.

Handbook of Skin Diseases. By Frederick Gardiner. 158 pages. Published by William Wood & Co., New York.

Handbook of Anesthetics. By J. Stuart Ross. 214 pages. Published by William Wood & Co., New York.

Cunningham's Manual of Practical Anatomy Revised and edited by Arthur Robinson. 451 pages. 203 illustrations. Published by William Wood & Co., New York.

Diseases of Women. By Dr. Charles M. Green. 466 pages, with illustrations. Published by W. M. Leonard, Boston.

Peking Union Medical College, Annual Announcement, 1920-1921, Peking, China. 64 pages. Peking, China.

Ninety-fifth Annual Report of the Managers of the Society for the Reformation of Juvenile Delinquents in the City of New York. 102 pages, with illustrations. Published by the New York House of Refuge Class in Printing, 1919.

Therapeutic Hints.

Acute Suffocative Catarrh.—Furlong cites a case of acute suffocative catarrh—a very rare condition, in his experience—in a man of 70. He injected at once 1/100 grain atrophine sulphate and 1/15 grain strychnine nitrate, and administered oxygen by inhalation. He also gave three separate dram doses of sal-volatile at intervals during the night. By the next morning the patient was practically as well as ever.—*British Medical Journal.*

Maternal Feeding of Infants.—J. D. Love of Jacksonville, Fla., in a discussion of some facts and fallacies relating to maternal feeding of infants, holds that the gross appearance of breast milk furnishes but an unreliable index as to its suitability for the baby. Before pronouncing milk as being too rich in quantity, the presence or absence of colostrum bodies should have been determined by microscopic examination. The mere fact that milk is scant in quantity furnishes no valid excuse for the withdrawal of the infant from the breast, but rather calls for supplemental feedings. Conclusions drawn from chemical examinations of breast milk, as usually practised, are apt to be misleading. Laboratory findings should confirm clinical observation. In influencing the quality of breast milk the maternal dietary, while of some importance, is a smaller factor than causes which operate through the medium of the mother's nervous system.—*Southern Medical Journal.*

Camphor.—Douglass W. Montgomery of San Francisco, discussing some of the medicaments used with success in the past, gives the following prescriptions containing camphor:

Rosacea.—In cyanotic cases of rosacea in which the skin is cool, often cooler than normal, hot soakings with borate of soda, or bicarbonate of soda solutions may be employed in the evening, followed by a salicylic acid lotion.

℞ Acid salicyl 0.5-1.00
Spts. camphoræ..... 25.00

An acetic acid lotion may be used instead:

℞ Spts. camphoræ
Aceti
Tr. benzoin āā10.00
Spts. vini dil.....150.00

The camphor modifies the acidity of the other two principal ingredients, salicylic and acetic acid.

Chilblains.—In this condition, which is an edematous fluctuation in the blood-vessels of the true skin, camphor is an old and much used remedy. It seems to act in causing resolution of the edema. and in relieving the irritability of the nerves. The following is Ewalt's formula:

℞ Camphor 5.00
Ol. terebinth 20.00
M. Sig.: Rub into the chilblains.

The camphor mitigates the irritation of the oil of turpentine.

Frostbite.—The following is recommended by Lederman:

℞ Camphor 5.00
Bal. Peru 2.50
Vaseline .....āā 50.00

—*Indianapolis Medical Journal.*

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Original Articles.

ENCEPHALITIS LETHARGICA.*

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THE present epidemic of encephalitis lethargica has acquired prominence from its virulence, its widespread distribution, and the many forms in which it has appeared. The disease is not new. Conditions similar to it existed in Germany as far back as the seventeenth century, and in Italy and Hungary in 1890. The epidemics which were recognized and fully described occurred in Vienna in 1916-1917, in England in 1918, and in the United States in 1919. Outbreaks of the disease have at one time followed epidemics of influenza, at others epidemics of poliomyelitis. It is, therefore, not out of place to suggest that some connection may exist among the three diseases. There is a feeling held by many that influenza is a precursor of encephalitis, and by others that poliomyelitis and encephalitis are closely related, if not identical processes. It is not as yet possible to say just what connection, if any, exists between influenza and encephalitis nor whether poliomyelitis and encephalitis are one and the same.

The disease is an acute infection and like most acute infections is due to a specific virus. Strauss, a year ago, proved that an inoculation of emulsion of human brain produced lesions in the monkey characteristic of the lesions found in encephalitis and that washings from the nasopharynx in a case of encephalitis produced paralysis in the monkey. More recently he has obtained a filtrable virus from nasal washings which in 85 per cent. of the cases has given positive results in animals, and in the case of the spinal fluid 80 per cent. He feels justified in concluding from this that the virus enters the system through the nose, which fact he corroborates by calling attention to the frequency with which coryza ushers in encephalitis. The disease, is, therefore, infectious and probably mildly contagious. Two observers have reported more than one case occurring in a single family. Here in New York we have had two members of the house staff affected with it, one at Mt. Sinai, and one at Lincoln Hospital.

The pathological changes which encephalitis produce are inflammatory in character. Macroscopically the brain shows a considerable degree of edema and a marked venos congestion. Microscopically, there appears an infiltration of small round cells in the lymph spaces and especially around the smaller blood vessels and nerve cells. In addition to this, are numerous small hemorrhages, areas of necrosis, and a chromatolysis of the nerve cells. These changes are most evident in the basal ganglia and mid brain where the resultant congestion is greatest. However, from the reports of many observers, these changes are not limited to the basal ganglia but may occur anywhere in the nervous system.

The type of symptoms which occur in any particular case are dependent upon the particular part of the nervous system affected. Thus, if the disease attacks the globus pallida, tremor and rigidity will result; if it attacks the thalamus, choreiform movements will result, if the meninges rigidity occurs—if the spinal nerve roots, pain will result—if it attacks the cranial nerve nuclei, ophthalmoplegia, facial paralysis, and so on.

There are four cardinal symptoms. I do not mean that these four necessarily always occur but that they are usual, frequent, and typical. These are: (1) Ocular paralyses. (2) Hypersomnia. (3) Elevated temperature. (4) A change in the general state. Of these, ophthalmoplegia and hypersomnia usually attract attention first.

In addition to these there are several other important symptoms which I shall briefly discuss.

The Cranial Nerve Palsies.—The most frequent group of symptoms which occurs in encephalitis lethargica is an affection of one or more of the cranial nerves. Reports have been made of an involvement of all but the first. The third nerve is the one most commonly affected, giving rise to ptosis. This may be single or double, complete or incomplete, constant or transient. Next in frequency may occur paralyses of either the fourth, sixth, or seventh. These ocular paralyses often inaugurate the disease so that ptosis, double vision, or strabismus may present themselves even before fever or apathy. It is not at all unusual for paralyses of two or more cranial nerves to occur simultaneously, thus, I have seen patients with ptosis and a facial paralysis, with ptosis and an internal strabismus. Many patients complain of a slight dizziness, which may indicate an involvement of the eighth nerve. The ophthalmoscope does not reveal much; usually a congestion of the fundus and in two instances an optic neuritis. It has been suggested that the pain in the ear or on the side of the face, a symptom which some cases present, is indicative of an involvement of the fifth nerve. One can, of course, deduce a conclusion that the greater the number of cranial nerves involved, the more unfavorable the prognosis.

*Read at the annual meeting of the Medical Society of the State of New York, March 23, 1920.

Euphoria.—Euphoria is a very frequent symptom; in constancy it should rank next to the cranial nerve palsies. The large majority of these patients are without complaint; they say they feel well, and if not delirious, maintain that they are well. A few suffer from mental depression but a great many are neither unhappy nor in pain, except those afflicted with radiculitis. It is unusual to see a severe illness in which the patient is so little cognizant of his true condition; it is also unusual to find a disease in which the feeling of well being and the absence of any distress is so marked and so constant. For these reasons it is fair to place euphoria among the leading symptoms.

Rigidity.—There is often some rigidity. It is variable, inconstant, and irregular in distribution, and is of course dependent upon the meningitic involvement. The rigidity of the neck is rare and when present never as marked as that in tuberculous meningitis.

Slight or marked rigidity may affect the arms or legs. It often varies from day to day, and is a symptom of the second or third week of the disease.

Tremors, Spasms, and Choreiform Movements.—I have placed these physical signs under one heading as they are somewhat similar. The tremor which occurs in encephalitis is coarse and in many respects similar to that seen in paralysis agitans. In distribution, however, it differs from the Parkinson tremor. In the latter disease the onset is apt to be hemiplegic and the termination general, whereas in encephalitis the distribution is most frequently in the face and hands. In some cases the tremor appears at the very beginning, in some towards the end of the first week, while in others it is wholly absent.

The choreiform movements are irregular, jerky, and resemble those seen in Sydenham's chorea. They occur with great frequency and may be general or localized. Most commonly they are general. In those cases in which they are localized, the distribution is variable. I have seen cases in which the choreiform movements were entirely restricted to the abdominal muscles, and others in which they were restricted to the hands. In one instance I saw a patient with choreiform movements which involved only the muscles of the lips and the lower face so that the patient was constantly making grimaces very similar to the muscular movements made by a rabbit when eating. In another instance the movement was limited to one-half the body.

Temperature Changes.—Elevated temperature has been present in all of the cases which I have seen. Observers, however, have reported cases without temperature, so that fever should not be considered an essential of the disease. In those cases in which no temperature has been reported, it should always be borne in mind that the temperature may have existed before the patient came under observation, or at some hour between the readings. While temperature may not be considered as an essential, it probably does occur in more than five-sixths of the cases. The usual rise is to 101 or 102, but it may be less or more. It is a characteristic of the disease that the temperature may at any time suddenly rise to 103 or 104.

The facies of encephalitis lethargica is sufficiently characteristic to warrant a separate description. It varies with the different types. In the mild form or at the beginning of the disease, the skin may be natural in color or slightly flushed, and the ophthalmoplegia or facial paralysis alone stamp the disease. Gradually, as the condition advances, a lack of expression develops and finally the characteristic appearance. The classic facies of encephalitis is rigid, mask-like, and devoid of expression. The facial muscles are drawn downward, the skin is pasty and wax-like, and one or more cranial nerve paralyses distort the features. It closely resembles the facies of Parkinson's disease, with the addition of ptosis or facial palsy, and a skin gray and pasty. There is something very unmistakable about the immobility, the paralysis, and the grayness. As ptosis is the most common of the paralyses, it is usual to see these patients lying in bed with partly closed lids.

Apathy.—The apathy appears about the second week of the disease. It may be slight or intense, or it may be interrupted by an active and busy delirium. The most characteristic attributes of this lethargy are the lack of proportion between the real and apparent, and the ease with which the patient can shift from stupor to consciousness and vice versa. It is usual to see these patients roused and then relapse back into coma. They will wake, say that they are feeling quite well, take some nourishment, and immediately go back to sleep.

Eye Symptoms.—Among the eye symptoms are diplopia, nystagmus, fixed and unequal pupils. All of these have been observed. Diplopia is the most common; in fact, few cases occur without it, and it is frequent in about 60 per cent. of the cases. Nystagmus is most apt to be present in the Parkinson type.

Mental symptoms occur with great frequency. They may vary from a mild delirium to a condition of mania. The delirium is of the muttering, busy type; it is usually inconstant and may subside during the day. The patient chatters and mutters about his work and picks at the bed clothes. As the disease advances, the mental symptoms change. In the ordinary cases, apathy at first alternates and then wholly supervenes. I have noticed that a very active delirium, if prolonged, constitutes a prognostic sign of grave import. The mental disturbances most frequently appear in the first week of the disease.

Sphincter involvement occurs as a late, rather than an early symptom, and very rarely ushers in the disease. I did, however, see one case which entered the hospital for retention of urine.. I have seen three encephalitis patients in adjoining beds, each requiring catheterization. Involvement of the sphincters is serious from a prognostic point of view, and when accompanied by excessive temperature and increasing apathy, is apt to terminate fatally. Both sphincters become involved at about the same time.

Speech disturbances should be placed among the list of frequent symptoms. The type of disturbance is difficult to describe, as there is nothing quite like it. The speech is thick, difficult to understand, hesitating, and chopped off.

Laboratory Symptoms.—The laboratory does not help much in the diagnosis. The blood may show

a slight leuocytosis, but is otherwise negative, The spinal fluid shows a more or less marked pleocytosis, which is dependent upon the meningeal involvement. In the cases which I have seen, the cell numbers varied from fifteen to fifty and occasionally higher.

The pulse is rapid and hurries as the disease advances. It is usually considerably above 100 and may rise to 140 or 150.

There are *other less common* symptoms, among which I might mention as the most frequent pain, pupillary inequality, hiccoughing, exaggerated knee jerks, slight rashes, Kernig's sign.

The pain may be an initial symptom and may occur in the face, arms, or legs. It appears to be due to the radiculitis. It is sharp, very intense, and difficult to relieve. It is, fortunately, not of very long duration.

The occurrence of severe pains in the arms, legs, or about the face of the patient suffering from an acute infection, ought to suggest the condition of encephalitis lethargica. One might mistake neuralgia, sciatica, or even the pains of tabes for the radicular pain of encephalitis.

Inequality of the pupils, together with fixity of the pupils is not uncommon. The inequality is of longer duration than many other symptoms. I have known of one boy who, having been up and about for some weeks, still retain a marked degree of inequality of the pupils.

The knee jerks, in the majority of the cases, are apt to be unequal and vary during the course of the disease. This physical sign is not, however, of very long duration.

Kernig's sign and slight rashes appear but are infrequent. Herpes and a tache cerebrale have been reported.

There are *several types* of the disease. So far we have been able to recognize two which are very distinct, the slow and the rapid. The slow are gradual, and preceded by a period of malaise, coryza, and slight temperature. The slow type is difficult to recognize as it is insidious and at first suggests something akin to a mild influenza. It is as insidious and suggestive as is typhoid fever. The rapid cases are violent, fulminating, and self evident. They are frank and open declarations of a severe infection. It is in these that the mental symptoms are apt to be most pronounced, and most extreme.

I feel that in addition to these two types there should be recognized a third which one might denominate "the mild." I have seen cases in which there was a little temperature, a slight involvement of one cranial nerve, and a pleocytosis preceded by a mild and short-lived delirium and followed by slight apathy. The entire picture might be described as a miniature of the disease. These cases run a much shorter course and end in an uninterrupted recovery.

It is characteristic of both the slow and rapid types to have a prolonged convalescence accompanied by a recurrence or relapse of some of the physical signs. It is, I believe, a characteristic of the mild type to have a short and uninterrupted convalescence. In some of these mild cases, I have seen the patient improve decidedly in forty-eight hours.

The course of the disease in the pronounced cases is measured by weeks. So far as sex is concerned, in the cases which I have seen, the preponderance has been among males. Whether this is a coincidence or not, I cannot say. So far as age is concerned, my experience has been that the disease has been most apt to attack the young and the sturdy.

The prognosis is fair, sixty-five per cent. of the cases recover. There are one or two points which I might mention in this regard. The slow cases run a less severe course than the rapid, and in children the outlook is far better than in adults. A very low, as well as a very high, cell count is not favorable. Those cases in which the count is intermediate, that is ranging from 40 to 60, afford a much better prognosis.

41 East Sixty-third Street.

THE PREVENTION OF RESPIRATORY DISEASES IN INFANCY AND EARLY CHILDHOOD.*

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It is aimed in this contribution to discuss the prevention of respiratory diseases in infancy and early childhood, in other words, at that period of life under five years of age. By infancy is understood the period of life from birth to the completion of the first year, and by early childhood, that period of life from the second to the end of the fourth year. With the exception of this broad classification, of under one year, and from one to five years of age, no effort has been made to present the subject according to age groups.

The experience of most physicians who treat a large number of children coincides with that of Koplik, who states, "if we study the statistics of any large pediatric clinic, it will at once be apparent, that up to the tenth year of life, those diseases which affect the respiratory apparatus form nearly two-fifths of the cases." Rosenau says, "more people probably suffer from common colds than from any other single ailment. Could the sum total of suffering, inconveniences, sequelæ and economic loss, resulting from common colds, be obtained, it would at once promote these infections from the trivial into the rank of serious diseases. The common cold is not merely a congestion, it is an infection."

The fact that over 20 per cent. of all deaths under one year of age, in New York City, are chargeable to diseases of the respiratory system, and that 25 to 30 per cent. of all deaths in children under five years of age are due to these causes, to say nothing of the suffering, complications and sequelæ in the large number of cases in which recovery takes place, makes the question of the prevention of respiratory diseases in young children one of momentous importance, from the standpoint of the community or public health, as well as from that of the individual or family. The situation in New York City, to note it specifically, was as follows during the years 1917 and 1918:

*Read before the Harlem Medical Association, March 3, 1920.

Deaths in Children from Respiratory Diseases in New York City.

	Under 1 Year of Age.		Under 5 Years of Age.	
	1917.	1918.	1917.	1918.
Total number of deaths	12,563	12,657	18,265	21,019
Number of deaths from respiratory diseases	2,741	2,993	4,668	6,347
Percentage of deaths from respiratory diseases, based on total number of deaths, reported at that age	21.8	23.7	25.6	30.2

It is true that the percentage of deaths from respiratory diseases in children during 1918 was somewhat larger than during the recent previous years, owing to the inroads which the epidemic of influenza made upon the respiratory tract of infants and young children. Apart, however, from this unusual situation in 1918, the toll of deaths in young children from respiratory involvement is altogether too large, and admits of reduction through educational propaganda and other public health measures.

There was a time when the number of deaths from infantile diarrhea, commonly termed "summer complaint," was so great that it practically controlled the curve of infant mortality. Happily, as the result of a greater public knowledge of the importance and value of breast feeding, of a more rigid supervision, control and grading of the milk supply, of the recognition of the dangers of irregular and indiscriminate feeding, and of the education of the masses in the hygiene and the care of infants, the number of these cases, especially the severe and fulminating types of yester-years, is fast decreasing, so that in New York City, at any rate, and in many of the other more progressive cities, diarrheal diseases of infancy are third in the list of baby-killing diseases, with congenital diseases first and respiratory diseases second. In New York City, during the years 1917 and 1918, the infant mortality rate from diarrheal diseases was 19.1 and 14.7 respectively, per thousand children born, as against 19.4 and 21.7 respectively, for the respiratory diseases of infancy. Similarly, the death rate under five years of age, based on per thousand population at that age for diarrheal diseases during 1917 and 1918, was 5.5 and 4.1 respectively, as against 7.7 and 10.2, for diseases of the respiratory system. Those of us who are engaged in child welfare work in New York City, therefore, have come to look upon the respiratory conditions in infants and young children as the "winter complaint" and as calling for energetic efforts for its control, just as years ago our attention was directed to the "summer complaint."

It will be readily appreciated that the means for affecting a reduction in morbidity and mortality from diarrheal diseases in children are more direct, nearer at hand, and more easily controllable from a public health point of view than in the case of diseases of the respiratory tract. Many of the diarrheal diseases are directly traceable to impure milk, to improper or injudicious feeding, to carelessness or ignorance or neglect in the preparation of the milk or food, and in the sterilization of utensils necessary for said preparation, and to the indifference or disregard of the simple rules of child hygiene, all of which can be and are influenced more or less directly by sanitary regulation and popular education, either through personal contact of the population with the public health nurses, or through means of public lectures, distribution of literature, and newspaper publicity.

The means for the prevention or control of the respiratory diseases, on the other hand, are neither so immediate and direct, nor so easily approachable through the agencies of municipal authorities or private physicians. The control of diarrheal diseases, is, to a large extent, a question of cooperation of the mother, while the prevention of respiratory diseases is bound up with each and every member of the household and with the environmental conditions of the outside world; in other words, the opportunities for contact infection and for the dissemination of disease, are greater in the case of the respiratory tract than in diarrheal disease and in the large majority of other conditions. A child or an individual, ill with measles, diphtheria, smallpox, scarlet fever, infantile paralysis and kindred communicable diseases is usually acutely ill and is isolated from other members of the family and from the community at large. However, a person with an acute or sub-acute cold, or one who, in the ordinary course of events, coughs and sneezes or expectorates carelessly, is publicly at large, and each in his own way acts as a disseminator of infection. It must be remembered also that in the prevention of respiratory diseases the factors of immunity, susceptibility, predisposition, and even hypersusceptibility, play a far more important rôle than in diarrheal diseases. And yet, despite all this, there is a fertile field for successful accomplishment in the prevention of these respiratory diseases which every year cause the sacrifice of thousands of children's lives. I do not mean to imply that the methods of approach or the means at hand for affecting a reduction in child mortality, in the case of respiratory diseases, can be compared to those used in the case of diarrheal diseases, in the sense that we can expect as brilliant results in the former as have been achieved in the latter. That there is a possibility, however, of effecting a definite reduction in the mortality from respiratory diseases as well as from diarrheal diseases in the young, may be seen from the following:

City of New York.

	Mortality Rate Under 1 Year of Age, per 1,000 Births Reported.		Mortality Rate Under 5 Years of Age, per 1,000 Population.	
	Diarrheal.	Respiratory.	Diarrheal.	Respiratory.
1902	47.8	43.8	12.4	16.1
1917	19.1	19.4	5.5	7.7
1918	14.7	21.7	4.1	10.2
1919	15.9	15.5	3.9	6.0
Reduction since 1902, per cent.	66.0	64.0	68.0	62.0

In other words, there has been in seventeen years a reduction of 66 per cent. in the infant mortality rate from diarrheal diseases, and a reduction of 64 per cent. in the respiratory diseases, together with a reduction of 68 per cent. in the mortality from diarrheal diseases, under five years of age, and a reduction of 62 per cent. in the mortality from respiratory diseases, under five years of age. Certainly a reduction under one

year of 64 per cent., and under five years of 62 per cent. in respiratory diseases, warrants optimism for the future, rather than the pessimism which exists at the present time in so many quarters, as regards the control of respiratory diseases in the young.

The public, which has come to look with terror upon the dreaded "summer complaint," and which through bitter experience finally has learned the lessons of prevention of diarrheal diseases, has not as yet awakened sufficiently to the realization that respiratory diseases in childhood also can be prevented in a large measure, by carrying out simple lessons of child care. It is with the desire and with the hope of arousing interest in the necessity of making a definite impression upon the unnecessarily high morbidity and mortality from respiratory diseases in children that these lines are written.

Acute bronchitis and bronchopneumonia are the two diseases of the respiratory tract which most of all cause death in children under five years of age, according to official death certificates. Though given as a cause of death, bronchitis, in most cases, is probably a milder term for bronchopneumonia without definite physical signs—the capillary bronchitis of former days. These respiratory diseases in young children are either primary or secondary to the common forms of contagious diseases—measles, whooping cough, diphtheria, influenza.

When approaching the public in an educational way, the use of scientific terms or phrases seldom produces results; thus the use of simple or combined bacteriological terms, of toxines, antitoxines, immunization, phagocytosis, opsonic index, etc., are elevating terms, but the public wants something more tangible. The public should be told and will readily appreciate that whatever the specific cause of respiratory conditions, a favorable soil for the development of the causative germs must exist in order to produce disease; and just so far as this soil is made unfavorable for the many bacteria which are always present in greater or lesser numbers in and about all of us, waiting for a medium upon which to thrive, flourish and multiply, and just so far as the human organism is able, even in the presence of a favorable soil to ward off, withstand or modify this onslaught of bacteria and their by-products, in just so far will respiratory conditions be prevented or modified in severity. The essentials to drive home to the lay mind in any campaign for the reduction and control of respiratory diseases in infancy and childhood, are, to a large extent, those which the various departments of health throughout the country circularized during the last world-wide epidemic of influenza. In the case of children—and the younger the children the greater the need—these facts require special emphasis and application, since young children, because of their dependence upon parents, guardians, maids, or others, cannot protect themselves against the many sources of contact infection, either at home or in public.

It may not be amiss to state here that the term "contact infection" does not imply, as so many think, actual contact between sick and well, or between carriers and well, but rather close association between individuals. These essentials relate to general home and bodily cleanliness; thorough ventilation of the sleeping quarters; the admission of as much sunlight as possible into the sleeping and living rooms; the use of separate sleeping quarters, if possible; the avoidance of dry sweeping; protection from the dangers of coughing, sneezing, kissing and spitting; the use of individual handkerchiefs, or paper napkins or cloths, during the act of coughing, sneezing or expectoration; prompt disposal of nasal, oral and bronchial discharges; the use of separate eating utensils and the scalding or boiling of the same, after use; the avoidance of common drinking cups, towels, wash-cloths, and tooth-brushes; care of garbage and refuse; the prevention of fly-breeding, through cleanliness primarily, and of the entrance of flies through the use of screens or mosquito netting, secondarily; the avoidance of interchanging toys, pencils, edibles, etc.; isolation from the rest of the family of persons suffering from running noses, watery eyes, common coughs or colds; the avoidance of crowded places, especially the moving-picture houses of small capacity, and of children's parties; the importance of taking to bed immediately upon the onset of any acute condition of the respiratory tract and remaining there until well.

Coughs and colds are so frequently due to household infection that the home, especially in the case of children, should be regarded as the great source of spread. Most colds are domestic in origin, hence the term "household colds." Since, as aforementioned, the portals of entry for the more serious diseases of the respiratory tract are the nose and throat, and since sub-standard health invites infection, two main general considerations present themselves: (1) The need of placing the throat, nose, mouth and teeth in such condition, through nasal and oral hygiene, that the various bacteria which are ever present in large numbers in these localities, and many of which are capable of producing fatal diseases of the respiratory tract, will find the nose and throat less favorable for their development. (2) That by the avoidance of over-eating, over-exercise, fatigue, irritability and a lack of the necessary amount of sleep, the general body health may be kept at such a standard as to maintain sufficient resistance or reserve force to ward off diseases of the respiratory tract, or to minimize their effects if they attack an individual. In addition to the general preventive measures just outlined, there are special phases of prevention applicable to respiratory diseases in early childhood. The general preventive measures aforementioned apply, of course, to all periods of life, but in childhood certain extra precautions are indicated.

Infants and young children are far more sensitive to climatic disturbances than adults, and slight or moderate changes in temperature which would have practically no effect upon the adult, are often sufficient to give an infant or a young child a cold in the head. A cold in the nose in infancy and early childhood is dangerous because of the greater tendency of the process to extend downward to the lower respiratory passages. It

is for this reason that overheated rooms, overclothing, poorly ventilated sleeping quarters, inadequate covering or exposed feet, will often cause or rather pave the way for respiratory diseases in the young. Those who have had experience in the care of children have known the undue wetting of the head, as well as cold or wet feet and hands, to be followed by acute respiratory involvement. There are some who scoff at the idea that such trivial circumstances as cold feet or a wet head may lead to such involvement, and yet, no less an authority than Holt makes the statement that "cold feet are responsible for many attacks of colic and indigestion"; while Carr says, "cold feet are a common cause of catarrh of the mucous membrane." To cold feet may be added the chilling of the body surface, through damp clothing, wet shoes and stockings, wet diapers or bellybands, improper drying of the body after bathing, exposure during inclement weather, especially on raw and windy days, and the keeping of babies on windy street corners under the delusion that fresh air in itself, without regard to special climatic conditions, is free from danger. The foolish custom of exposing the lower limbs of children through the use of particularly abbreviated socks and sandals, is responsible for many of the inflammatory attacks of the mucous membrane of the respiratory tract. To be sure, "cold feet" have been responsible for a great many more and worse things in the general walks of life than colic, indigestion and colds; but that such a condition may prove a forerunner of serious respiratory diseases in infants and young children, of this I am firmly convinced from practical experience. It is reasonable to assume that in the case of an infant or young child, with cold or wet feet, head, or other part of the body, there is a disturbance of equilibrium of the circulatory mechanism, and that as a result of contraction of the blood vessels in a particular part of the body, there ensues a corresponding congestion of some other part of the body, be it nose, throat, stomach, bowels, or lungs. This explanation may appear somewhat crude, and for this reason the viewpoint, which has a more scientific tone, is presented as quoted by Rosenau: *"Exposure to wet and cold,* especially in combination, is a frequent source of lowered resistance. The exact way in which such exposure acts is not definitely known, but laboratory researches offer material for a number of suggestions. Emery sums up our knowledge upon this subject as follows: 'Immunity is to a very large extent a function of the leucocytes which are specialized cells to which the defense of the body is entrusted. Now, the functions (movement and phagocytosis) which can be easily investigated, are found to be dependent in a very high degree to temperature, acting best at the temperature of the body, or slightly above; and it is highly probable that the more subtle functions of the leucocytes may be similarly depressed by a low temperature. The exposure of the skin to cold, especially if the animal heat be abstracted more quickly by evaporation of moisture on the surface, will lead to a cooling of the blood which cirulates through it, and hence to a slight, though appreciable, cooling of the whole blood. This, it is true, is soon compensated for, and no great amount of cooling of the whole body occurs; but, even so, it is quite possible that periodic chilling of the leucocytes during their repeated passages through the cold skin may be sufficient to diminish greatly their functional activity, and to lower the resistance to a point at which infection may occur, and when once pathogenic bacteria have gained a foothold the resistance will for a time tend to decrease. There is also some evidence going to show that exposure to cold may lessen the production of the defensive substances which occur in the blood (alexin, antibodies, etc.), though this is not fully proved. It is worthy of note that the loss of immunity due to the action of cold and wet on one part of the body (such as the feet) is a *general* one, and may result in a nasal catarrh, an attack of pneumonia, acute rheumatism, etc., according to the nature of the infection at hand.' "

Another ingenious explanation and one quite the opposite of this, is presented by Mudd and Grant (*Journal of Medical Research*, 40: 53, May, 1919). These investigators proceeded to show that chilling of the body surface causes a reflex vasoconstriction or ischemia in the mucous membrane of distant parts of the body, such as the naso- and oropharynx, tonsils, etc. They contend that the ischemia incident to the cutaneous chilling, "by decreasing cell respiration or by retarding removal of the products of cell metabolism, or by increasing the permeability of the epithelial cell surfaces to bacterial products, or by decreasing the local supply of antibodies, or by altering the media of the tonsillar crypts and folds of pharyngeal mucosa in which bacteria are living, or by a combination of such factors, so disturbs the equilibrium between the host and the microorganisms as to excite infection." It therefore appears from a scientific as well as from a practical standpoint, that chilling of the body surfaces, whether because of increased local congestion or of ischemia, is a predisposing factor to the development of respiratory involvement, in that it produces conditions favorable for bacterial attack.

Pneumonia is by no means an uncommon condition in the new-born or during the first few months of life; much of a preventive nature can be done at this time. The practice of having the delivery room too cool is far more common than it should be, and in many instances this is responsible for pneumonia in the new-born, especially in premature or weakly infants. The delivery room should be well aired but warm; mothers can stand the warmth; babies must have it. A temporary chilling of the infant's body is sufficient in many cases to cause pulmonary congestion and subsequently pneumonia. New-born infants should be carefully covered with blankets immediately after birth, and a warm water-bag, *carefully protected*, should be *cautiously* applied to the extremities. I have seen several cases of pneumonia in the new-born where failure to carry out these simple precautions was responsible for respiratory disease. Atelectasis of the new-born and aspiration-pneumonia—intake of blood, mucus or liquor amnii—are conditions which are preventable in many instances if the labor is con-

ducted with scientific precision, or if in prolonged labor with delayed respiration or asphyxia, energetic post-partum attempts at artificial respiration with a catheter or the use of a pulmotor, are promptly or persistently applied. I have great confidence in the use of a soft rubber catheter, 14-French, directed along the course of the finger to the epiglottis and aspiration at the distal end, for removing inspired material. I feel convinced that its more general use in cases such as aforenoted, will prevent many cases of telectasis and aspiration-pneumonia in the new-born.

Commendable as may be the custom in maternity institutions of placing the infants shortly after birth in the nursery, away from the mother, to be brought to and fro through the hallways, sometimes from another floor, at nursing time, I cannot help but feel from my own experience that this is responsible for much of the snuffles, nose colds, bronchitis, if not for some cases of pneumonia, seen in this class of infants. In general, infants do not stand chilling well, whether it be chilling of the entire body or certain parts of it, and for that reason uniform body warmth is so essential. I have known infants and young children in whom the use of an excessive amount of cold water to the head or even lukewarm water for that matter, or an undue amount of perspiration, yes, even cutting the hair short, has been followed by acute rhinitis, angina or bronchitis. So, too, many overclothed infants and young children suffer from undue perspiration with subsequent chilling of the body, which is followed by colds. The occurrence of rhinopharyngobronchial conditions, following wet or cold feet, is so common as to call only for mention without comment. The lessons to be learned from these cases are self-evident.

At this point I should like to mention a condition which, in my experience, is not uncommon and which is frequently overlooked or diagnosed improperly. I refer to acute adenoiditis. Because of circumstances aforenoted—chilling of the body, excessive perspiration, undue exposure, wet or cold head, hands or feet—there occurs a congestion and catarrhal inflammation of the lymphatic nodules in the postnasal space. This condition may occur either with the normal lymphatic tissue or with nodules that are pathological in size or number. This adenoiditis or retronasal angina, as it has been called, is nothing more than an acute cold in the nose, with special involvement of the postnasal space, giving rise in nurslings, or in those bottle-fed, to difficulty in breathing, to fever of an intermittent or remittent character, gastric symptoms, nasal discharge, enlarged glands, and not infrequently earache, with redness of the tympanic membrane. These youngsters do not look particularly sick in the majority of cases, but they seem very much distressed; they are restless, irritable, toss about a great deal, and seem drowsy. Teething, bronchitis, autointoxication, febricula (whatever that may mean) are the diagnoses which are given in many of these cases. A careful regard for the warmth of the hands and feet and the body surface, will prevent this annoying and distressing condition in childhood.

Bronchitis, as such, is not a fatal disease in infancy and childhood; it may however, because of lack of care, be the forerunner of pulmonary disease. Given a case of bronchitis, certain simple precautionary measures have been found advisable in my experience; first, the administration of a liberal dose of castor-oil; second, the placing of the patient in bed under cover and under uniform warmth in a properly ventilated room. These two measures will often be all that is necessary, in addition, of course, to carefully regulated diet. The use of castor-oil has several advantages (a) in that it clears the intestinal tract of mucus which is swallowed by those of tender age, thus preventing intestinal fermentation with its attendant flatus and secondary embarrassed respiration, and (b) in that it has an expectorant action upon the bronchial secretion which is not generally appreciated. Those of us who served our apprenticeship in the children's dispensaries of long ago will remember the well-known and widely used cough mixture of that pioneer pediatrician, J. Lewis Smith, composed of syrup of ipecac, sweet spirit of nitre, castor-oil, and syrup of tolu. Dr. Smith knew the value of castor-oil as an expectorant, and many children were benefited because of his keen therapeutic insight.

It may seem farfetched to place children in bed for a mild attack of bronchitis, but I am firmly convinced that this measure alone is all-important, far more so even than medication. In the spring, fall and winter months, the rooms in the modern apartments, or in private houses for that matter, show varying degrees of temperature—some are warm, others are cool, and others are cold. To carry an infant in arms from room to room, through unevenly warmed hallways and rooms, or to have the runabout go from room to room, produces a chilling of the body in these youngsters and a disturbance of the circulatory balance which increases the pulmonary congestion and aggravates the existing bronchitis, if it does not eventually produce pneumonia.

My plea is, therefore, for placing young children in bed at the first signs of a cold, whether it be nasal, pharyngeal, bronchial or any combinations thereof. I recognize the difficulty of keeping runabouts in bed unless they are very ill. For that reason I have attempted to train the children under my care to "like the bed" as it were, by having the parents keep them in bed, part or the whole of one day every month, or more frequently, when they are well, furnishing them at the time with necessary toys to keep them occupied. By this means they are given a rest which certainly conserves their energy, and the taking to bed a the time of bronchitis or any other simple ailment does not appear as a hardship, but rather as part of their mode of life.

What is commonly called a "cold" is infectious and contagious, or better, let us say, communicable, and the same precautionary measures should be exercised for all members of the family, and particularly for the younger members, as in the case of contagious diseases. Children should be kept away from all adult members of the family or older children who present any suspicious signs or symptoms of nasal or bronchial catarrh. The affected individual should have his own bed, a

separate room, if possible, separate handkerchiefs, cloths or paper napkins, towels and eating utensils. All discharges should be collected on paper napkins or small pieces of gauze, and subsequently destroyed by burning. Handkerchiefs, if used, should be boiled. Kissing should be avoided during health as during illness. Promiscuous handshaking should be discountenanced and discontinued as a custom, for, after all, it is only a custom. Breiter, as far back as 1897, in an article entitled, "The Hand as a Propagator of Microbic Disease—A Medico-Social Question" (MEDICAL RECORD, December, 1897) called attention to this phase of the subject. Hand-to-mouth infection is a most prolific source of diseases of all kinds, and particularly of respiratory disease, and it would be better for us as a nation, if we were to adopt the Chinese method of greeting, which consists of placing the fingers and thumbs of the hands together in front of the body and bowing before the one greeted.

Babies and young children seem to feel instinctively that the mouth is meant as a receptacle for all manner of things besides food, and care must be exercised in preventing them from placing therein fingers, pencils, toys, clothing, and what not, particularly "what not." The runabout age of children is notable for what has been termed by Feer, the "Filth Infections." It is at this period of life that children infect themselves with dust and dirt, either at meals, at play or in their association with others. Swapping partly eaten articles of food, toys, etc., at this time and during school age, should be interdicted.

Few realize, perhaps, how much saliva there is extant. Therefore, I cannot refrain at this point from quoting part of Chapin's description of how diphtheria and other infections contained in the secretions of the nose and throat may be disseminated:

> Not only is the saliva made use of for a great variety of purposes ,and numberless articles are for one reason or another placed in the mouth, but for no reason whatever, and all unconsciously, the fingers are with great frequency raised to the lips or nose. Who can doubt that if the salivary glands secreted indigo the fingers would not continually be stained a deep blue, and who can doubt that if the nasal and oral secretions contained the germs of disease, these germs will not be almost as constantly found upon the fingers? All successful commerce is reciprocal, and in this universal trade in saliva the fingers not only bring the foreign secretions to the mouth of their owner, but there, exchanging it for his own, distribute the latter to everything that the hand touches. This happens not once but scores and hundreds of times during the day's round of the individual. The cook spreads his saliva on the muffins and rolls, the waitress infects the glasses and spoons, the moistened fingers of the peddler arrange his fruit, the thumb of the milkman is in his measure, the reader moistens the pages of his book, the conductor his transfer tickets, the "lady" the fingers of her glove. Everyone is busily engaged in this distribution of saliva, so that the end of each day finds this secretion freely distributed on the doors, windowsills, furniture and playthings, in the shops and public buildings, and indeed, upon everything that the hands of man touch. What avails it if the pathogens do die quickly? A fresh supply is furnished each day. Besides the moistening of the fingers with saliva and the use of the common drinking cup, the mouth is put to numberless improper uses which may result in the spread of infection. It is used to hold pins, strings, pencils, paper and money. The lips are used to moisten the pencil, to point the thread for the needle, to wet postage stamps and envelopes. Children "swap" apples, cake and lollypops, while men exchange their pipes and women their hatpins. Sometimes the mother is seen "cleansing" the face of her child with the saliva-moistened handkerchief, and perhaps the visitor is shortly after invited to kiss the little one.
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> Children have no instinct of cleanliness, and their faces, hands, toys, clothing, and everything that they touch must of necessity be continually daubed with the secretions of the nose and mouth. It is well known that children between the ages of two and eight years are more susceptible to scarlet fever, diphtheria, measles, than at other ages, and it may be that one reason for this is the transfer of the secretions. Infants do not, of course, mingle freely with one another, and older children do not come in close contact in their play, and they also begin to have a little idea of cleanliness.

The use of the pacifier or artificial teat or dummy is a common cause of spreading disease and is mentioned only to condemn it. It is a source not only of infection of the mouth, throat and bronchial tract, but its continued use predisposes to congestion of the postnasal space and the development of adenoids, at least an hypertrophy of the normal adenoid tissue in the pharyngeal vault.

Domestic pets are a more frequent cause of acute coryza than is generally supposed or admitted. It is well known that dogs and cats contract whooping-cough and diphtheria, and still better known that they disseminate skin diseases, such as ringworms, favus, etc. Sneezing and coughing in dogs are not uncommon. Attention has recently been called by Roberts (*New York Medical Journal*, July, 1919) to the fact that 90 per cent. of cats and dogs are infected with a specific bacillus producing a contagious form of nasal catarrh and with mixed types of streptococci. The close association of children and adults with these animals is undoubtedly responsible for the production of a large number of nose colds. The undue fondling, kissing and sleeping with dogs should be prohibited by physicians wherever and whenever possible.

In all centers, such as dispensaries, baby health stations, schools, day nurseries, etc., where large numbers of children and adults congregate for treatment or supervision, it is incumbent upon those in charge to dispose of individuals having coughs or colds as soon as possible. The clientèle should be inspected as a group, by a physician, nurse or matron, and those affected with coughing, sneezing or watery eyes should be examined or treated at once or otherwise disposed of. Similarly, wherever possible, overcrowding of these centers should be avoided, particularly when respiratory diseases are prevalent, by so arranging the clientèle that their visits are spread over the morning and afternoon, instead of having them all gather together at one time. Mothers should be instructed to send or bring to these centers only the children registered. These centers should be frequently and thoroughly aired and carefully cleaned with washing soda water or moist moppings, and as much sunlight should be admitted as possible. Sunlight as a destroyer of germs, a purifier of atmosphere, an enemy of humidity, is not sufficiently appreciated. Remember the Italian proverb, "Where the sun does not go the doctor does."

Most of the foregoing statements relate to the predisposing factors of respiratory diseases. There are certain types of children who are particularly susceptible to pulmonary involvement and in whom special care must be exercised. These types as a class present conditions in which there is a weakness of the general muscular apparatus and particularly that of the chest wall, combined with an abnormal flexibility of the ribs, all of which induces to a respiratory insufficiency. It is for this reason that infants and young children with rickets, myxedema, mongolism, infantilism, prematurity and syphilis often succumb to diseases of the respiratory tract. Any condition which lowers the muscular tone of the chest wall and prevents the proper and necessary intake of air and the expiration of organic and other matters renders the child liable to pulmonary disease. These children must be carefully guarded against outside influences which predispose to coughs and colds. In fact, one of the most frequent causes of death in premature infants is infectious bronchopneumonia, and this, because the lungs are not fully formed, because the muscular apparatus suffers from inertia and because the respiratory movements are superficial and shallow. As a result of the predominance of rickets among the Italians and negroes, we find that this class of children contributes a large percentage of deaths from respiratory diseases under ten years of age. The mortality from acute respiratory diseases in children, from the standpoint of parental nativity, is thus noted by Guilfoy: "The spectacular mortality from acute respiratory diseases among children of Italian mothers stands out boldly in the tabulation of rates from the diseases acute bronchitis and pneumonia. It is more than three and one-half times that of children of Russian, Austro-Hungarian and Irish mothers and a little more than double that of American mothers.

"In discussing the mortality from the infectious diseases, it was shown that children of Italian mothers head the list, and this partly explains the high mortality from bronchitis and pneumonia among these children, as these latter diseases are sequelæ to that most contagious disease of childhood—measles. In addition, the Italian mothers take steps to prevent the entrance of cold or fresh air into their apartments, during the spring and winter seasons, and, in consequence, their children are rendered susceptible to infection by the pneumococcus."

All diseases which are nutritional or metabolic in their origin carry with them a reduced vitality or resistance and thereby an increased susceptibility to respiratory infection. Children who suffer from the exudative diathesis also appear susceptible to coughs and colds, particularly if this predisposition is directed toward the respiratory tract instead of toward the stomach, intestines, skin, etc. This diathesis is frequently familial; the attack of cold or bronchitis in these cases often comes on without apparent cause and the knowledge of the existence of such diathesis in other members of the family is important in taking active measures of precaution in the infants and young children. Indeed, there are families in which all or many children are predisposed to frequent involvement of one part of the body or the other. Herrman has reported a family in which the children of four successive births died of pneumonia within two weeks after their birth, and in addition one died at three weeks of age, one at ten weeks of age, and one at eleven months of age, and in which neither the labor, the hygenic conditions, character of feeding, nor mother's milk seemed to be at fault. He attributes these multiple deaths to "an unusual susceptibility of the respiratory tract."

Gastroenteritis in early childhood is also a predisposing factor of pulmonary diseases. Some of these cases develop a severe and fatal pneumonia. Unnecessary and too frequent rectal irrigations with undue exposure and chilling of the body should be avoided. The tendency to subnormal temperature, because of extra loss of fluids and the inanition following the difficulty in feeding should be guarded against by the use of proper protective covering, warm drinks, hot-water bags, enteroclysis or hypodermoclysis, careful feeding, etc.

Bronchopneumonia is frequently secondary to measles, whooping-cough, influenza and diphtheria. Its prevention is largely, of course, a matter of the proper treatment of the original condition. There is a tendency these days with many physicians and many of the laity to allow these children out of bed or the house too soon. The rash of measles is not limited to the cutaneous surface and its disappearance from the skin does not necessarily mean its entire disappearance from the delicate and sensitive bronchial mucous membrane; besides the mucous membranes do not recover from the effects of the rash as quickly as the skin surface. It may appear an exaggeration to say that the child with measles should be kept in bed or indoors for at least ten days after the temperature has become normal, but our experience in the 1918-1919 influenza epidemic taught us that countless lives were sacrificed at the beginning of the epidemic because of the failure of the profession and the laity to recognize the importance of this fact.

The pneumonias which follow measles, whooping-cough, influenza and diphtheria, are frequently so desperate and so often fatal, that it is better to err on the side of caution and to keep the children under close surveillance, rather too much than too little.

The prevention of respiratory diseases in infancy and early childhood is correlated in a way with tuberculosis, at this time of life, and for that matter at later periods, in that repeated attacks of bronchial or pulmonary disease, especially those following measles and whooping-cough, predispose to tuberculosis. It may perhaps be more correct to say that repeated colds bring out a latent infection of early infancy, for it is now recognized that "human infection by tubercle bacilli takes place usually during infancy or early childhood" (Hess). Apart from the dangers to infants and children attendant upon close association with adult members of the family suffering from common colds, cough and expectoration, it is important to remember that many sources of tu-

berculous infection in children are traceable, as Hess has shown, to contact with "communicable but undiagnosed tuberculosis."

As Hess states, "there is a clinical basis for this point of view. It is within the experience of most physicians that persons in apparently normal health may show tubercle bacilli in the sputum. . . . It seems probable that there are many individuals who from time to time excrete tubercle bacilli, who are occasional shedders, if we may use that term, of tubercle bacilli, and who are responsible for the large numbers of reactions encountered among children tested with tuberculin. . . . It does, however, emphasize the fact that where there are young children we should watch more carefully for a communicable tuberculosis among the adults of the household who suffer from apparently harmless catarrhal respiratory infections."

No attempt has been made in this contribution to cover the subject in its entirety. It is hoped, however, that these remarks will lead others to give added impetus and attention to the subject of respiratory diseases in infancy and childhood, with the ultimate reduction in both their morbidity and mortality. Prevention here is more a matter of education than of compulsion and legislation, for it is hard to legislate righteousness, common sense or the golden rule into most people.

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THE SKIN AS AN INDEX TO HEALTH.*

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The problem of valuation of the skin, as an index of health, is a subject of great practical interest to a clinician. The consideration of this problem in its clinical aspects can be properly prefaced by a few general remarks.

Physiology of the Skin.—It is important to keep in mind the peculiarities and unique characteristics of the skin, as an organ of the body. Skin is the only organ diffusely distributed over the whole surface of the body. It is also the only organ that has so many physiological functions to perform. Serving as the protecting encasing of the body, as the seat of tactile, sensory, and sexual nerve endings, as the respiratory, thermoregulating, and eliminative organ, the skin, obviously, must be of a paramount importance in the general human economy. The enormous surface of its vascularization and innervation renders easily understandable the intimate physiological interrelationship between the skin and the rest of the body.

Pathology of the Skin.—This anatomic fact renders plausible the expectation that the skin can serve as a surface indicator of visceral disorders and that a skin disease can be interpreted as a danger signal from within. In fact, this idea has taken such a hold on the layman's mind that nine out of ten patients seeking advice for a skin disease begin their recital of woe with a question: "Doctor, don't you think I need a blood medicine?" This conception of skin disease, as the projection on the surface of internal disorders, has led to the theory of elimination of the body impurities through the diseased areas of the skin. It largely accounts for the reluctance on the part of many laymen to have their skin diseases treated from fear to aggravate the internal condition by the stoppage of elimination and by the closing in of these impurities. This medical superstition, harking back to the medieval humoral pathology, needs hardly any refutation before an intelligent medical audience. However, the survival of this idea still can be seen in the practice of many practitioners in their overemphasis of the systemic treatment over the local in skin diseases.

A factor of tremendous importance for a clear understanding of the skin pathology is the peculiar topographic location of the skin in the human economy, which renders it subject to all kinds of mechanical insults, of chemical and physical irritants. Atmospheric influences, cold and heat, wind and sun rays, normal and abnormal secretions of the human body, a great variety of animal and vegetable parasites, and last but not least, that specific dermatological insult—scratching, due to an intolerable itching, all these influences tend to keep up and to intensify the primary morbific impulse set in motion by a systemic or local factor. Thus a vicious circle is created which tends to perpetuate itself and which can be broken most effectively only by being attacked from both ends, *i.e.*, by applying simultaneously, both the systemic and the local treatment.

Local vs. Systemic Dermatoses.—The first step in valuation of the skin as the index of health should be to determine how many of skin diseases are of local origin and distribution and how many are of systemic. It may be of interest to note that of some 200 nosological forms accepted by the American Dermatological Association more than two-thirds are purely local in origin or distribution, and that less than one-third are of systemic origin. Yet it would be a grievous fallacy to take these statistical inferences at their face value. First, it should be remembered that dermatological classification is based essentially on morphological and histopathological differences and not on etiology and pathogenesis. It stands to reason that local dermatoses, being of a more constant morphological design and of slower histopathological changes, lend themselves more readily to a morphological and pathological differentiation. So it came that local dermatoses were accorded more morphological study and that their classification was much quicker and easier attained than that of more elusive and morphologically inconstant systemic forms.

To local dermatoses belong mainly parasitic skin diseases, affections of skin appendages (hair and glands), tumors, local atrophies, and degenerations. Among systemic or symptomatic dermatoses most important and common are: syphilis, tuberculosis, scarlatinoid erythemata, urticarias, eczemas, psoriasis, dermatitis, herpetiformis, pemphigus, erythema multiforme, Raynaud's diseases, drug eruptions, pigmentations, and generalized atrophies.

The number of systemic dermatoses is small in-

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deed, but so common they are, so difficult of detection are their underlying constitutional factors, and of such vast importance are they to the general economy that their clinical importance easily tops over that of the numerous but easily identified and easily controlled local dermatoses. It is true, the dividing line between systemic and local dermatoses can not be sharply drawn. The most common example would be when persistent and distressing itching robs the patient of sleep and affects his general condition. The absorption of pus from staphylococcic or streptococcic skin infection may bring fever with a subsequent train of constitutional symptoms. A parasitic skin affection, such as blastomycosis or sporotrichosis, from a superficial and purely local condition may metastasize and become systemic with a fatal issue. A harmless looking seborrheic wart may turn into a keratosis, then into an epithelioma which, if unrecognized or mistreated, invades the lymphatics and is transformed into an inoperable visceral carcinoma.

On the other hand systemic dermatoses often present local factors in a striking and heretofore unexplained manner. For instance, it is easy and natural to conceive the infectious exanthemata to be manifested by an universal diffusely distributed eruption; it is equally plausible that toxic rashes and eczemas should be of generalised diffuse character. But how can we explain that the unquestionably systemic dermatosis, psoriasis, has such a marked preference for the knees, elbows, and other extensor surfaces? Why the equally unquestionably systemic dermatosis, erythema multiforme, has a selective distribution on the back of the hands, tibial surfaces, and neck? Why again lichen planus, also due to toxic influences, preferentially starts on flexor surfaces of the forearms and legs? Why so many dietetic and toxic eczemas recur on the same limited areas of the skin? Whether we shall explain this selective localisation by a mechanical irritation or by a trauma, by local vasomotor, neuratrophic reflex influences, or by any other hypothesis, the unavoidable inference is that the systemic factor alone is not sufficient to precipitate the breaking out of skin lesions unless certain local factors determine its localisation.

Local vs. Constitutional Treatment.—In application to therapeutics this means that the detection and elimination of a systemic underlying etiological factor is more of a preventive than of a curative value: It will prevent a recurrence but it may not and in many cases does not clear up the present local lesions because the local resistance and vitality are not altered by the constitutional treatment.

Another potent and specific reason why constitutional treatment alone can not clear up local lesions has been mentioned before. This is the peculiar exposed location of the skin in the human economy which renders it subject to a constant exposure to all kinds of external irritants. Even should a local lesion be caused entirely by a systemic factor, once started it evolves a secondary chain of pathological changes of its own, independently of the systemic factor that had originally started it. These secondary pathological changes may consist of chronic cellular infiltration, lichenification, infection with streptococci, seborrheic contagion, etc. To combat this local factor one must not only break up the vicious circle of local irritation produced by the interplay of itching and scratching, not only meet all secondary local developments and the individual indication of the case, but above everything else one must strive for a local stimulating and alterative effect to raise the local resistance and the recuperative power of the affected area. This alterative effect of cellular stimulation is obtained best by the exposure of the affected area to the actinic rays of the *x*-ray or ultraviolet light. Both of these agencies are the best weapons in the dermatological armamentorium, and they can be truly called the specific biological cellular stimulant of chronically inflamed tissues. Thus the best and the quickest results in systemic dermatoses can be obtained by the simultaneous application of both constitutional and local treatment.

The Semeiological Service of Dermatology to General Medicine.—The preceding remarks give a sufficient insight into the correlation between the pathology of the skin and that of the general economy to warrant the attempt at a valuation of the skin as the index of health. That the skin reflects in a general way the state of general health has been accepted by the laity and the profession alike as a hygienic axiom. This is what the layman calls a pure complexion in healthy, and sallow dirty in chronic invalids.

The professional mind naturally looks to dermatology for more definite and specific indications of systemic disorders. The ideal of skin semeiology from the point of view of an internist would be to have a well defined dermatological design corresponding to every type of visceral disorder.

Unfortunately this ideal can never be attained, because there is no specificity between the morphological type of dermatological lesions and the pathogenetic factors responsible for them. Not only the same etiological factor can produce different types of skin lesions, but *vice versa* the same type of skin lesion may be produced by different etiological factors.

The old time conception of skin disease, as a rigid and fixed pattern, remaining stationary throughout its course, has been abandoned for good. The modern dynamic viewpoint in general pathology has modified this conception to the extent that skin disease, as a clinical entity, retains its essential morphological characteristics and traits, but its clinical picture may present infinite variety and modifications depending on secondary changes, location, and peculiarities of the individual case.

Therefore, while dermatology at the present time is not able to furnish the internist with a clear-cut and numbered specimen of a skin picture for each systemic disorder, it does offer to him several groups of clinical skin characteristics and morphological traits for various systemic pathological conditions. These dermatological symptom-complexes or syndromes possess, some of them pathognomonic, and others merely suggestive diagnostic value. If persistently looked for and carefully analyzed, they can be of enormous clinical assistance in detecting various visceral disorders.

Dermatological Syndromes of Systemic Significance.—Up to the present the number of these syn-

dromes is small, but the systemic pathogenetic factors revealed by them are so destructive and universal, and the number of the cases falling into these groups is so enormous, that the practical value of these syndromes is great indeed.

Syndrome of Syphilis.—Possibly the oldest and the best established of all is the syndrome of syphilis. It is surprising to what little extent it is utilized by the general profession. Only the frankest and the most exquisite in type lesions are used for the clinical diagnosis of syphilis. Yet the specific traits of cutaneous syphilis can be expressed in very few words. They are: dusky red, raw ham, or copper color, sharply defined borders, deep cutaneous and subcutaneous infiltration, tendency to form flat lesions, serpiginous, kidney-shaped, or circinate in shape; in the later stage tendency to ulcerate and to form soft, gradually depigmented, wrinkled scars of a cigarette-paper variety.

These specific stigmata in various combinations and grouping are found in practically every case of skin syphilis, and are pathognomonic. In view of this it is a matter of wonder and regret to see how much stress is laid my many practitioners on the specific history and how faithfully they cling to the habit of questioning into the venereal past of the patient. What a futile and perfectly useless expenditure of time and energy on the part of a physician to play detective and to pry into the venereal past of the patient when he has at his command means of objective diagnosis, infinitely more reliable and promising of results! It is neither scientific nor practical to predicate a diagnosis on the veracity, memory, and power of observation of the patient. It is a common experience that the primary syphilitic lesion is more often overlooked and ignored than any other. Even secondary generalized rashes and mucous patches are not uncommonly overlooked or misinterpreted and forgotten by the patient. Instead of questioning and cross-examination a physician should strip and carefully examine the whole surface of the body, searching for any evidence of cutaneous syphilis. One is rewarded for his efforts more often than it would be expected, by finding either an active lesion or valuable retrospective evidence in the form of leucodermatous spots or kidney-shaped, soft, flexible, atrophic, pigmented, or depigmented scars.

Another factor commonly abused in the clinical diagnosis of cutaneous syphilis is the Wassermann test. There is a tendency on the part of many practitioners to shirk the burdens of clinical diagnosis by accepting unreservedly the dictum of the laboratory. In fact, serologists themselves have found it necessary to caution against the absolute acceptance of the Wassermann test by qualifying it merely as one of the clinical symptoms of syphilis. A negative Wassermann is admittedly inconclusive and can be found in clinically active and well marked cases. Positive Wasserman does mean syphilis but, obviously, does not necessarily mean that the present skin lesions are of a specific nature, for the simple reason that a syphilitic is not only not immune against other skin diseases, but is in fact, more predisposed to them than an average individual.

The Wassermann test has an absolute value in the cases of visceral and cerebrospinal syphilis, and equally so in the therapeutic control of cases of syphilis. In the presence of skin lesions the Wassermann test should be interpreted only in conjunction with these lesions, and in the case of a negative Wassermann the clinical evidence should be given precedence.

Tuberculosis Syndrome.—Another cutaneous syndrome of great clinical importance, tuberculosis, is still less appreciated by the general profession. Besides skin tuberculosis proper, represented by lupus vulgaris and ulcerating and verrucous types of tuberculosis, there is a large number of so-called tuberculides due to the hematogenously deposited bacilli or their toxins. Here belong scrofuloderma, folliculitis, acne varioliformis, lichen scrofulosorum, and erythema induratum or Bazin's disease. All these manifold lesions of tuberculides are, unquestionably, more frequent than recorded in the literature. But due to their insignificant clinical appearance, sluggish chronic course, and the lack of a subjective course they are, as a rule, overlooked and ignored. Yet their clinical significance is much more definite and conclusive than that of the tuberculin test, the diagnostic value of which decreases with the age of the patient. The presence of tuberculides always points to the active or semilatent focal tuberculous infection somewhere in the system, most likely in the lymphatic glands.

Diabetic Syndrome.—Another valuable syndrome offered to the internist is diabetes. A dry lusterless skin, local or generalized pruritus, eczema of the genitals, attacks of furunculosis or carbuncles, dry gangrenous ulcers, and exanthomatous formations—all these symptoms, singly or combined, should suggest an underlying glycosuria. In fact, it is not of rare occurrence that the dermatologist is the first man to detect a latent diabetes on the strength of some of these symptoms.

Erythema Multiforme Group and Focal Infection.—A cutaneous syndrome which should be of intense interest to the internist and still more to the pediatrician is the group of erythema multiforme because of its clinical relationship to the so-called rheumatic infection.

Three types of the erythema multiforme group are particularly often associated with constitutional symptoms of malaise, fever, and involvement of the joints; erythema multiforme of large papular type, erythema nodosum, and the purpuric type, which according to the intensity of constitutional symptoms is termed purpura rheumatica, purpura hemorrhagica Werlhofii, and Henoch's purpura. The early recognition and correct interpretation of these lesions, when they precede visceral symptoms, can be of the greatest service in the prevention of further development of the rheumatic infection and its cardiac complications. This syndrome should be gravely regarded, as a surface indication of deep streptococcic focal infection somewhere in the system, calling for a thorough search, and it should not be lightly dismissed, as is often done.

The group of erythema multiforme is the main representative of dermatoses due to focal infection. However, many other types of dermatoses may be the result of focal infection. Most common clinical types of this character are: erythema-

tous, bullous, herpetic, less frequently eczematous and psoriaform.

Leukemic Syndrome.—Quite recently there has been introduced a leukemic syndrome. It includes besides bluish tumors, which are true granulomata, also persistent pruritus, prurigo-like rashes, bronze-like pigmentations, and purpuric lesions. The appearance and persistent development of these lesions without any definite etiological factor suggests a possibility of latent leukemia or Hodgkin's disease and calls for a blood examination.

Precancerous Dermatoses.—Among dermatoses of vast clinical importance must be included the group of precancerous dermatoses. The importance of skin cancer in the general cancer problem and its quota in the general cancer mortality is, surely, not insignificant. Here belong: seborrheic warts, senile and arsenical keratoses, Paget's disease, leucoplakia, and pigmented melanotic nevi. Each of these lesions is a potential source of malignancy and should be thoroughly removed by cauterization or excision. Every destructive and metastasizing carcinoma starting from the skin has been at some time one of these insignificant and harmless looking seborrheic warts or keratoses. The early recognition and prompt destruction of these precancerous lesions would seem to be a self-evident indication; yet thousands upon thousands of people are walking around with these keratoses without the slightest attention on the part of their medical attendants.

Endocrinous Syndromes.—Possibly the most interesting and promising, from a therapeutic point of view, are cutaneous syndromes based on the deficiency and disorders of internal secretions. The best defined syndromes have been developed about the thyroid gland, which is considered the keystone of the whole endocrinous system.

Between the two extreme types of thyroid dysfunction represented by Graves' disease, *i.e.* hyperthyroidism on the one hand, and by myxedema, *i.e.* hypothyroidism on the other, there is a great number of cases of various grades of intensity of glandular dysfunction. Dermatologically hypothyroid cases are more frequent and are more amenable to therapeutic control.

The hypothyroid skin syndrome is manifested by thick, dry, pasty skin, suppression of perspiration, lusterless brittle hair, and alopecia. Many cases of dry chronic eczema, psoriasis, ichthyosis and scleroderma have hypothyroidism as the underlying etiological factor, and they readily improve from the administration of thyroid.

Hyperthyroidism on the other hand produces thin, perspiring, easily flushed skin, urticarial attacks, pigmentations, distrophies of the nails, keratinization and pruritus. The relationship of other ductless glands and their internal secretions to skin disorders is not as definitely established, yet a number of clinical observations is recorded to substantiate such relationship.

The association of pathological changes in the adrenal glands with the Addison bronze-like skin discoloration and purpuric rashes, as well as the successful treatment of some cases of vitiligo with an extract of suprarenal glands is well known.

The disorders of the hypophysis gland are manifested by a symptom complex of acromegaly, fibromatous growths, warts, alopecia in men and hypertrichosis in women.

Sex Glands.—To the internal secretions of the sex glands are attributed manifold cutaneous disorders; such are, skin changes after castration, herpes progenitalis, erythema multiforme, urticarias, vicarious hemorrhages under the skin and the nails associated with the disturbances of menstruation, types of eruption described under the name of dermatitis dysmenorrhoica—pigmentation of the linea alba and the nipple, chloasma uterinum, and impetigo herpetiformis occurring in pregnancy, and a tendencny to hypertrichosis and acne rosacea in the climacteric period.

The frequent observance of disorders of internal secretions in a very large clinical group of angioneurotic dermatoses such as Raynaud's local asphyxia, symmetrical gangrene, sclerodermia, angioneurotic edema, herpes, and dermographia, is highly suggestive of the close association and correlation of the sympathetic vasomotor nervous apparatus and of the ductless glands.

Anaphylactic Dermatoses.—One of the latest deductive principles accepted by dermatology is anaphylaxis. Its practical application in the form of food protein tests by intracutaneous and subcutaneous methods has for its purpose first to identify the protein responsible for the anaphylactic symptoms and then to effect the desensitization to this substance by injecting gradually increasing doses of it.

I have no experience with the desensitization procedure, but I have used food protein tests in a number of cases for diagnostic purposes and have found them extremely serviceable for the isolation of the offending proteins. They simplify the dietetic control of anaphylactic dermatoses and put it on a definite and rational base. As a whole, the method is too young to admit of tangible results.

Conclusions.—This concludes the presentation of the most important and the best defined syndromes and principles which modern dermatology offers to the internist for clinical utilization. Taking full advantage of these offerings would, no doubt, not only increase the efficiency of the general practitioner in handling skin cases, but to an equal degree would broaden his clinical insight and understanding as an internist. To derive maximum benefit from the dermatological research the internist must revise his old-time conception of dermatology, as a peculiar and detached branch of medicine, devoted largely to a hair-splitting morphological differentiation and to local medication. Dermatology has passed the morphological and pathological stages of its development and now it has entered the final and most productive stage, namely, the biological. The best research of this period centers its attention on the problems of coordination of cutaneous symptoms with the visceral, and on the interpretation of morphological differences in terms of systemic pathology. Obviously, the best results in this field can be obtained only by cooperation of the internist and dermatologist. At present an incredible amount of dermatological material in general practice goes to waste ignored, overlooked, misinterpreted, and unrecorded. On the other hand a large number of cases in dermato-

logical practice in the absence of a thorough systemic examination receive only symptomatic relief, the cases remaining understudied and only partially understood. Dermatological research will not reach its full fruition and will not render its fullest service to the internist until it enjoys the closest cooperation and interchange of clinical observations with general medicine.

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TREATMENT OF SPLANCHNIC RELAXATION BY ELECTRICAL CURRENTS.*

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In the treatment of any condition, it is a logical thing to consider the pathology and etiology before attempting to outline the therapy, and as a general thing most abnormalities are so treated. The above condition offers no exception to this rule.

Splanchnic relaxation has been variously termed splanchnic neurasthenia, splanchnoptosis, gastroenteroptosis, and intestinal stasis, all of which are descriptive of a part of the underlying conditions. The best known, splanchnic neurasthenia, is perhaps quite a little more suggestive of the symptomatology, but the word "neurasthenia" means so little in this day, that it would seem best to drop it. Relaxation or insufficiency would appear to express more properly the underlying conditions, and therefore might be better terms to use.

The splanchnic circulation is made up of the portal vein and its branches together with the arterial branches of the celiac axis. Of this the liver and spleen contain the larger amount of blood, the liver alone receiving about one-quarter of the whole body's circulation. The splanchnic vessels are capable of containing the whole amount of the body's blood, which demonstrates the possibilities of a profound state of relaxation.

Normally, when one stands erect, the splanchnic vasomotor mechanism causes a constriction of the vessels, which results in an elevation of the blood pressure. When there is a loss of tone of this nerve mechanism, the reverse will be true, a dilatation of the vessels will be the result, and an engorgement of the organs will ensue. In the course of time, repeated engorgements of the liver, spleen, and other organs will assume the pathological type. Normally also the process of digestion adds to the engorgement of the digestive tract, and the liver plays its part in this. This engorgement is physiological and gradually disappears as the digestive process is finished. When, however, there is already a pathological engorgement established, this increases materially at each ingestion of food, which the patient notices and speaks of as an added discomfort to what has already been felt.

Of the nerve supply, the splanchnic is the largest and most important of the vasomotors of that region. Its fibers arise from the 5th to 12th dorsals inclusive, which corresponds to the intervertebral interspaces of the 2d to 8th dorsals. It descends obliquely inward in front of the bodies of the vertebræ along the posterior mediastinum, perforates the crus of the diaphragm, and terminates in the semilunar ganglion, distributing filaments to the renal plexus and suprarenal gland. The great splanchnic nerve of both sides is received into the solar plexus and the ganglia, as are the lesser splanchnics and the right pneumogastric, and this plexus and ganglia supply all of the abdominal viscera. The great nerve supply, both of the vasomotor and sympathetic systems, affords an easy explanation of the difficulties that may arise from an undue amount of irritation of these nerves. We may also have referred pains in the abdomen from irritation of the nerves at some distal part, as will be shown by some excitation of the right pneumogastric being referred to its terminal in the abdomen. Irritation of the communicating branches between the 11th dorsal and the 2d lumbar, causes marked dilatation following a primary contraction, as is the case with irritation of the vagus as noted above. This irritation long continued, finally causes an exhaustion of the nerve energy, and gives rise to a chronic dilatation of the vessel walls, amounting to a practical paralysis. (Landois' "Physiology.")

What part constipation plays in the pathology of this condition may be suggested by the absorption of the bacterial products of the intestinal tract. Autointoxication is the term used in earlier years, but at present writing is not held in favor by some. According to Adami and McCrae ("Pathology," p. 106), that while indol introduced into the tissues sets up headaches, muscular weakness, and a sense of fatigue, conditions resembling those ascribed to constipation, there is not the slightest evidence that indol is produced either from the tissue cells, or even by the digestive juices: It is a tryptophane derivative, a product of protein disintegration. It is formed by the proteolytic activities of the colon bacillus, and along with cresol and the etherial sulphates, is absorbed, more particularly in obstruction of the upper part of the small intestine, being discharged into the urine as indican.

The fact that so many of these patients have ptotses with kinks, acting as obstructions to the fecal current in the small intestine, accounts for the almost universal finding of indican in the urine of these cases. There is also another probable factor involved in the pathology. This is a perversion of the internal secretions of the tract. Since modern advances made in the study of endocrinology, we find these problems coming more and more to the front for solution, but we are not as yet in the position to lay claim to any great certainty of knowledge. Just what part secretin plays in these cases has not been determined. We know from experiments that it stimulates the flow of pancreatic juice, as also does the secretion of the pyloric glands stimulate certain glands in the cardiac portion of the stomach.

No doubt we will learn in time just where and how these hormones are influenced by the various electrical currents when applied for the correction of these abdominal conditions, which will scientifically and satisfactorily explain the excellent clinical results of treatment.

The symptomatology of splanchnic relaxation is

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suggested by the pathology. Added to the symptoms enumerated earlier in the paper, we have insomnia as a prominent one. Nervous excitability is also featured, and mental depression follows soon in its wake. This may become a full-fledged melancholia in time, and may be termed pathognomonic of the advanced stage. Some of the minor features are digestive disturbances, dizziness, tinnitus aurium, migraine, flatulence, and abdominal pains. Many speak of a sense of weight in the lower abdomen, a dragging down that is most uncomfortable. This may be accounted for by the actual sagging of the abdominal organs, with the body's posture changed to meet it, together with the actual nerve disturbance incident to this.

In determining this condition of relaxation, it is necessary to make some physical examination with the clothing removed from the abdomen. The patient, standing, shows the sagging, and palpation will demonstrate the change of position of the organs. In the recumbent position, normally the abdomen drops moderately below the rib line, while in this condition it rounds out more or less prominently, according to the particular case. Here again palpation will elicit points of tenderness, faulty position of the organs, and a tenseness of the abdomen, which may be in part due to flatulence, but in some largely due to the liver engorgement.

It is not the purpose to enter into a discussion of the diagnosis further than to mention a prominent factor that is quite constant. This is the disparity of the blood pressure findings in these cases, and this is pathognomonic. The same applies to the pulse findings. It may be mentioned simply by stating that as a rule the pressure is of the hypotension type, irregular in the arms, and higher lying down than sitting. The pulse as a rule is more rapid in the recumbent posture, thus reversing the rule.

Treatment of splanchnic relaxation resolves itself empirically into three subdivisions: hygienic, including diet; electrical or physical measures, and mechanical, including exercises of recognized types.

Proper living will do much toward prevention of the later stage when undertaken early enough. Dietary care in the line of cutting down of proteins, or in many cases the total elimination of these, will produce favorable results. This will be evidenced by the lessening and disappearance of the indican in the urine, as well as by a sense of betterment felt by the patient. They all do well under the vegetable and fruit diet, with some fats, such as olive oil, butter, and perhaps bacon. Cereals may be used in cases where they agree, or where the patient is not afraid of adding to the adipose. All need to keep the system flushed with plenty of water, and in the cases of hypotension large amount may be taken to advantage.

The bowel must be kept free from accumulations. A dose of castor oil once in two weeks is a good rule. During the early stages of treatment, owing to the intestinal stasis, a mild laxative may be given as needed, but it is advisable to leave these drugs off just as soon as possible. Mineral oil or agar may be given with safety, as they are not drugs and are not absorbed into the system. As these patients are easily influenced psychically, it is best to dwell as little as possible upon this feature of the trouble, as many get obsessed with the idea that the bowels must be frequently moved, and are not satisfied by the ordinary regular actions.

Rest before meals will be advisable in the average case, particularly before the noonday meal. Fifteen or thirty minutes in the recumbent position before eating will do much to restore tone to the digestive organs. Some are benefited by a similar rest after the hearty meal. Each case must be advised according to its merits.

Exercise in the open air and sunshine is a very important part of the treatment. At first the sense of fatigue will make it difficult to get the cooperation of the patient in this matter, but a carefully given outline of what is to be done will be more sure of getting the patient to follow out the directions. It is best to start with short walks which can be gradually increased until a sufficient distance is walked daily. The patient's interest will be aroused in this way and cooperation secured. Always advise against getting overtired.

As insomnia is one of the prominent symptoms, and one that causes great anxiety on the part of the patient, his fears may be largely removed by the statement that resting quietly in bed two or three hours will represent at least one hour of sleep. As under the treatment insomnia usually leaves early, it is advisable not to use drugs for producing sleep, assuring the patient that these simply put off the evil day and do no permanent good, and by not using them the chances are far more favorable for results to be had early. In the writer's experience, the patients have slept fairly well after a few treatments, and normally after a couple of weeks, and soporifics have never been used.

The actual treatment of these cases by electrical currents will be outlined by what the writer does in the average case, but it will be recognized that individual cases may require variations from this. It may be good policy to take up each part in detail, as some may not be conversant with the methods used, and may not fully understand unless the technique is given.

The first thing to do is to apply the high frequency current to the liver and splanchnic area by the diathermic method. To do this, a machine that will deliver the D'Arsonval current is essential, as this is the current of greatest amperage and lowest voltage, which means the greatest amount of heat will be supplied to the tissues through which it passes, and at the same time produce the least disturbing effects.

The electrodes used are made of flexible metal, usually lead and zinc, which can be cut and fitted to any part of the body with ease. Their size should be approximately 3 x 5 inches for every 1,000 milliamperes of current. The electrodes may be differently shaped, but the relative proportion should be kept so far as is possible in order to secure the best effects. In applying the electrodes care must be used in the actual fitting of the anterior one, as the ribs will in a measure prevent accurate approximation. The posterior electrode will offer no difficulty as the back is easily fitted. The electrode should be moistened and, in some cases where the skin is dry, it should be well dampened

also, otherwise sparking between the metal and the skin will take place and a burn be produced. These burns are slow to heal and offer difficulties to further treatments.

The electrodes are usually held in place by the patient, using the body weight for the posterior and the hand or hands for the one in front. Turkish towels are used over each to absorb the excess moisture and to make it possible to hold the metal plate. By the use of these towels the writer feels that scalds are prevented, as excess moisture may be quickly turned to steam by the intense heat of the current, which will be prevented by this method. Another point to be observed is that the electrodes should be as nearly opposite each other as is possible for an even distribution of the current. The tendency of electrical currents to go by way of least resistance will be shown by its accumulation at the end of the electrodes that happen to have the least distance between them, so if the metal plates are so placed that the two ends are too near the curve of the body, the current strength will accumulate there, and the chances are that a burn will follow, or the patient will complain of too much heat, so that the current will have to be reduced in strength, to the patient's disadvantage.

The length of treatment varies with the case, the large-bodied patient requiring a longer time, as a rule. The average time is twenty minutes, but thirty may be given to advantage at times. The amount of current also varies, but the average is from 800 to 1,200 milliamperes. It is the writer's practice to use moderate amperage rather than the larger, unless local elimination is essential or there is considerable pain to be relieved.

The effect of this treatment will be seen by a gradual lessening of the liver engorgement and better bowel activity, no doubt because of an improved condition of the intestinal secretions.

The next step is the application of the sinusoidal current. This may be given by the use of either of two types of apparatus, galvanic or faradic. The writer for some years used only the galvanic type with splendid results, but of recent years more use has been made of the faradic type. In the latter the use of different shaped cams make it possible to give the current with many variations that appear to be beneficial. By this we secure deeper effects and the long and short effects alternating, as one chooses, according to the individual needs. It is well to have both types in the office, so that one may be able to select the best for each case that presents.

The electrodes used for this treatment are pads made of metal covered with asbestos and gauze, the latter sufficiently thick to hold moisture well. Each pad should have a metal plate on the upper side for making the proper connection with the cord attached to the machine. These pads are available in the market made much better than one can make them in the office.

These should be sterilized by boiling, preferably, and the sterilizer can be used to keep them warm, as warm electrodes carry the current better and are more comfortable to the patient. It will be observed that they are applied wet, and, in fact, the writer applies them as wet as is conformable with comfort to the patient, using the turkish towels to absorb the excess and to protect the clothing. In the sinusoidal current there is no polarity, or rather the polarity changes with each wave, so it matters little about placing the pads from this standpoint. It is usual to apply the smaller as the active one over the spinal area, and the larger over the abdomen. The spinal pad should be wide enough to cover the skin at least an inch each side of the spinal column, and long enough to cover the intervertebral spaces of the nerves involved.

The usual size is 4 x 6 over the spine, or a longer one if preferred, with either a pad 8 x 10 or 10 x 12, as one may choose for the abdominal application. This latter pad may be applied directly over the center of the abdomen, or it may be placed over the ascending colon for a part of the time and then over the descending colon. The treatment time is usually twenty minutes, and the strength of current measured according to the patient's tolerance, as few, if any, of these machines have a meter in circuit for measuring the current strength. No doubt the machines of the future will have to make this change to meet the needs more accurately.

Another method approved by some is that by the use of bipolar electrode. This is made up of two small pads upon a frame that allows of adjustment for width. This is strapped to the body with a pad on each side of the spine just below the inferior angle of the scapula. In this type there is no need of the abdominal pad. The one objection to this is that the patient must sit up in a chair instead of lying down, and as a rule the patient is more comfortable in the recumbent position. The rates of sines should be about twelve to the minute in either type of treatment.

In this treatment, the pads being very wet, the turkish towels come in play again to protect the clothing of the patient. The tonic effect upon the nerves and musculature is quite pronounced, and peristalsis being activated, insures a better state of the bowels.

As a final step in the treatment, vibration is essential. Remembering the nerve distribution, we vibrate the interspaces of the 2d to 8th dorsal vertebræ for two minutes, for its stimulating effect. In some cases the heart muscle tone is below par, in which case we vibrate the interspace of the 7th cervical and 1st dorsal for two minutes.

The writer cannot too strongly condemn the practice of some who vibrate the whole spinal column, as it is not at all scientific and does not meet the requirements and in some cases may do actual harm. To be of real value, vibration should be scientifically applied, and one should be conversant with the nerve distribution.

In some advanced cases of ptoses the mechanical supports may be of distinct value, particularly during the early part of the treatment. These belts or pad supports not only support the abdominal walls, but they increase the intraabdominal pressure which is lacking in all of these cases. They should be accurately fitted and only worn for a time until the muscle strength is restored by proper exercises and other means. In applying these the patient should be in the recumbent position with the hips higher than the trunk so as to allow gravity to carry up the organs. The same applies to the corsets of the ladies, which may be laced

tighter when standing. These corsets should be of the front lace kind, long in front, fitted by measurement, and laced from below upward, which will make them more or less loose at the top.

Exercises were just mentioned as being of value. This is recognized by the profession generally, and all know just what are needed, so it will not be necessary to go into detail about them. The kind most needed are those that bring the abdominal and back muscles most actively into play. One thing must be borne in mind: Never tire out the muscles in this effort to build up. It will be far better to gradually work up to a more full system of exercises than to undertake to do a number at one time. Correction of posture is of great importance in these cases.

It would seem that the subject is almost interminable, but as the main parts of it have been treated, the writer will desist from further details and in conclusion will simply repeat that in his judgment the important point after all is early recognition of this condition, and with this the rest is easy, and he trusts that this poor effort will inspire you with a more keen desire to do all that is in your power for these sufferers.

Maryland and Pacific Avenues.

ACUTE INTUSSUSCEPTION;

REPORT OF A CASE RELIEVED BY ENEMA.*

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One is greatly surprised in reviewing the recent literature on this subject, to note how few references there are to this mode of treatment; while, by contrast, many reports similar to this one can be found in the medical literature of five years or more ago.

The case here reported was a typical case of intussusception clinically, and most authors agree that there is a very typical picture of this condition.

There are many who claim that when these symptoms are manifest, immediate operation should be resorted to. It is to suggest the *utility of giving less radical methods at least a hasty trial, especially in those cases seen early*, that I desire to report this case.

Not all pediatricians and surgeons are in favor of immediate operation, and there are those who advise the use of manual and aerohydrostatic methods, even in long-standing cases. Notable in this group are several Danish clinicians.[1] Porter[2] advocates this method, yet sees "no good reason why the abdomen should not be opened and a similar procedure be undertaken in full view of the surgeon." Hess,[3] in a very interesting review of this subject, says, "It is before decided pathological changes in the intestine will have taken place that we may hope to obtain results by irrigation, or other mechanical methods of reduction." Griffith[4] advises the use of non-surgical methods of reduction in cases that have lasted only one or two days. McMurtry[5] cites a case of nonoperative reduction after three days duration. Apfel[6] gives a little review of the literature and mentions Kerley's case of reduction of an intussusception, which had existed six days, by means of water pressure. Dawe[7] reports a case of acute intussusception reduced by manual manipulation over the abdomen, together with enema.

So I could mention numerous other cases of successful reduction by nonoperative methods, especially as recorded in the older literature.

It is only proper to state that even in my cursory review of the literature I found reports of cases of fatal termination after resorting to these aerohydrostatic methods of reduction, as due to causes other than the delay in operation. Fenwick[8] reports the use of enemata in a case of intussusception causing rupture of an ulcer in the transverse colon.

I might also mention that several cases of spontaneous cure of intussusception are reported. Usually the parts involved sloughed and were passed off in the stool.

The etiology, in these cases, is often very difficult to determine. All agree that the condition is most frequently seen in robust infants, between the ages of six and sixteen months.

Cubbins[9] reports several cases in which he found a long mesentery as the anatomical pathology. However, it seems that some contributory or exciting cause must be present, in addition. Tumors of various sorts, intestinal worms, persistent constipation, medication, and other widely dissociated causes are mentioned. Hess[3] in his collection of 1028 cases with statistics, discusses this phase of the subject more in detail.

Grace A., age 7 months, breast fed. Seen at 2 P. M., December 3, 1919, when her mother gave the following history:

Chief Complaint.—Vomiting yellowish fluid material since about 10 A. M. with absolute refusal of all food. Also intermittent attacks of severe griping abdominal pain, coming at irregular intervals, causing rigidity of the entire body; with this the child would scream, because of the pain. These attacks lasted but two or three minutes, leaving intervals when she would go to sleep, apparently exhausted, especially towards the latter part of the morning. The child had passed two normal stools early that morning.

Family History.—Mother well. Father now suffering with pulmonary and renal tuberculosis. The baby's von Pirquet reaction was negative.

Past History.—The only thing suggestive of an etiology was a slight constipation, which the infant had been having for the past week, having but one rather hard movement per day. The mother said the child weighed almost 18 pounds one week previous.

Physical Examination.—A robust child, extremely pale, apparently in severe pain, and in fear of my approach. The abdomen was slightly distended, but soft, with no rigidity or muscle spasm. There appeared to be generalized tenderness, but I was unable to palpate any masses. I did not, at this time, make a rectal examination. The temperature, by rectum, was 98.6°. The child's skin was clear. Throat and ears negative, as was also the chest. All reflexes were active and there was no neck rigidity.

Immediately after this examination the child vomited a yellowish clear fluid.

I advised the mother to put the child to the breast every four hours for but five minutes at a time, to give plenty of boiled water, and to apply dry heat to the abdomen.

At about 7 P. M. the same day, I was again asked to see the baby, because it had had an evacuation of blood from the rectum a few minutes before. I learned that the vomiting and attacks of pain had continued much as before.

*Read before the Clinical Conference of the Surgical A service of the Brooklyn Hospital, January 10, 1920.

The infant showed the same extreme pallor and fear of all who approached. The abdomen remained slightly distended but soft, and I could palpate a small, firm, oval mass about the size of a walnut, in the left lower quadrant just to the left of the midline. During this examination the child had another mucosanguineous stool. By rectal examination I was just able to touch a smooth mass high up and to the left.

I then had about a quart of sterile water placed in a syringe suspended about 4 feet above the level of the child. The child was placed horizontally on her back and a copious quantity of water was allowed to flow into the bowel, while I held the anal tissue firmly about the rubber tip for about a minute, to prevent its escape. Bloody fluid was then allowed to escape, and more sterile water was injected. This procedure was repeated until we had used almost the entire quart of solution. With the escape of the last fluid, I believe, and this belief was confirmed by all those who were about, some flatus was expelled. However, the amount was only small and I thought it advisable to send the child to the hospital at once. Before sending her I made an abdominal examination only, and was then unable to feel any mass.

After the enema, the mother says, the child seemed greatly improved throughout the time she was able to observe it. At the Brooklyn Hospital my diagnosis was confirmed. Abdominal and rectal examinations here proved negative. Another enema was given with bloody fluid return. It was decided not to operate at once, but merely to observe, for the child was greatly improved. It did not vomit, nor pass another bloody stool (voluntarily) after the enema that was given at home, and remained apparently free from attacks of abdominal cramps. The following day another enema was given with the same mucosanguineous return but no feces. However, on the day after this the child had a normal fecal movement. The child received albumin water the first night after admission but the following day was placed on 4-hourly breast feedings. She was detained at the hospital till all occult blood had disappeared from the stool (a period of one week) and then discharged cured. Her stay in the hospital was afebrile.

Her weight on discharge was 15 pounds, 10 ounces. Several months have since elapsed, and she has had no symptoms of a recurrence.

Various heights are recommended for the elevation of the enema container, but after reviewing the literature, I conclude that it is not advisable, under any circumstances, to have a greater elevation than 6 feet.

Pynchon, quoted by Reeves,[10] says, "The fall of water may vary from 15 to 30 feet, according to the age of the patient, and the stages of the trouble, providing that a lesser fall of, say, 6 feet, in alternation with massage, is not successful." Reeves emphasizes the importance of intestinal irrigation in the treatment of intestinal obstruction but advises against the use of such great pressures and mentions experiments upon animals where fluid was forced from the anus through the mouth.

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621 St. Marks Avenue.

AN UNUSUAL CASE OF DELAYED POSTOPERATIVE HEMORRHAGE FOLLOWING TONSIL AND ADENOID REMOVAL.

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When the Mackenzie and the Mathieu tonsillotomes were the customary instruments for tonsil operations, with removal of adenoids, postoperative hemorrhages from tonsil crypts and stumps were of frequent occurrence. With the advent of the various forms of cold wire snare these hemorrhages became less frequent. Following the substitution of the Sluder operation where practicable, the number of patients having postoperative hemorrhage has still further decreased. In a very great majority of cases such hemorrhages come from the tonsil area. To find bleeding from the nasopharynx in the adenoid region, commencing again after twenty-four hours following the operation, is comparatively uncommon.

The following history shows the need for keeping in mind the possibility of *late* nasopharnyngeal hemorrhage:—

A girl, 8 years old, had negative family history. Personal history included ordinary ailments of childhood with no complications. No family or personal history of hemophilia. Patient suffered from frequent head colds, recurring attacks of tonsillitis, and the usual symptoms of adenoids. Examination of the throat showed submerged tonsils with a small amount of pus on the surface. There were no ear symptoms. Local treatment gave only temporary relief, the attacks of tonsillitis recurring. Several separate lymphatic glands of the anterior cervical chain were beginning to enlarge. Operation was advised. Under general (ether) anesthesia both tonsils were removed by the Sluder method, and adenoids with the Brandegee forceps and curette. There was only a moderate amount of adenoid tissue. During the operation, and subsequently, there was rather less than the usual amount of bleeding. The patient left the hospital, with uneventful recovery, at the end of two days.

Inspection of the throat a few days later showed healing of tonsil areas. No adenoid tissue remained in the nasopharynx, and nasal breathing had become entirely unobstructed. The patient returned to her home, out of town.

The tenth night after the operation, the child meanwhile having progressed normally, a profuse gush of blood from the mouth and nose wakened her from sleep. The hemorrhage continued and a large quantity of blood was lost. Applications of ice, peroxide of hydrogen, and adrenalin failing to check the hemorrhage, Dr. E. P. Whelan of Nutley, N. J., was called, and introduced a posterior nasal plug. The patient was almost pulseless, but retained consciousness. An intravenous saline infusion, 250 c.c., was given. On arriving, two hours later, I found her improving. The hemorrhage and air hunger had ceased. The pulse was 160, temperature (rectal) 100° F.

Half a pint of saline solution was introduced into the rectum and retained. Strychnine sulphate, 1/60 of a grain, was given hypodermatically every four hours. Improvement continued.

The following evening the nasal plug was removed and the strychnine discontinued. Calcium lactate, 15 grains, at four hour intervals, was ordered. A careful inspection of the throat showed no change in the tonsil areas. They appeared entirely healed and normal. The bleeding had been wholly from the nasopharynx.

Subsequent history is negative, there being no further hemorrhage, and the patient slowly recovering.

As I have said, the case illustrates the possibility of a *late* nasopharyngeal hemorrhage following adenoid removal.

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Medicolegal Notes.

Verdict of Coroner's Jury Held Not Admissible in Evidence to Fix Liability in Civil Suits.—Overruling many of its previous decisions on the subject in similar cases, the Illinois Supreme Court holds that a coroner's verdict as to the cause of the death of a servant is not competent evidence in a proceeding under the Workmen's Compensation Act, since the employer is not a party to the coroner's investigation, nor is the coroner a judicial officer. The court is of the opinion that it should no longer be the policy of the State and the holding of the court that a coroner's verdict or inquest should be admissible as evidence in civil suits for the purpose of establishing personal liability against any individual in cases where the death of any person is charged or to establish a defense to such a suit, or for the purpose of establishing other issues between private litigants. The court says that a review of the earlier cases in which it took the opposite course, and admitted such evidence, discloses the fact that many, if not all of these cases have been largely controlled by the admission in evidence of the verdicts of the coroner's jury, and in many of them such verdicts have furnished the sole evidence to establish liability.

As a consequence of such practice there has resulted in the State of Illinois a race and scramble by litigants to secure a favorable coroner's verdict that would influence or control in case a civil suit should be brought to establish a claim by reason of death. It was not intimated by the court that plaintiffs prosecuting such suits have offended more in this particular practice than defendants who are sued in such suits, and it was believed that the facts would disclose that both are alike guilty. It cannot be questioned, the court added, that as a result of such practice the coroner's verdict in many cases has been and will continue to be a mere trap or device for the purpose of catching the unwary in such suits, and that public interests intended to be served by coroner's inquests may not be so well guarded as they otherwise would be. So far as the court had made investigation, only two other States in this country, Iowa and Mississippi, have adopted the same view as the Illinois court formerly did with reference to the admissibility of the inquest of the coroner's jury as evidence in such cases. In the Iowa cases dealing with the point the admissibility of the verdict or inquest was not questioned by the parties. In one of these cases, Tomlinson v. Sovereign Camp, 100 Iowa 472, the court indicates that it might have ruled otherwise if objections to the evidence had been raised. The decided weight of the authorities in this country is against the admissibility of such a verdict as evidence. The court cited in support of this statement cases decided in Kentucky, Maryland, Pennsylvania, Alabama, Wisconsin, Michigan, Oregon, Washington, California, South Dakota, Nebraska and Texas.—Spiegel's H. F. Co. v. Industrial Commission (Ill.) 123 N. E. 606.

State Statute as to Providing and Furnishing Narcotics by Physicians.—The Minnesota statute, chapter 260, laws 1915, section 1, forbids the sale of narcotic drugs, but provides that pharmacists may dispense them upon the written prescription of a physician, and that a physician may administer such drug to a patient upon whom he is in professional attendance. There are exacting requirements as to records to be kept in both cases. Section 2 forbids any physician to furnish or prescribe any such drugs for the use of a habitual user, provided this shall not prevent a physician from prescribing in good faith for the use of any patient for treatment of the drug habit such substances as he may deem necessary. The Minnesota Supreme Court holds that it was proper, in proceedings for violation of the act, to instruct the jury that the statute makes a distinction between the dispensation of these drugs to habitual users and to ordinary patients, that in the case of patients not addicted the physician may prescribe them and also furnish them, but that in case of habitual users he may not furnish the drug, but may only give a prescription to be filled by a pharmacist under the safeguards imposed by the law. It was held proper to receive evidence of other sales of narcotics to the same addicts and of sales to other addicts. Such evidence was held within the rule which permits evidence of this character when it is part of one scheme to violate the law or when it tends to show an inclination or predisposition to violate the law. The trial court was not in error in refusing to receive in evidence a stamp with which the defendant said he stamped all containers of such drugs dispensed by him. A package found on the person to whom it was charged the defendant sold morphine bore no stamp, but it was admitted that the defendant furnished him the quantity of the drug found in his possession.—State v. Whipple (Minn.) 173 N. W. 801.

Privileged Communications—Waiver—Conversations After Relations Have Ceased.—In an action for injuries to a pedestrian, run over by a street car, the defendant examined Dr. S. as a witness. Dr. S. aided Dr. B. in the treatment of the plaintiff at the hospital immediately after the injury. The defendant asked the witness certain questions as to what the plaintiff had told him as to the circumstances of the accident. This line of examination was objected to on the ground of privilege under the statute, Dr. S. being deemed to occupy at the time the relation of physician to the plaintiff as his patient. The Iowa Supreme Court held the objection was properly sustained. The privilege was not waived by the plaintiff by his testimony on cross-examination. Testimony thus given by the plaintiff on cross-examination is not deemed voluntary, and is therefore not a waiver. Thereupon inquiry was made of the witness as to conversation had with the plaintiff after the profession relation had ceased. Objection was made to this line of examination on the same ground as before and sustained. It was held that this objection should not have been sustained. The defendant had a right to inquire into conversations had after the termination of the professional relation. These in the statutory sense were not confidential.—Arnold v. Ft. Dodge D. M. & S. R. Co. (Iowa), 173 N. W. 252.

Contributory Negligence of Patient.—In an action for malpractice for neglect of professional duty in treating a fracture of the plaintiff's right leg, between the knee and the ankle, it appeared that the plaintiff contracted erysipelas, which he alleged was the result of bandaging cloths or bandages and lacing a shoe too tightly upon the limb, and of the failure to properly attend thereto, it was held that under the evidence, which was not detailed in the court's opinion, the question of the defendant's negligence, and of the plaintiff's contributory negligence, were fairly questions for the jury. Even if a physician has been negligent in some respect, it is well settled that the patient must not have contributed to his injury in any degree; that he must conform to all reasonable directions of his physician, otherwise he cannot recover.—Hanson v. Thelan, North Dakota Supreme Court, 173 N. W. 457.

Death from Sunstroke.—The New York Appellate Division holds that an award for an employee's death from sunstroke is not justified where the Industrial Commission does not find that he met his death through exposure to heat more excessive than that to which others were subjected, or through any special hazard of the employment, of track worker on a railway, but merely finds that he met his death from sunstroke arising out of and in the course of employment.—Drezzenski v. Crenshaw Engineering Co., 177 N. Y. Supp. 100.

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SECONDARY WOUND CLOSURE.

ONE of the many surgical lessons of the great war came in the results of treatment of certain types of infected wounds. After they had been cleaned up, secondary suture was employed in a large percentage of the cases instead of allowing them to close by the slow process of granulation. This resource should and doubtless will be adopted in civil practice to an ever increasing degree when it becomes generally known how great an economic saving results, not only to the patient but also to the community through the quicker return of the individual to productive activity. During the last year of the war and since its close, numerous text-books on war surgery have devoted sections to methods of preparation for and the technique of delayed primary and secondary suture of wounds; and many statistical tables have been published showing the results of such treatment.

Among these, a report by Brenizer (*Surgery, Gynecology and Obstetrics,* December, 1919) on 961 cases of secondary wound closure is particularly interesting and instructive. These cases were treated at Base Hospital No. 6, A. E. F., France, between April 8 and December 11, 1918, a period of eight months. The greater number of these closures were made on the fourth to sixth day, after the reception of the wound and the primary excision, and before the twelfth day, that is before the thin, bluish, attenuated epithelial edge had formed and the skin had become fixed in its retraction.

Brenizer and his associates first closed a few wounds without bacteriological control and without the removal of the more loosely textured surface granulation tissue with Dakin's solution. They simply painted the surrounding skin and granulation tissue with iodine, dissected the granulation tissue and thin layer of connective tissue from the underlying structures *en masse,* and closed the wound. Most of the wounds healed even in this way, but a few of them became red and swollen, the patient became toxic, and the wound broke down. In these wounds they almost always found the streptococcus. They then disregarded entirely the quantitative bacteriological examination of wounds and depended upon qualitative cultures to eliminate the streptococcus, gas bacillus, and tetanus bacillus. When the streptococcus was found the wound was treated with Dakin's solution by the Carrel method until the streptococcus no longer appeared in cultures. When the gas bacillus was found, the wound was similarly treated and Bull and Prichett's gas bacillus antitoxin was given. When the wound was very moist and covered with necrotic tissue, it was chemically scoured with Dakin's solution.

The technique of secondary closure was carried out as follows: "The surrounding skin was cleaned with ether and painted with iodine and the whole granulating surface was covered with gauze soaked with iodine. A clearcut incision was made just outside the epithelial edge, through the skin, and the skin undermined. The granulating area was then undermined and dissected away *en masse,* thus removing mechanically the bulk of all bacteria. The granulation tissue was not scraped off but was dissected off with a layer of the new-formed connective tissue down to the fresh, bleeding, underlying structures. The raw area was again painted with iodine and all bleeding carefully stopped. Fascial planes were closed, all necessary repair to tendons, nerves, and vessels was done, including curettement of bone, and the skin edges were closed without tension." In this way 961 wounds were closed with but one death, that being from tetanus in a case having received three injections of antitetanic serum, the last less than ten days before the wound closure. Closure was entirely successful in 894 cases, or 93 per cent.; partially successful in 38 cases, or 4 per cent.; and in 29 cases, or 3 per cent., the operation failed.

The cases of open wounds with fracture were selected cases showing little or no comminution and no small fragments. The success with those cases, however, hardly justified continuance of the treatment. The secondary closures of amputation stumps were successful, save for an occasional sacrifice of bone; but secondary suture was abandoned for traction and spontaneous closure in most cases. Brenizer found the most difficult wounds to close were those of the hands and feet, and the wounds everywhere over the body where a circular area of skin had been cut away at the time of primary excision. He found that, eliminating the streptococcus, gas, and tetanus bacillus, wounds of the soft parts may be closed by ordinary surgical technique with as high a percentage of healing *per primam* as by other methods; also that a small dosage of staphylococci or attenuated contamination of the wound by staphylococci, after secondary excision and secondary closure, does not interfere appreciably with the healing of the wound.

Surely, the results in this series of cases form a strong argument for the employment of secondary closure in suitable cases in civil practice.

MYOCLONIC ENCEPHALITIS.

SICARD believes that encephalitis lethargica is a clinical group-affection whatever its nature, which differs with the localization, being expressed respectively as a cortical encephalitis, mesencephalitis, myelitis, etc. He suggests as a comprehensive term epidemic neuraxitis. (*La Presse Médicale*, April 14, 1920, xxviii, 22.) In addition the nerve roots may be involved so that radiculitis results. In the present connection he limits his remarks to the myoclonic type of which he has seen five well defined cases. The first patient showed neither lethargy nor ocular pareses; instead of lethargy there was insomnia. The diagnosis was at first most obscure and among the maladies suggested were tetanus, rabies (history of exposure to a dog), and infectious chorea. The second patient was equally free from somnolence and eye troubles. No diagnosis was made. The third case was very similar to the preceding, but by this time the nature of the malady was strongly suspected. All three patients succumbed. The other two patients recovered.

To sum up briefly the clinical phenomena: the disease began in the midst of perfect health with prostration and lightning pains involving the nerve roots of the cervical and intercostal regions. Fever next developed and was very moderate. Locomotion and even sitting up were impossible. The mind was clear and cerebral symptoms were very vague. A week or ten days passed before further developments. Myoclonus then appeared, often generalized and often most marked in the abdominodiaphragmatic region. After a periad known as status myoclonicus the subject developed delirium of the oniric type and gradually the clonus subsided. Coma followed by death, or recovery ensued. The spinal fluid was practically normal. The condition is clearly not a form of lethargic encephalitis although evidently due to the same cause. It corresponds with the electric chorea of Dubini.

The American Red Cross reports that a similar affection prevails in Vienna where some three hundred cases of what is tentatively called cerebral influenza are being treated in the various hospitals. Of 71 cases treated during April by the Red Cross physicians 40 terminated fatally. The disease ordinarily begins with headache and insomnia followed soon by clonic muscular contraction of the limbs, face, and abdomen. In some cases there is paralysis of the ocular muscles, preventing closure of the eyelids and producing an illusory appearance of insomnia even in patients lying in the profoundest stupor. Fever does not necessarily accompany the malady in the early stages but appears later when the patient passes into violent delirium accompanied by auditory and optical hallucinations. In the worst cases death comes in a few days. Persons between the ages of 18 and 35 are most often attacked. Pregnant women appear to be particularly vulnerable to attack. The disease is not confined to Vienna but is reported to be spreading throughout German Austria.

AMYL NITRITE IN THE PERIPHERAL VASOCONSTRICTION OF THE SHOCKED SUBJECT.

DUCASTAING writes briefly on this subject in *La Presse Médicale* for December 20, 1919, xxvii, 78. The arterial spasm in shock is responsible for part of the disease picture of the latter. Two cases are given, in one of which the subject, an artilleryman, received a severe shell wound, with great exposure of muscle bellies. There was traumatic shock with earthy face, unconsciousness, absence of motor restlessness, and bradycardia, the latter phenomenon being unusual. This state persisted for twelve hours, upon which, under ethyl chloride, the wound was treated heroically by extirpating all devitalized masses. The new surface was irrigated with warm saline and ether, and Carrel irrigation begun. Serum and camphor were injected. Two hours later the patient was still unconscious, still had bradycardia, pupils normally dilated and reacting to light. With the diagnosis of arterial spasm nitrite of amyl was given in inhalation and the pulse mounted to 80 (from 40-45), but soon returned to the low figure. There was absence of many of the active phenomena of shock. As soon as the arterial tension began to increase and the frequency to mount, the state of calm was succeeded by the picture of agitation, subdelirium, nausea, and gastric intolerance. In the second case, which resembled the first save that pulse was quite absent from the radial, nitrite of amyl at once caused the beat to appear at the rate of 130. As in the first case the gradual reaction of the circulation changed the picture from quiet to agitation, leading to a fatal exit. In these cases nitrite of amyl showed that a condition of peripheral vascular spasm was present with a general inhibition of much functional activity. Evidently subsidence of this spasm will alter the picture to one of the opposite type. The condition in the second case was complex, for to the primary wound shock was added operative shock, while in the first patient gas gangrene rapidly developed.

SLOW EVOLUTION OF TYPHOID PERFORATION.

THIS condition can be studied only in cases in which the patient must not be submitted to operative intervention. Gautier and Brutsch relate such a case in the *Revue médicale de la Suisse Romande* for December, 1919, xxxix, 12. The patient, a robust young man, was admitted to the hospital for "fever" which had been coming on insidiously with failure of health. The case proved to be one of walking typhoid with the picture of emaciation, severe headache, diarrhea, and mental torpor. The temperature was above 104° F. An abdominal examination revealed no complications and the stools contained no blood. The pulse and blood count were excellent, as was the state of the urine. There was a positive serum agglutination of Eberth's bacillus. A crisis then took place in which the patient vomited and became tympanitic, while the temperature

fell several degrees. Vomiting continued with hiccup, and the temperature curve underwent an entire change, the patient at times being almost apyretic, while the maximum was not over 102.5° and this for a short time only. There was no abdominal resistance. The patient remained in this condition several days when the diarrhea, which had ceased with the appearance of vomiting, reappeared with blood in the stools, and soon afterward resistance was noted in the abdomen in the hypogastrium, the diagnosis of perforation being now made for the first time. Treatment was strictly expectant and the patient's state was in some respects still good, but the prolonged vomiting had made it impossible to maintain his forces and this fact with the exhausting diarrhea and constant escape of blood led to death. In this case the blood-counts seem to have been very deceptive, there had been at no time more than medium temperature which was gradually falling, while the pulse seems to have been uniformly low and of fairly good tension up to the time that the perforation took place.

The Mental Malady of de Maupassant.

The alienation of this celebrity has been variously interpreted and several years ago a Canadian physician attempted to show that it was due to progressive paralysis of syphilitic origin. Charles Ladame, a Swiss physician, has recently written a monograph on the subject, noticed in *Le Progrès Médical* for February 14, 1920, xlviii, 7. It is admitted that his death was almost universally held to be due to that disease, but for many years he had shown evidences of insanity and this fits with the belief that his trouble began with syphilitic meningoencephalitis which destroys life with relative rapidity. The author was evidently at least markedly psychopathic before the development of the organic malady. This is shown in his writings, while enough is known of his conduct to justify the belief that he had been for many years the victim of a psychosis. The study under review appears to be limited largely to the author's writings rather than to his behavior. The handwriting test shows plainly that he had developed paresis, but if followed back, it also appears that this malady had not been present for longer than a few months. His last work, *l'Angelus*, exists in manuscript and is said to bear no evidence whatever of paresis. The frequently recurring accounts in his works of the phenomena of mental alienation cannot be properly cited as *prima facie* evidence that the writer himself was alienated. The test could be applied to perfectly sound authors with negative results. The ability to visualize morbid minds is an attribute of genius expressed in an instinctive psychology. De Maupassant does not appear to have been a born psychopath as he was a man of vigorous animal health and strength. If his mental troubles were really due to the slow action on the cortex of the spirochete or its products his case is unique, for this agency has never been known to be in any sense a stimulator of mental function, being thus in direct contrast with the toxin of tuberculosis to which such properties have repeatedly been assigned.

News of the Week.

Smallpox at Dvinsk.—Smallpox has broken out in the province of Latvgallia, and unless checked seriously threatens the Baltic States and Poland. The American Red Cross field unit, which was recently sent south to Dvinsk from the headquarters at Riga, has completed arrangements for the wholesale vaccination of the population in that region, some 400,000 persons. The vaccine is to be shipped from the Red Cross headquarters in Paris. Typhus, influenza, and dysentery are also prevalent in this region.

Trachoma in Algiers.—An epidemic of granular trachoma is sweeping the oasis towns of the Sahara desert. French resident doctors state that thousands of children are affected, but so far the adult population has been comparatively immune. Dr. Toulant of the Pasteur Institute of Ophthalmology, who has been conducting experiments on a herd of monkeys in an effort to isolate the bacillus, has informed the American Red Cross that eight of every ten children are affected.

Better Provision Urged for Tuberculous Discharged Soldiers.—As a part of its efforts to make better provision for the tuberculous among discharged soldiers, and at the same time to bring about an improvement in the campaign the United States Public Health Service is conducting against tuberculosis, Surgeon-General Hugh H. Cummins sent the following telegram to the American Medical Association during its recent sessions in New Orleans: "I desire to urge more active participation by the general practitioner and by general hospitals in the treatment of tuberculosis. To insure earlier diagnoses, properly train internes and other personnel, popularize treatment in the home climate, provide additional facilities. I earnestly indorse the resolution passed by the National Tuberculosis Association in 1916, recommending that general hospitals should admit tuberculous patients and provide separate wards for that purpose. Sanatoriums and specialists in tuberculosis will always be needed and we should have more of them, but I believe that success in the anti-tuberculosis campaign is largely dependent upon first, convenient facilities for observation and prompt treatment of patients with open tuberculosis and second, in a sharpened perception and higher degree of skill by which the family doctor will make early diagnoses or even forestall the development of clinical tuberculosis in the adult before a definite diagnosis is possible. To provide adequate care for tuberculous ex-service men and others, to protect infants from infection, enlist the aid of the general practitioner, allay phthisiophobia, and improve home treatment of tuberculosis, the opening of general hospitals to this most common of all serious diseases will materially assist."

Viennese Doctors Threaten Strike.—The doctors and surgeons of the Viennese hospitals declare that they cannot live on their present rate of pay, and threaten to go on a strike unless their salaries are immediately raised by the municipality. Their present remuneration is lower than that of the lowest day laborer and they claim that they should have pay at least equal to that of the washerwomen in the same hospitals. The lack of drugs

and the overcrowding in the hospitals of Vienna has made the task of the overworked medical staffs one that is almost beyond endurance.

Government to Buy New York Quarantine Station.—The House of Representatives has approved the taking over and purchase by the Federal Government of the quarantine station in New York Harbor. The purchase price is $1,395,275, which is the amount settled upon in condemnation proceedings. No opposition to the measure on the part of the Senate is anticipated.

Anthrax in Curled Hair Factory.—Five persons have died from anthrax in the past six weeks in Chicago. Three of these persons had been employees of the Chicago Curled Hair Factory, and, believing the disease was contracted by handling hair imported from Argentina, Health Commissioner Dr. John Dill Robertson has closed the factory. All firms that have purchased hair from the company recently are being warned to be extremely careful in its use. All the employees of this plant are being visited by the Health Department and blood tests are being made.

Disinfecting Polish-American Soldiers.—The American Army on the Rhine has undertaken the task of disinfecting 25,000 Polish-American soldiers who are being returned to the United States on American transports, after having served in the Polish army. This task is being carried out at Warsaw and Danzig. The work is under the care of a medical unit sent from Coblenz under the command of Col. Harry Gilchrist. The disinfection is being carried out owing to the fear that the returning soldiers might bring typhus fever to the United States.

Christian Scientist Father Convicted.—Andrew Walker of Bloomfield, N. J., has been convicted of manslaughter as the result of the death of his daughter Dorothy, whom he had had "treated" over the telephone and personally by Christian Science practitioners for diphtheria. There is only one degree of manslaughter in New Jersey, and the maximum penalty is five years. The jury in returning its verdict made a strong recommendation for mercy, and the judge has the power to make the punishment nominal. The counsel for the defense has stated that if necessary the case will be carried to the Supreme Court of the United States.

"The Modern Hospital," having outgrown its former quarters, has removed its offices to its own building at 22-24 East Ontario Street, Chicago.

Automobile Fatalities During April.—The report of the National Highways Protective Society for April shows that 82 persons were killed by automobiles in New York State. In New York City during April 50 persons were killed by automobiles, 19 of whom were children under 16 years of age.

West Side Dispensary Buys Site.—The West Side Dispensary and Hospital, located at 328 West Forty-second Street, has purchased the adjoining property at a cost of $50,000. A lying-in hospital costing from $50,000 to $100,000 is to be erected in the newly acquired plot.

Annual Report of Montefiore Home.—The annual meeting of the Board of Directors of this institution was held on May 2, at which time a report was submitted showing that the total income of the institution for the year was $494,249 and the expenditures $491,469. During the year the home has been able to open a semi-private ward of 50 beds and has instituted a system of occupational therapy. It was announced that a research department and laboratories would be re-established. In addition to an income of $10,000 from a fund established by Jacob Schiff, $15,000 a year has been pledged by some of the directors to meet the expenses of this work. Construction work on the new pavilion has been resumed and it is hoped to have this ready for occupancy by the end of the year. Plans for a new country sanatorium at Bedford Hills were also announced.

Sir William Osler, who died last December, bequeathed his medical and scientific library to McGill University.

Dr. Royal S. Copeland, Health Commissioner of New York City, sailed for London on May 9, where he will represent the city at the Housing Congress. Later he will attend the Public Health Congress in Brussels.

Gift to Polish Red Cross.—The American Red Cross announces a gift of 2,000,000 Polish marks to the Polish Red Cross to enable it to equip and maintain three hospitals in an effort to stay the further progress of typhus fever in that country.

Milk and Child Exposition.—A Milk and Child Exposition is to be held at the Grand Central Palace during the week of May 17, designed to educate the public as to the value of milk as a food and to emphasize that the New York Health Department has discovered the fact that many children of the poor are suffering from malnutrition due to lack of milk. It is hoped that the exposition will increase the consumption of milk in New York City and also that it may open a way whereby the poor can get milk at a reasonable price.

Dental Survey Shows Few Sound Teeth.—According to figures recently given out by the New York Association for Improving the Condition of the Poor, which has just completed an examination of the teeth of the children in three large public schools on the lower East Side of Manhattan, 1,382 children were examined, and 1,334, or 97 per cent., were found to have defective teeth. The total number of cavities found was 9,307, or 6.8 cavities per child. The most serious aspect of this survey is the vast amount of decay found in the first permanent molars.

Home for the Aged Celebrates Anniversary.—The Home for Aged and Infirm Hebrews recently celebrated its fiftieth anniversary. On this occasion Dr. S. Newton Leo, the institution's physician and surgeon, was presented with a silver loving cup.

Red Cross Scholarships.—Upon the suggestion of Henry P. Davison, ten scholarships in public health nursing will be offered by the League of Red Cross Societies to the Red Cross membership of stricken countries or to nations with inefficient Red Cross organizations. The course of study will be carried out at King's College, Women's Department, University of London, and will begin next October.

Child Hygiene Conference in New Jersey.—

The New Jersey State Department of Health has called the first conference on Child Hygiene of a State-wide character at Asbury Park, June 12-14. New Jersey is carrying on one of the most active child hygiene programs in the United States, having been granted the largest appropriation ever granted by any Legislature in the United States for this purpose, $150,000.

Society for Clinical Study.—This society will hold its regular monthly meeting in the reception hall of the New York Diagnostic Clinic, 125 West Seventy-second Street, New York, Wednesday evening, May 26.

Positions for Physicians.—The Manhattan State Hospital, Ward's Island, announces a vacancy for a medical interne at $1,200 a year and maintenance, and for an assistant physician at $1,300 to $1,800 and complete maintenance. This hospital offers exceptional opportunities for study and research in psychiatry and neurology, as well as instruction in hospital administration. Courses of instruction are given to physicians appointed to the resident staff. Opportunities for promotion are offered to physicians who are proficient in their work. Appointments are made by the Superintendent to the grade of medical interne upon non-competitive examination. The grade of assistant physician is open to physicians holding a license to practice in New York State who have had one year's general hospital experience. Further information may be had by addressing the Superintendent, Dr. H. B. Heyman, Manhattan State Hospital, Ward's Island, New York.

Obituary Notes.—Dr. ALFRED KIMBALL HILLS of New York, a graduate of the Hahnemann Hospital and Medical College, Philadelphia, died at his home on May 2, at the age of 80 years. Dr. Hills was a member of the New York Academy of Medicine, and formerly publisher of the *Medical Times*.

Dr. JOHN M. BENEDICT, a graduate of the Medical Department of New York University, in 1882, died of angina pectoris at his home in Woodbury, Conn., on April 23. Dr. Benedict practised medicine in Waterbury, Conn., for thirty years, retiring in 1913.

Dr. RICHARD J. P. GOODWIN, a graduate of Harvard Medical School, in 1885, and for many years a practitioner of medicine in Manchester, N. H., died in Malden, Mass., about April 21, at the age of 84 years. He had charge of the army hospital in Manchester during the last months of the Civil War and was for many years a pension examiner.

Dr. EDWIN L. CHASE of Shrewsbury, Mass., died suddenly at the home of a relative in Smyrna Mills, Me., on April 30, aged 50 years. He was a graduate of the Baltimore, Maryland, School of Medicine in 1898, and a member of the Board of Health of Shrewsbury.

Dr. CHARLES J. HELM, a graduate of Harvard Medical School, in 1887, died of pneumonia at his home in Peru, Ind., on April 27, aged 57 years.

Dr. F. W. NORTON, a retired physician, who formerly resided in Boston, died at the home of a relative in West Minot, Me., on April 25, aged 59 years.

Dr. WALTER W. GILMAN, a graduate of Harvard Medical School, in 1888, and a member of the staff of the Worcester City Hospital at the Memorial Hospital, died at his home in Worcester on May 2, aged 59 years.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, April 24, 1920.

Conditions in Vienna.—At a meeting in Norwich the other day of "Save the Children Fund," the speaker was Mrs. Hawker, who had returned recently from a visit to Vienna, whither she had gone as a delegate from the "Save the Children" Conference, held in Geneva on Feb. 25, 1920. Mrs. Hawker, in the course of her address, gave some figures showing that owing to the lack of suitable food infants and young children in Vienna were in an appalling state. Still births increased in the year 1919 by about 20 per cent., the main reason being the under-nutrition of the mothers. The diminution of the population by still births and mortality of infants is evidenced by the fact that in normal years the surplus of living births compared to deaths amounted to about 8,000 yearly, while during the past four years there died in Vienna 80,000 more people than were born. Children naturally suffered the most and tuberculous disease especially played havoc among the young. In 1913, there were 6,430 deaths of children from tuberculosis; in 1914, 6,223; in 1915, 7,810; in 1916, 9,651; in 1917, 11,791; in 1918, 11,531. In addition to tuberculosis, rickets among young children is extremely rife in Vienna. According to statistics given by Mrs. Hawker to the writer, 90 per cent. of breast-fed babies are rachitic and a great many, perhaps the majority of those children who survive are cripples. There are said to be in Vienna at the present time 25,000 children partly crippled, partly suffering from tuberculous diseases of the bones and of the joints. Probably environment plays its part in the causation of this condition, as the sanitary and hygienic state of affairs throughout Vienna is of the most deplorable character. For example, in April, 1919, there were in Vienna 550,000 apartments, of which 41,000 consisted of only one room, and 254,000 of one room and a kitchen. Criminality among children has increased greatly. In Vienna in the year 1913, 1,848 children were guilty of penal offenses, while in the year 1917, 5,926 children offended in a similar manner. The speaker paid a generous tribute to the American Child Welfare Administration, which has been active in sending many poor children to Switzerland, Holland, Sweden and elsewhere.

State Aid for British Hospitals.—As with many British hospitals, in fact, as with practically all of them, the Norfolk and Norwich hospital at Norwich is appealing for funds to permit of its being continued on a voluntary basis. Its outgoings are considerably more than its takings, and it is in debt. At a meeting of the Governors of the Institution, held during last week, ways and means for helping it out of the slough into which it has fallen were considered. Dr. Samuel Barton, Chairman of the Board of Management, in the course of a speech discussing the situation, said that Norwich had a hospital second to none in the English provinces and they, the Governors, were naturally proud of having kept up with the times

in all the advances of medicine and surgery. They were quite up to date, but the expense of keeping in front was naturally great. As governors they could not recommend a drastic reduction of beds and expenditure, for by so doing they would reduce the efficiency and utility of the institution. The alternative to the voluntary hospital was a rate or State aided one, which meant whole-time officers, red tape, and forms strictly demanded, and the treatment of the sick a secondary consideration. Dr. Barton gave one or two impressions gained from his canvass of the public during the year. He divided the public into three classes—1. The class who do not give to any charity and are the enemies of voluntary hospitals and the chief supporters of the idea of rate aided hospitals. 2. A class which he called obsessionists. Their only wish was to die rich. They did not spend on themselves selfishly. Their only lament was that they would not be able to read in the *Times* of the thousands they had died worth. Although in his opinion not certifiable the obsessionist was a person of unsound mind, and to argue with him was worse than useless. 3. This was the most numerous class and the pleasantest to come into contact with. He referred to the charitable who were only too ready to give in a good cause. This class simply required educating as to the good work and needs of the hospital in order to make them respond freely. It ought to be the first duty of the governors to get on with the propaganda among this class. Another speaker at the same meeting also opposed to the hospital being put on the rates said that if it were run by the State it would cost at least £60,000 against the £40,000 it now costs because the honorary medical staff would have to be paid and the administrative staff would have to be larger. None of the speakers advocated the adoption of a pay system or a modified pay system. Indeed, the consensus of medical opinion in this country seems to be in favor of a continuation of the voluntary system and, perhaps, if the State does step in, only to supplement the voluntary hospitals and not to supplant them. However, there does not appear to be any valid reason why patients who can afford to do so should not pay according to their means, and that the hospitals should not be open to that large section of the British middle class, who now comprise the really poor.

Medical Degree for a Bone-Setter.—The petition of members of Parliament in favor of the medical degree *honoris causa* being granted to Mr. H. A. Barker, will be formally presented in a few days' time, when the full text of the memorial will be published.

Developments of Radiography.—Major G. W. C. Kaye, lecturing recently at the Royal Institution on "Recent Advances in *X*-Ray Work," described the development of the Coolidge tube. This he said had revolutionized *x*-ray research and would probably become the main instrument of the radiographical work of the world. A new method of taking fingerprints was also described. The hands are cleaned with alcohol and red lead is rubbed over them. Radiographing them reveals with great accuracy the details of the skin.

The Effect of Alcohol on the Duration of Life.—Dr. I. D. Lister in his presidential address to the Assurance Medical Society delivered March 3, 1920, remarked that alcohol was by no means exhausted as a subject for consideration. It was known that for certain select lives, with a very high standard of moral hazard in the risk, there was a low mortality among teetotallers; while Sir Dyce Duckworth in 1904 expressed an opinion in favor of the moderate use of alcohol by both the healthy and the sick. The experiments upon which the case for total abstinence rested were chiefly reaction and discrimination time experiments. They were, perhaps, conclusive as showing the temporary depression of nervous and psychic rapidity of action due to doses of alcohol. Lister submitted that such evidence was no criterion as to the effect on life duration. It might not be a good thing to be always energetic. That a drug capable of producing depression might produce annihilation of energy was one thing, but there were also drugs capable of producing exaltation of energy which might produce exhaustion. All that he felt himself able to say was that excesses were bad in either direction. Certain many abstainers were drug takers, even if it only were their tea that they took. To ascribe all the good effects on mortality, among certain excellent groups of lives, entirely to their abstinence from alcohol was unscientific, but inasmuch as total abstinence connoted other qualities making for longevity it was therefore to be favorably regarded in assessment. On post-war affections, such as soldier's heart, malaria, dysentery, wounds, amputations, the reasoned guidance of physicians and surgeons, not only of war experience, would be of the greatest help to us. Did rapid action of the heart over a prolonged period tend to cardiac or vascular degeneration earlier than if the heart pursued a placid course throughout? Were war neurasthenia and shell-shock things which increased mortality, now that we hoped there was no chance of their recurrence? Should they be "rated up" when the signs had disappeared? There was a great difference between the clinical diagnosis of the ill, and the insurance diagnosis of the apparently well.

Obituary.—The death occurred on April 13, 1920, of Sir Hugh Adcock, who for many years was chief physician to Mouzaffer-e-Din, prior to his succession to the throne of Persia. Sir Hugh, who was 71 years of age, was the son of a London surgeon, and after taking his medical degree, engaged in practice in Norfolk and London. In 1888 he went to Persia, and was presented by the Shah Nasr-e-Din with the first class Gold Star from the Imperial College, Teheran, for his services during the severe cholera epidemic of 1892. Sir Hugh was afterwards consulting physician-in-chief to the Shah.

Transmission of Syphilis as an Industrial Disease.—Despite the fact that the industrial transmission of syphilis has been understood for decades cases of such transmission continue to appear. Thibierge has recently reported two in cobblers from infected shoe pegs carried in the mouth and later thrown back in the common stock, and one in a carpet layer from a similar use of carpet tacks.—*Le Bulletin Médical.*

LETTER FROM GENEVA.

(From Our Regular Correspondent.)

GENEVA, April 15, 1920.

Psychic Disturbances in Influenza.—Psychic disturbances following influenza have not been uncommon in France or Switzerland, and they have been regarded as one of the most characteristic sequels of this epidemic malady, by some, particularly by Lemierre. These phenomena occur quite as frequently in patients who do not develop pulmonary infections and although alcoholism favors their advent, the appearance of intellectual disorders is not necessarily their etiological basis. The psychic sequelæ vary in intensity, some offering intellectual obnubilation and stupor, physical and mental prostration frequent in the severer form of influenza; in others there is a real transformation of the personality so that an individual ordinarily reserved becomes talkative and even playful. In patients who are usually of a happy disposition, the reverse is true. Cases of hallucination have been observed engendered by the toxi-infection and this form, when attenuated may be the prelude to grippal delirium. Many accidents and suicides can be attributed to the latter mental process or the subject may resort to acts of violence against other persons. At all events, no matter what the cerebral manifestations of the influenza may be, they are invariably followed by amnesia, at least that has been the experience here. It is usually during the febrile phase that the psychic disturbances are observed, usually retrogressing when the temperature has become normal, but they may persist for several days longer in severely infected cases. Their intensity is generally in direct proportion to the grippal infection, but nevertheless these psychic disturbances need not be taken into account when making a prognosis. So far as is known they do not give rise to suppurating meningitis and the cerebrospinal fluid has been found normal. The treatment of the psychic disturbances of influenza will be that of the disease itself, combined with hot baths or packs in the case of agitation and not with chloral or morphine.

The influenza at Pontarlier offered an interesting study. The epidemic, like all those occurring on the Swiss frontier, was very serious on account of its diffusion, malignancy and high contagious power. There were slight and even latent cases to be sure, and there were intestinal forms with diarrhea, frequently dysenteriform, and the nervous types with coma, impulsive delirium and in alcoholics, delirium tremens. But the pulmonary forms were especially prevalent, with single or multiple foci, occasionally generalized pulmonary edema, intense hyperthermia and a very irregular evolution. Death was commonly the result of cardiac failure or asphyxia. Tachycardia with collapse, great distress, oliguria, or even anuria announced the advent of cardiac failure. Intense dyspnea with marked increase of the respiration and thoracic pain, the dyspnea being out of all proportion with local signs, the suppression of the expectoration with persistency of the focal symptoms and cyanosis of the face and extremities usually gave warning of approaching respiratory failure within a day or two. Physiological misery, previous affections of the heart or lungs, deformities of the thorax, but above all alcoholism, particularly in subjects under forty years of age, were elements of great gravity. Death usually occurred about the end of the first week, but some instances of the fulminating type with death in thirty-six hours were observed, which were unduly common throughout Switzerland. An interesting fact was that quite frequently a facial erysipelas developed which renders quite plausible the part attributed to the streptococcus as the casual agent of respiratory complications. In patients with malaria of long standing the diagnosis was sometimes difficult, but when doubt exists quinine should be given, not only for its antimalarial properties, but as a cardiac tonic as well. The treatment resorted to by the local profession was cold packs when the temperature went above 104° F., bleeding and injections of camphorated oil, caffeine or sparteine, and as a general tonic cinchona was found very valuable.

Cancer in Animals.—Cancer of the tongue and lips in animals is an interesting topic to which Cadiot has recently called attention. He has pointed out the extreme infrequency of these neoplasms, but so far as the lips are concerned it is still more rare in horses than in dogs, while the commissure is the site of election of epithelioma with enlarged lymph-nodes. Care must be exercised in not mistaking true cancerous neoplasms for botryomycoma or actynomycoma; in cats the supposed cancroid is very often merely a microbic ulceration. As to cancer of the tongue, Cadiot has been able to collect seven authentic cases; three in the horse, once in an ox, once in a dog and twice in the cat, therefore four cases in herbivorous, as against three in carnivorous animals. Now, in all these animals the tongue is continually exposed to traumata, irritation and incessant soiling with gingivitis and alveolar pyorrhea. In spite of this, the tongue in these animals usually remains free from chronic lesions. The traumata leave only thin, elastic cicatrices which soon disappear and only exceptionally is there any thickening or induration of the mucosa. A persistent leucoplasia or epithelioma on the edges of the tongue are not observed, at least no instance has as yet been put on record and still the edges of the organ are the most exposed to traumatic irritation. These data are clearly of interest. The extreme infrequency of cancer of the tongue or lips in animals is evidently due to the inexistence of specifity in them which, on the contrary, in man is the principal factor for the development of cancers as well as their high morbidity.

The Pain of Membranous Pericolitis.—The dull pain in the right iliac fossa to which membranous pericolitis gives rise frequently leads to the erroneous diagnosis of chronic appendicitis. Its appearance at the very onset of the colic process is a moot question, but the bands of adhesions to which it ultimately gives rise and the resulting bends and kinks in the colon, are unquestioned. Grégoire of Paris has obtained good results by freeing the colon of the membranous

products surrounding and then fixing the colon to the peritoneum of the iliac fossa by a few sutures in order to prevent the return of the ptosis which is prone to be present and to hold the gut in its new position.

Treatment of Gangrene of the Lung.—Quite recently at Nancy an attempt has been made to treat pulmonary gangrene with the new arsenical preparations by intravenous injections. This treatment is to be resorted to without delay as soon as the diagnosis is made; it is not incompatible with the drugs ordinarily employed in this affection, so the Nancy physicians say, and although it has contraindications belonging to it, it is applicable to the majority of cases. Three cases have been observed in which pulmonary gangrene was cured without other treatment, two by intravenous injections of novarsenobenzol and one by intramuscular injections of hectine. The dose of novarsenobenzol was 15, 30 and 45 centigrammes in three successive daily injections, but after the third dose the intervals were increased as progressively larger doses were given.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 29, 1920, clxxxii, 18.

1. The Relation of Teeth to General Health. Charles H. Lawrence.
2. The Milk Situation. Howard Swift.
3. The New Clinic. An Advance Movement in Child Welfare and Race Regeneration. J. Victor Haberman.
4. Intestinal Obstruction. E. A. Codman.

1. The Relation of Teeth to General Health.—Charles H. Lawrence reviews the literature on this subject, which he finds brings to light a vast deal of theory upon the relation of dental conditions to general health, but does not form a sound basis for treatment of patients. It may be regarded as proved in certain instances that dental sepsis does cause systemic disease. Therefore, a careful examination of the teeth should always be made, and the patient should be questioned regarding dental symptoms. If the *x*-ray findings alone are positive, extraction of useful teeth should be reluctantly performed, since results show that benefit is obtained in only a small number of cases and the extracted tooth is not always as bad as the *x*-ray indicated. It should not be forgotten that mastication is an important part of digestion, and that disorder of nutrition may rise from lack of teeth. Anemia and disorders of digestion may be due in some cases to dental sepsis—in others they are as surely caused by too radical extraction in its treatment. From the standpoint of cleanliness artificial teeth should not be permanently fixed in the mouth. From the medical point of view permanent bridge work and similar devices are not desirable. Such are the facts concerning the relation of the teeth to the general health. They should not be confused with theories. Until more clinical facts are available caution should be used in promising results from the extraction of diseased teeth.

4. Intestinal Obstruction.—E. A. Codman, in this issue, concludes the review of 41 cases of intestinal obstruction operated on during a period of twenty years, from which he draws certain inferences. The first of these is that modern surgical methods are adequate for the relief of obstruction if one takes into consideration the influence of early diagnosis. Of the 41 cases, 14 were fatal. Of the fatal cases four did not die of the obstruction, but of other causes, two or more weeks after the operation. Of the fatal cases all had had symptoms for more than forty-eight hours. Of the 27 which survived, 14 had symptoms less than forty-eight hours. The inference is that the forty-eighth hour in obstruction is more significant than in appendicitis. Bands and adhesions are the most common cause, although in about half the cases there had been no previous laparotomy. This was surprising, but was substantiated by the statistics of Fitz (1888); although in those days laparotomies were relatively uncommon. In a patient over 45, if there is no previous history of laparotomy and the onset is not sudden, cancer is much the most probable cause. Seventeen females and twenty-four females in this series the writer finds is in accord with previous statistics. A point particularly to be emphasized is the use of the Monks or Moynihan tube to remove the poisonous content above the obstruction. The use of the tube should never be given up because of the condition of the patient. A case which would die from the slight additional shock of this procedure without it would surely die from the septic absorption.

New York Medical Journal.

May 1, 1920, cxl, 18.

1. The Obligations of Medicine in Relation to General Education. William C. Braisted.
2. Encephalitis Lethargica. John H. W. Rhein.
3. Demonstration of Reconstruction Section of Defects of Hearing and Speech. Charles W. Richardson.
4. Influenza in the Aged. Malford W. Thewlis.
5. The Relation of Focal Infection to Mental Disease. Henry A. Cotton.
6. After Treatment of Fractures. William T. Johnson.
7. Physiological Therapy in Influenza. Albert C. Geyser.
8. The Eye in General Practice. George D. Wolf.

2. Encephalitis Lethargica.—John H. W. Rhein gives a summary of our present knowledge of this disease, and reports three cases. In all of these the lethargy was pronounced, though in two cases there was at times a mild delirious state, preceded in both instances by a lethargic state which lasted until death. Other points of interest in these cases were that they occurred during the epidemic of influenza and that with the lethargy there was associated a disturbance of the extraocular movements and what appeared to be a double ptosis; the responses which these patients gave to questions when aroused seemed to be perfectly lucid; the temperature changes were insignificant until shortly before death. The disease was usually ushered in by the appearance of catarrhal manifestations of the mucous membrane of the eyes, throat, and bronchial tubes. As a rule the symptoms developed gradually, though the onset might be sudden, as by the occurrence of a convulsion or fainting spell. Headache is common and diplopia a common symptom. Slight fever is almost always present. Somnolence, lethargy, stupor, and coma appear in about 80 per cent. of the cases. Paralysis affects the oculomotor nerve mainly and next in frequency the facial nerve. In some cases there are no localizing symptoms. A review of experimental work shows that further studies are necessary to determine the nature of the virus and its relation to influenza. The treatment is entirely symptomatic, though withdrawal of the spinal fluid may give relief if there is increased pressure.

5. The Relation of Focal Infection to Mental Disease.—Henry A. Cotton presents a study of focal infection in the patients of the New Jersey State Hospital carried out by the aid of modern laboratory methods. As a result of their efforts to detect and remove foci of infection there has been a decrease of 91 in the hospital population during the past nine months not accounted for by death or other ascertainable reasons. They feel justified in concluding that in the removal of foci of infection they are doing more for patients suffering from mental disease than they have ever been able to accomplish before. The teeth harbored the focus of infection in by far the largest percentage of cases, while the tonsils ranked second, and the gastrointestinal tract third as the site of the responsible focus.

Journal of the American Medical Association.

May 1, 1920, lxxiv, 11.

1. The Obligations of Medicine in Relation to General Education: Presidential Address. W. C. Braisted.
2. Syphilitic Scars of the Spirit. Joseph Collins.
3. Arsphenamine Reactions. John F. Martin.
4. Summary of Bureau of Chemistry Investigation of Poisoning Due to Ripe Olives. G. G. DeBord, R. B. Edmonston, and Charles Thom.
5. Dental Surgery and Organic Heart Disease. P. J. Calvy.

6. Acute Middle Ear Infections in Children from the Standpoint of the Pediatrician. Linnæus Edford LaFetra.
7. Use of Mercurochrome as a Germicide in Ophthalmia Neonatorum. A Preliminary Report. C. A. Clapp and M. G. Martin.
8. The Metabolism of a Dwarf: Studies in Metabolism. I. Fritz B. Talbot.
9. The Suboxidation Syndrome in Childhood. Charles Gilmore Kerley and Louis Berman.
10. Mercuric Chloride Poisoning from Vaginal Injections—Two Fatal. P. Brooke Bland.

3. Arsphenamine Reactions.—John F. Martin states that in large hospital clinics where syphilis is treated with various arsphenamine preparations, reactions occur more or less frequently, depending upon the care taken in preparing the solutions, the purity of the contents, the time elapsing between the making of the solution and its administration to the patient, the amount of arsphenamine given, operative technique and skill, and factors within the patient. Laxness in following the printed directions that accompany each ampoule of arsphenamine accounts for the greater number of reactions to treatment. One should note any departure from the normal lemon color of the brand of arsphenamine being used, and then immerse the ampoule in 95 per cent. alcohol for fifteen minutes to detect obscure cracks. Cracked ampoules are to be rejected. Using the directed technique for one brand of arsphenamine while preparing the solution of another will, in some cases, cause reactions. Giving too large a dose of arsphenamine at the beginning of a course accounts for some reactions. Lack of preliminary preparation for a treatment—a laxative the night before and a light breakfast four or five hours before—is sometimes the cause. When two or more reactions occur from a multiple ampoule solution, in the majority of instances the fault will be found in the technique of preparing the solution, and the usual cause will probably be hypoalkalinity. Factors attributable to the patient, after both arsphenamine and the technique of preparing the solution have been excluded, include allergic idiosyncrasy, an inherited dominant susceptibility to arsphenamine medication; anaphylaxis, protoplasmic sensitization from repeated doses; blood synthesis reactions, in which arsphenamine becomes altered or precipitated from causes not understood, or ascribed to excess of carbon dioxide in the blood, or faultily prepared arsphenamine solutions; and the nitritoid reaction, ascribed to the action of arsphenamine in destroying spirochetes and liberating large quantities of bacterial protein to which the tissues have become sensitized. The Herxheimer reaction is attributable to the stimulating activity of non-sterilizing doses of arsphenamine. Reaction symptoms occur singly or in syndromes. The most common type of table reaction is the vasomotor syndrome assigned to the vasodilating action of arsphenamine. Insufficient alkalinization of arsphenamine solutions accounts for a large number of this type of reaction. When repeated reactions of this type occur, preceded by a number of arsphenamine injections without reaction, epinephrin deficiency as a possible factor in causing the reaction is to be considered. Preinjection of epinephrin tends to prevent this type of reaction. Another type of reaction is the "spine pain," characterized by stabbing pain in the lumbosacral region. Kolmer and Yagle state that arsphenamine causes hemolysis and that this action is increased by hyperalkalinization. Dilute solutions of neoarsphenamine (0.9 mg. in 90 c.c. or more of water) are claimed to cause hemolysis, while concentrated solutions (0.9 gm. in 30 c.c. or less of water) are not hemolytic. In addition to these reactions there are others due to functional and organic impairment, causing certain viscera to be more susceptible to arsphenamine. Dermal reactions appear to be due to too large doses of arsphenamine. Among the grave reactions are dermatitis exfoliativa, toxic jaundice, hemorrhagic encephalitis, and gangrene.

7. Use of Mercurochrome-220 as a Germicide in Ophthalmia Neonatorum.—C. A. Clapp and M. G. Martin report having used dibromoxymercuryfluorescein (mercurochrome-220) in four cases of gonococcal ophthalmia neonatorum with exceedingly satisfactory results. They find that a 2 per cent. solution can be used with impunity and with only a slight burning effect for the first few seconds. Though it leaves a red stain it is no more objectionable than argyrol, and will not produce a permanent stain, as occasionally happens with silver preparations. In the cases reported there was a marked improvement after its use was begun, and apparently a more rapid convalescence.

8. The Metabolism of a Dwarf.—Fritz B. Talbot calls attention to the recent work of Benedict and Talbot, about to appear in the forthcoming publication of the Carnegie Institution of Washington, which gives for the first time the complete curve of the basal metabolism of children from birth to puberty, and makes possible comparisons which in the past were not feasible. The basal metabolism of a dwarf was studied, which compared with the normal showed that his total metabolism for twenty-four hours was 780 calories against an average of 900 calories for normal boys of the same age. Although his metabolism was slightly diminished, it was almost within the normal. When the total calories of this dwarf were compared with the total calories of normal boys of the same weight it was found that he was producing more calories than the average, the total calories being 780 against 675 for normal boys. This was slightly above the possible deviation from the normal. His metabolism studied from the point of view of body weight was found to deviate markedly from the normal. The study shows that the intensity of his metabolism is greater for each unit of body weight than that of a normal boy. The result of the metabolism studies on this boy showed that in order to make him gain in weight he must receive as many calories as a normal boy of the same age and a great many more calories per kilogram than a normal boy of the same age or weight. This finding corresponds to what was found to be true in atrophic infants who required from 160 to 180 calories per kilogram before they gained.

The Lancet.

April 10, 1920, cxcviii, 5041.

1. Considerations on Abdominal Emergencies in Which Operative Interference Is Either Contra-indicated or Restricted. Charles F. M. Saint.
2. The Incidence of Nose, Throat, and Ear Disease Among Aviation Candidates. David Ranken.
3. Delayed Arsenical Poisoning; a Report of Fifty-eight Cases Following the Administration of "606" Preparations. George S. Strathy, C. H. V. Smith, and Beverley Hannah.
4. The After History of 500 Consecutive Tuberculosis Dispensary Cases. F. Garland Collins.
5. Unusual Cases of Intestinal Obstruction. J. A. Cairns Forsythe.
6. A Case of Combined Aortic and Mitral Regurgitation Which Lasted Over Thirty Years. W. Gordon.
7. The Plating of Simple Fractures. F. D. Saner.
8. Experimental Medicine and Venereal Diseases. William F. Snow and Thomas A. Storey.

2. Incidence of Nose, Throat, and Ear Diseases Among Aviation Candidates.—David Ranken submits statistics based on the examination of over 56,000 candidates for the aviation service, young men between the ages of 18 and 23, from all parts of the country, showing that aural disease appears seriously to affect 2.8 per cent. of this part of the population. These statistics, the writer states, could form the basis for the estimation of the incidence of other diseases in this group. The obvious conclusion is drawn that much remains to be done before the amount of nose, throat, and ear disease affecting the youth of Great Britain could be said to have been brought down to a negligible factor.

3. Delayed Arsenical Poisoning.—George S. Strathy, C. H. V. Smith, and Beverley Hannah, report 58 cases of arsenical poisoning following the administration of "606" preparations. Most of these cases were seen in military hospitals, though several additional cases have come under observation in civil practice. Of these 58 cases 47 showed symptoms referable to the liver—namely, jaundice, decreased digestive power, and liver atrophy. Eight were fatal, and at autopsy showed marked atrophy of the liver. Atrophy of the liver was noted in cases which ultimately recovered. This condition could be diagnosed by the *x*-ray. Dermatitis occurred in eight cases, five of which were severe, with marked exfoliation. Peripheral neuritis was observed in two cases. Albuminuria was present in over 50 per cent. of the cases. Edema was found in two cases. The onset of the symptoms seldom occurred until five weeks after the administration of salvarsan

had ceased. The earliest symptoms of salvarsan poisoning of the liver were bile in the urine, albuminuria, loss of appetite, and jaundice. These symptoms should be looked for in all patients receiving salvarsan medication, and on their appearance the administration of salvarsan should cease. Where evidence of liver damage is present the diet should be reduced to a minimum. Dermatitis with atrophy of the liver was observed in one patient who received arsenic in the form of Fowler's solution. Where the onset was sudden, with stupor and vomiting, death supervened in a few days.

5. Unusual Cases of Intestinal Obstruction.—J. A. Cairns Forsythe cited four unusual cases of intestinal obstruction to illustrate the difficulties with which the surgeon may have to contend in the diagnosis and operative treatment of intestinal obstruction. These cases were: (1) Acute angulation at the hepatic flexure from pericolitis, with rupture of the taeniae cecum; (2) adenomatous polypus of the ileum, accompanied by a chronic intussusception; (3) acute intestinal obstruction from traction diverticulum of the ileum, and (4) strangulation of a loop of the ileum by an adherent appendix epiploica of the sigmoid. The writer points out that traction diverticula are of rare occurrence, but they have been found in all parts of the alimentary tract. They are small funnel-shaped pouches produced by retraction of chronic localized peritonitis, by cicatrices in the wall of the intestine, or by inflammatory processes in adjacent organs. Adhesion of the bowel wall to a tuberculous lymphatic gland is one of the commonest causes. Mesenteric gland disease may lead to intestinal obstruction in various ways. The first case was probably unique in that two of the three taenae coli of the cecum were ruptured.

British Medical Journal.

April 10, 1920, 3093.

1. Lecture on the Soldier's Heart and War Neuroses; a Study in Symptomatology. Sir James Mackenzie.
2. Some Points in the Prognosis and Treatment of Chronic Nephritis. J. O. Symes.
3. A Familial Form of Acoustic Tumor. Anthony Feiling.
4. The Operative Treatment of Ulcerative Colitis. P. Lockhart Mummery.
5. Fibroids Complicating Pregnancy, Hysterectomy, Recovery. R. de S. Stawell.
6. Phagedena of Hunterian Chancre Following Treatment with Novarsenobenzol. H. M. Hanshell.
7. A Case of Cervical Caries Simulating Cerebellar Tumor. Richard Armstrong.

1. Lecture on Soldier's Heart and War Neuroses: A Study in Symptomatology.—Sir James Mackenzie, in the introductory part of this lecture, calls attention to the need for a presentation of disease which conforms to the aspect of disease presented by the living subject. Thus far there has been no orderly classification of the large mass of symptoms which have been recognized. He therefore attempts a classification based upon the mechanism of their production, as follows: (1) Structural symptoms—that is, those based on a modification of the tissues of the organ, and which are chiefly revealed by physical signs. (2) Functional symptoms—that is, symptoms due to modified or deranged function of an organ. (3) Reflex symptoms—symptoms due to reaction on the central nervous system or on the nervous mechanism of organs. It is to the last group that he especially directs attention. In considering this he discusses the mechanism of an ordinary stimulation, of the radiation of sensation, of a motor reflex, and the mechanism of radiation in disease, and emphasizes the fact that if we apply a mechanical stimulus to the skin we produce sensation peculiar to the nature of stimulus, as, for example, touch, pain, heat, or cold; if we apply the same stimulus to the viscera or to the serous surfaces of internal structures of organs we get no response or rarely a response of a different nature. He had repeatedly tested in the conscious human subject the various organs by cutting, stitching, or tearing, and no sensation was elicited. The insensitiveness of the viscera in its full significance has not yet been grasped. In the testing of the sensibility of organs very imperfect methods have been used. No conclusions should be drawn as to the sensitiveness of an organ which has been stimulated through a structure which is itself sensitive. Nearly all conclusions have been drawn from observations made by pressing on the organs through the sensitive abdominal wall. Many observers state that they have demonstrated the sensitiveness of an organ by observing its position by various methods, such as the *x*-rays, and later by pressing over it and eliciting pain. The error here lies in the failure of the observer to take the precaution of excluding the sensitive external body wall. When in testing the sensibility of organs pain is elicited, a clear conception of the stimulus giving rise to it should always be obtained. There is evidence that a mechanical stimulus only produces pain when a vital process is set in motion.

4. Operative Treatment of Ulcerative Colitis.—O. Lockhart-Mummery believes the best treatment of chronic ulcerative colitis is by frequent washing through with saline solution after an appendocostomy opening has been established. The operation should be performed as soon as the diagnosis has been made, and not left as a last resort, although it may sometimes succeed even then. The diagnosis should always be confirmed by sigmoidscopy.

Schweizer medizinische Wochenschrift.

March 25, 1920.

Encephalitis Lethargica.—Maier sums up our knowledge of this affection as follows: Up to 1916 we had no definite knowledge of this malady. Its nearest congener is infantile paralysis, which, however, has a pronounced spinal component and affects children by preference. As for any relationship with grippe the more the two are compared the less the suggestion of any kinship. Encephalitis lethargica appeared two years before the pandemic. In grippe encephalitis there are no cortical disturbances. Many old practitioners have informed the writer that in the pandemic of 1889-90 there was nothing comparable to sleeping sickness. It is true that patients affected with encephalitis, when placed in wards with influenza cases, did not contract the latter, but this negative evidence is not decisive of anything. The same thing may be said of subjects with other diseases, notably the "false grip" cases. The coexistence of the two maladies in certain localities speaks rather for a common predisposition to both affections, based on lowered resistance. Again, influenza itself lowers the general resistance to disease, so that encephalitis follows in its wake. The new disease is proving very instructive in the demonstration of cerebral physiology, but it is a serious matter, despite its small incidence, with its 30 per cent. mortality; and while it comes and goes in the space of three months it can reappear in subsequent waves. Despite the low diffusibility—it is rare for more than one case to occur in a family—it should for the present be considered as mildly contagious, and a certain degree of isolation and quarantine observed. The symptomatology is multifold, and at the onset many conditions may be mimicked as hysteria, dementia precox (catatonic form), and fugues, myoclonus, and chorea. Fever is present in 100 per cent., busy delirium in 78 per cent.; lethargy in 82 per cent., muscular rigidity in 78 per cent. Diplopia and strabismus are somewhat less common, but this may be in part explained by defects of observation.

Pro-German Naïvetés.—Cruchet refers to a recently published work by a German author on experimental bacteriology and infectious diseases in which entire mass innovations of American origin are ignored. Such works are usually regarded as a boycott of French, American and other scientists. But this attitude may be unjust, for a similar work by an Austrian contains the short but significant passage that unfortunately he was unable to obtain access to the recent labors of any but German and Austrian scientists. The work in question had for its subject lethargic encephalitis. There should be some discrimination shown in these cases. The general present attitude of the Teuton, if not repentant, is at least conciliatory, and there is no evidence yet of any new Teutonic propaganda. On the other hand, there is every reason to watch for and anticipate such activities.—*Journal de médecine de Bordeaux.*

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventy-first Annual Session, Held in New Orleans, April 26-30, 1920.

(Special Report to the MEDICAL RECORD.)

(*Continued from page* 814.)

SECTION ON PEDIATRICS.

First Day—Wednesday, April 28.

DR. FRITZ B. TALBOT OF BOSTON IN THE CHAIR.

Chairman's Address.—Dr. FRITZ B. TALBOT made this address, in which he brought out the fact that many people both inside and outside the medical profession were giving more and more thought to the subject of child hygiene. He expressed the belief that in the future his subject would attract more attention and would draw to the solution of its problems greater minds than it had done in the past. It was pointed out that research into the cause and nature of disease had assumed an importance which was not recognized a decade or more ago, and as a result of the work done in the past ten years the general practitioner was able to treat successfully to-day many diseases that he was formerly unsuccessful in treating. We had also gained a knowledge of normal physiological processes of the child's body with which we could compare pathological processes, and that had been very important because up to date we had not had any normal standards with which to compare the pathological. The speaker also emphasized the great impetus which preventive pediatrics had received during the war owing to the campaign and propaganda of Children's Year. At the International Conference called at Cannes by the Red Cross it was stated that next to the then present typhus fever epidemic child welfare had assumed the place of greatest importance of all the specialties represented there. The establishment of normal health in childhood laid the foundation for normal healthy adult life. This foundation might be laid either by attending the individual child or by classes in clinics. Dr. Talbot discussed somewhat in detail the deficiency of pediatric teaching in our medical schools, and particularly the failure to teach infant feeding. The medical student in order to get his degree had to care for twelve obstetrical cases; why should he not care for twenty normal infants, both on the breast and on the bottle, before he received his degree. In this way he would obtain actual first-hand knowledge which he never got from books, and when he went into private practice he would be familiar with what, perforce, he would have to do. Many diseases were becoming extinct—could not the time used in learning their recognition and treatment be used to better advantage in learning prevention? Every so often it was important that the relative value of subjects should be balanced anew so that teaching could be readjusted to the times. At the present time there was the necessity of understanding social questions that had an influence on health, home life, etc. The social element of medicine could well be taught along with the scientific aspect at the bedside at the same time that clinical medicine was taught. That would bring the pediatrician back to the place that the general practitioner formerly held with so much pride. The teacher of pediatrics should cooperate with those specializing in other subjects, and particularly with the obstetrician with the object of enabling the student to acquire a knowledge of the theory and practice of antenatal care. It would be ideal if the student could observe the prenatal care, be present at the delivery and then follow the child for five months after birth in a certain number of cases before receiving his degree.

The Treatment of Indigestion in Children.—Dr. JOHN LOVETT MORSE of Boston presented this paper, in which he stated that digestion might be disturbed by decreased powers of digestion or increased work in digestion. Decreased powers of digestion might be due to diseases other than digestive, physical or mental overfatigue. The treatment consisted in relieving diseases other than digestive, and removing causes of overfatigue. The regulation of intervals between feedings and methods of taking food was often enough to effect a cure. In the more severe cases there was intolerance for individual food elements, often with intestinal fermentation from abnormal bacterial activity. Examination of the stools would reveal which food was badly borne and caused fermentation. A microscopic inspection was often sufficient to determine this, but should never be depended upon alone. The microscopic examination should therefore always be made. This was not a difficult matter, and required but a few minutes. In fat indigestion the stools were large and semi-solid, with the odor of butyric acid, and contained a considerable amount of mucus. Microscopicolly, fat was present, more often as fatty acids and soap. The stools of sugar indigestion were usually loose, greenish, containing acetic or lactic acid and often mucus. In starch indigestion the stools were usually loose, brownish in color, contained acetic or lactic acid, sometimes butyric acid, and occasionally mucus. Almost invariably the starch was changed partially into dextrin. In general the bacteriological examination was not of great importance in diagnosis, for usually no additional information was obtained. Usually the character of the intestinal flora could be ascertained from the reaction of the stools. There was no place for the so-called digestants in the indigestion of infancy, for there was probably never an insufficiency of hydrochloric acid or pepsin. The treatment consisted in the regulation of habits and the regulation of the quantity of food to the capacity of the individual child. If it was necessary to cut down one food element, this should be made up by substituting another food element in a quantity sufficient to make up the required number of calories. Then the food element that caused the trouble must be given in a small quantity, and increased as fast as would be allowed. The diet list must be written out explicitly and the number of calories indicated. A list of foods and their caloric values should also be given to the parents. Dr. Morse said he had found that almost all parents were sufficiently intelligent to use these tables. In cases in which there was marked clinical evidence of fermentation it was difficult to say what proportion of the disturbance was due to bacteria and what proportion to chemical processes. It was probable, however, that the original difficulty was not due to bacteria. The bacteria could not be changed by giving bacteria by the mouth, but only by changing the intestinal contents; and this must be done by diet. The only exception to this was the gas bacillus, the growth of which might be inhibited by butyric or lactic acid. There was no place for the use of drugs in the treatment of the indigestion of childhood except for the temporary relief of symptoms. Cure could only be brought about by the regulation of life and diet. Recovery was a matter of years sometimes, but was usually certain, provided treatment was kept up for a sufficiently long time.

Dr. L. W. HILL of Boston said he wished to bring out three points, as he had been seeing a great many of this group of cases. First, Dr. Morse got results which were equalled by very few men in this country, not only because he had seen a great many cases, but primarily because he took infinite pains. That was the one thing of importance; one must be willing to work, to follow the cases closely, and to see them often. One must take as much trouble with these cases as with a difficult surgical or obstetrical case. Sometimes it took, not weeks or months to effect a cure, but years. Second, with reference to the relation of bacteria to the food supply, Escherich had brought out in 1886 that the intestinal bacteria depended upon the food supply, and by changing the food supply one could change the bacteria. Two types of bacteria were distinguished, the putrefactive and the fermentative. If the intestine was infected with the fermentative bacteria one should withdraw the carbohydrates and substitute protein food. If the putrefactive bacteria were present one should withdraw protein food and substitute carbohydrates. That was one of the most important things in infant feeding. Dr. Hill said that if he had to choose one particular principle in infant feeding that was the one he would adhere to. The intestines were swarming with bacteria, and if the infant was overfed

the bacteria seized the food and decomposed it, so if the baby was overfed an indigestion with fermentation resulted. There was no use telling the mother to give this or that; one must figure out absolutely what the child should have and give the mother an ironclad diet list, containing exactly what the child should have for each meal. Never give directions by word of mouth, but always written directions. Trust nothing to the judgment of the mother, but have it all on paper.

Dr. CLIFFORD GRULEE of Chicago called into question the statement Dr. Morse had made to the effect that you could not change the intestinal flora by administering another type of bacilli by mouth. He said he did not see how they were going to account for certain phenomena unless one admitted that bacteria introduced by mouth did show growth in the intestines. Typhoid bacilli were introduced into the mouth and developed and multiplied in the intestines. It was also true that some types of dysentery were produced by bacilli introduced by way of the mouth. His experience was contrary to that of Dr. Morse. It seemed to him there was no scientific reason why lactic acid bacilli introduced by the mouth could not be taken up by the intestines. The latest results obtained by the use of the duodenal tube showed that there was a definite relation between the bacteria in the stomach and those in the duodenum in various types of nutritional disturbances.

Dr. L. T. LE WALD of New York said he wished to indorse what Dr. Morse had said, but he wished to supplement it by a few remarks on what to do when treatment failed. In other words, his work in the study of children had been along the lines of roentgenological diagnosis in cases that did not yield to ordinary methods of treatment. He had a little more distinct view of the subject than the man who saw it only from the standpoint of the pediatrician. Their observations in obscure conditions in adults ten years ago were about what they were in pediatrics today. A more careful study with the *x*-ray of cases of indigestion that did not yield to ordinary methods of treatment frequently showed anatomical anomalies or definite mechanical obstructive lesions that could be dealt with effectually only by knowing the exact nature of the lesion. Dr. Le Wald described a number of these anomalies and mechanical obstructions.

Dr. ISAAC ABT of Chicago agreed with almost everything Dr. Morse had said, and said he was particularly impressed by the fact that Dr. Morse had laid stress on the fact that gastrointestinal disturbances might be produced by constitutional disturbances. He doubted whether there was such a thing as indigestion pure and simple. Indigestion was but one step in general metabolic disturbance. The problem was not so difficult as some had thought. It was a question of finding what the difficulty was, and of diminishing the amount of food element that was causing the trouble or altering the food entirely. So far as placing great reliance on the examination of the stools, he doubted whether this was the most important element in the diagnosis. Sometimes one found fat when the food was perfectly correct. Personally he had found little help from the examination of the excreta.

Dr. MORSE, in closing the discussion, said he did not think Dr. Grulee's argument was very good when he spoke of typhoid bacilli in the intestine. Typhoid fever was a systemic infection, and infectious dysentery was a disease of the intestinal walls. By giving bacteria by the mouth they could not be implanted permanently in the intestines, unless the food was also changed so that they had a favorable medium in which to grow. Dr. Jacobi had brought out a most important point when he once said that in the modification of milk one should mix brains; it was most important in making stool examinations that one should mix brains in the interpretation of results. There was a great deal to be learned from the examination of the stools, but if one thought because he saw a few fat globules or a little starch that the child had fat or starch indigestion he had better not examine stools microscopically. One must first take what he saw in the normal child as a basis for forming a judgment as to what was abnormal, and he would have to use brains in the interpretation of his findings. The reaction of the stools furnished more information than any other single thing.

The Treatment of Indigestion in Children from Six to Twelve Years of Age.—Dr. HARRY M. MCCLANAHAN of Omaha read this paper, which was based upon the study of 96 school children between the ages of six and twelve years. This was the age at which children were subjected to the stress of school life, the age at which the permanent teeth erupted, and the age at which they began to get a little away from close parental supervision. In 24 of these cases there was a history of nervousness, and three of these children had to be sent away from home before anything could be done for them. In 27 cases three were distinctly diseased tonsils, and 10 of these were associated with adenoids sufficiently large to cause mouth breathing. These were operated on and all received benefit. Ten of the tonsillectomy cases, however, were operated on without benefit to their general condition. Twenty-five children in this series had distinctly bad teeth, and one point that had impressed him was that these children would not chew their food properly because of pain. Three children who had malocclusion were sent to the orthodontist and showed distinct improvement after treatment. Indigestion in the largest number of these children appeared to be due to high protein feeding and neglect of fruits, cereals, and leafy vegetables. Those showing obstinate constipation were fluoroscoped for the purpose of ascertaining if there were anatomical defects present. All had the urine examined several times. Dr. McClanahan recalled that some years ago he had read a paper on the significance of indican in the urine. All of these children complaining of indigestion had an excess of indican in the urine. There were five alimentary glycosurias which disappeared under proper diet. Practically all of these children had some nervous symptoms, such as increased irritability, restlessness, grinding of the teeth, etc. Fourteen had eneuresis, and 10 of these recovered under rational treatment. Of the series, 52 were constipated and five only suffered from emesis. Seven of the children had intestinal parasites. In 25 cases the abdomen was distinctly enlarged. In those children having epigastric tenderness and pain on pressure these symptoms were associated with a distinctly red tongue. From these findings the essayist drew no conclusions. In the treatment of indigestion in children of this age the most important factor was the cooperation of the mother. It was his rule in all cases to write a simple diet, giving what the child could have rather than what he could not have. A psychological factor of importance was the gaining of the good will of the child. If there was one factor in the treatment that was of importance it was that rest and regularity in sleep were of the greatest value in the physiological restoration of the nervous system. Eleven of the nervous children were kept out of school. The importance of regular bathing was also stressed. The essayist said he wished to confess that he used drugs in the treatment of these cases. He found that before these children came under his observation most of them had been drugged to the extreme and he felt that it was better for the children to have some drug under the direction of the average physician than to take drugs of the mother's choosing. The main object of the drug was to get the bowels regular. He had given paraffin at bed-time and had found nux vomica valuable given after meals. This was a good reminder of the necessity of keeping regular habits. If one obtained the cooperation of the mother and child these were most satisfactory cases to treat and the doctor received due credit.

Dr. LAURENCE DEBUYS of New Orleans said they should all feel greatly indebted to Dr. McClanahan for bringing up this subject inasmuch as this was a period in the child's life which frequently did not receive sufficient attention. The foundation of the future individual was laid, it was true, during the first two years of life and influences were more important the nearer they approached his birth time. However, one could not build a good foundation in infancy and then let the structure go uncared for later on. At the period Dr. McClanahan had chosen for discussion one could not watch the child as closely as in infancy. Indigestion at this period of the child's life had to be considered from two view points, that

of the child and that of the child in relation to his surroundings. It had been well said that some children were born nervous, some acquired nervousness and some had nervousness thrust upon them. It was sometimes necessary to take these nervous children away from their homes in order to get results. The teeth should receive attention and regularity of habits should be insisted upon. It was important to ascertain the amount of food that the child could take care of and then see that he received this food at regular intervals and nothing between meals. The food should be plain and wholesome rather than palatable. Unfortunately, too often the parents allowed a child to have what he liked rather than what was best for him. Dr. DeBuys condemned the practice of drugging children and said that too often the child at this period of life had already become dependent upon drugs, especially as regarded bowel movements. He also condemned the use of glycerin suppositories and soap in infancy; if it was necessary to use something water should be used. The stimulating effect of glycerin and soap made the child insensible to the normal desire to stool.

Dr. Henry Dwight Chapin of New York observed that there were many factors that entered into indigestion in childhood, but that he wished to mention one only and that was to emphasize the deleterious effect of the lack of proper rest. An interesting experiment had been performed in the case of a few children in the public schools of New York. They took the undernourished children in the public school across the street from the Post Graduate Hospital and gave them a midday meal and then weighed the children to observe the effect. They all gained in weight except about half a dozen. They found that the reason these children did not gain was because they did not get enough rest. By having these children sleep an hour every day they were made to gain in weight. Some children played too hard and overexerted themselves and this was an important factor in their malnutrition and indigestion. A little more rest would cure some of these cases.

Dr. John Lovett Morse of Boston said he wished to corroborate what Dr. McClanahan had said. He did not think they stood so differently on the question of drugs as Dr. McClanahan had intimated. In his paper he had said that he had no use for drugs except for the treatment of symptoms but they were not used with the idea of curing the condition. He was glad to hear that Dr. McClanahan used nux vomica because that was the one drug he used in cases of this kind. He had found it wise to get the cooperation of the child rather than of the parents. There was one form of treatment that might be called psychotherapeutics which he had taken advantage of. Before examining the child he saw the mother first and had her tell him what the child had eaten for the past two meals. He then examined the child's abdomen and told the child what he had been eating; after that the child was afraid to disobey orders as regarded diet for fear when he examined him again he would find it out.

Dr. Fritz B. Talbot of Boston emphasized the importance of rest in the treatment of these cases. He said it was interesting to hear the different views as to why rest was beneficial but that did not make so much difference so long as the child got the rest.

Dr. De Vilbiss of the U.S.P.H.S.. said it was important to make the child understand that this was his own problem. In their work they had had to make the best of conditions as they found them and to work with such material as was at hand. They told the mother about the child and what should be done; perhaps she would act and perhaps not. They put the child on the scales and showed him that he was underweight and that was a mark against him. The child then immediately became interested and wanted to know why he was underweight and what he should do to come up to the standard. He was willing to do almost anything in order to "go over the top" with the other children. They first corrected physical defects—teeth, tonsils, adenoid, etc.—and then by gaining the cooperation of the child they were able to get results.

Dr. George Dow Scott emphasized three points with reference to the successful treatment of these children: (1) the neglect to feed stewed and raw fruits which acted as a laxative, diuretic and tonic to the stomach and intestines; (2) the advantages of semisolid foods, cereal with enough milk to put on the cereal, with toast and cooked food. Meals should be regular and nothing should be permitted between meals; (3) another thing that was important was bathing. Bathing was a better tonic than any drug. A bath fifteen minutes before meals was a tonic to the nervous system and helped digestion.

Dr. Frederick Moore of Des Moines called attention to another source of error in handling these children. It was important to get a history of the previous diet of the child because frequently it was deficient not only in quality but in quantity. The temptation was for the physician to give a complete and special diet at first. When that was done the mother lost interest in a short time. One should not make a great variation from the customary diet at first but should make changes gradually. A careful history of the child's diet was as important as the diagnosis.

Dr. McClanahan, in closing the discussion, said these made very satisfactory cases for treatment because one got results. By caring for these cases of indigestion in childhood much invalidism in later life was prevented, for undoubtedly the foundation of later life was laid in childhood.

The Relation of Acquired Food Dislikes of Childhood to the Ills of Middle Life.—Dr. C. Hilton Rice, Jr., of Montgomery, Ala., contributed this paper. He first discussed the phenomena of life and nutrition from the view point of biologic chemistry, showing that a defect in nutrition might not be immediately perceptible, but was nevertheless often cumulative in its effect. Against this background the following facts of general observation were set up: (1) All healthy adults and children with few exceptions, ate a variety of foods. (2) Many children, particularly in the second and third years, left to eat what they liked, turned to the carbohydrates and formed dislikes for essential foods, especially milk, eggs, fresh meats, and green vegetables. (3) Many middle-aged sufferers from disturbances of metabolism had food dislikes that dated back to childhood. These individuals had often been anemic and constipated from childhood. After a careful exclusion of other etiological factors the conclusion seemed warranted that the total or partial absence of essential foods over a long period of time might account for much disease of middle life. This disease was only the masked and remote effect of the gradual, cumulative action of malnutrition on tissues and organs over long periods of time. Some of the conditions that might be related to defective nutrition dating from childhood were hypertension, gastric and duodenal ulcer, visceroptosis, etc.

Dr. W. W. Butterworth of New Orleans expressed the opinion that Dr. Rice had presented a new viewpoint in reference to disturbances of nutrition. Instead of looking backward as the internist did he was looking forward, and while it might be difficult to prove his assertions there was much in them to commend itself to one's attention. Take, for instance, rickets which was brought about by deficiency in certain food elements in infancy yet the dire results were seen later in bone deformities stunted growth, etc. Pellagra might also be cited as a condition that showed the far-reaching effects of a deficiency in certain food elements. Many of these conditions due to food deficiencies were slow in onset and might have disturbances in digestion over years and years before finally definite disease resulted.

Dr. Talbot said he thought Dr. Rice had in mind the same idea that he had when he composed his address. We were all searching back to the cause with the idea of prevention in the background. It was going to be difficult to prove many things but it was obvious that many of the diseases of adult life had their origin in childhood. In regard to digestion disturbances and food likes and dislikes, Dr. Talbot said he had very little experience with patients who were on an extremely unbalanced diet. Education in his community was such that most people came to know what a good diet was. There was, however, a certain group of children who had food dislikes and did not get a well balanced diet. Most of these food dislikes came in certain types of families in which the history

showed asthma, hay fever, or urticaria. and they had food idiosyncrasies due to anaphylaxis. One must bear in mind that food dislikes might be due to anaphylaxis.

Dr. MAY G. WILSON of New York stated that in 1916 they had made a study of diet in a large group of children and found that outside of potatoes, tomatoes and lettuce there was a lack of green vegetables in the diet. In many children who were in the lower grades in school, milk was omitted for the diet and tea substituted. By the time the children were ten or eleven years of age they began to use condiments and acquired a dislike for the essential foods. In a group of 2000 children only five per cent. used green vegetables.

Dr. O. M. GILBERT of Boulder, Colo., said it fell to him to treat a great deal of tuberculosis and he had observed that a great many of these patients did not like milk or eggs and never could take meat. He felt that this defective diet or lack of dietetic training was an important factor in relation to tuberculosis. There were a few cases with anaphylaxis but they were very rare. With the average individual it was only a matter of taking time and of gradually adjusting the patient to the proper diet. Irving Fisher should be credited to having called attention to the injurious effects of an excess of protein diet after middle life. but a proper protein diet was essential during the formative period of life, and lack of a proper protein diet was a factor in developing not only conditions like pellagra but of tuberculosis as well.

Dr. RICE, in closing the discussion, said the conclusion he had reached on this subject had come to his mind too recently for him to give statistics, but that he had observed that in Alabama one of the commonest diets of children was bread and cane syrup with too much candy and too many ice cream cones between meals, and that most of these children did not like green vegetables. From the point of view of the pediatrist they were in a position to look forward and see the effects of the food dislikes of childhood on the metabolic disturbances of middle life better than the internist who got only a fragmentary history.

Three Pertinent Questions on Maternal Feeding.—Dr. WILLIAM A. MULHERIN of Augusta, Ga., read this paper in which he considered the following questions: (1) Should our textbooks unqualifiedly state that intercurrent pregnancy was an indication for immediate weaning? (2) Might we not question the advisability of immediate weaning in mild typhoid fever? (3) Should not more positiveness exist in our textbooks regarding the advantages of complemental feeding over the method of alternating the breast and the bottle? In discussing the first question the essayist emphasized the advantage of slow weaning when the baby reached a certain age and the breast milk was no longer sufficient to properly nourish it. The evidence seemed to show that uncomplicated pregnancy did no more than weaken the milk and perhaps diminish the quantity so that there was no need for immediate and abrupt weaning. It seemed advisable that in uncomplicated pregnancy weaning should be brought about slowly. With reference to the question of immediate weaning in typhoid fever, the writer stated that in severe typhoid fever there could be no question that immediate weaning was advisable. In mild typhoid fever, however, with the diagnosis made from the tenth to the twelfth day of illness, the breast secreting freely, a positive Widal with the baby's blood, the mother feeling equal to and desirous of nursing her baby he felt that it might be permissible to continue the baby at the breast and to piece out, if necessary, with complemental feeding. He cited three cases in which this course was followed with no ill effect and with possible advantage to both mother and child. It was evident that if the child had been nursing for ten or twelve days, during which time the mother had typhoid fever without it being known, the danger of the child contracting the disease was greater than after the condition had been diagnosed and care taken to avoid infection. Again the wear and tear on the mother of sudden weaning was perhaps greater than any ill effects of continuing to nurse the infant. There was not much danger of the mother transmitting typhoid fever to the baby through the milk and the child could be protected from infection from other sources. In reference to the third question, he felt that greater stress should be laid on the advantages of complemental feeding over the method of alternating the breast and the bottle. It was well known that stimulation was an important factor in increasing and preserving the milk supply and when the bottle was alternated with the breast the latter received less stimluation and the milk supply decreased. This was an important matter and should be stressed much more than it had been.

Dr. JOHN LOVETT MORSE of Boston said that as regarded the weaning in cases of uncomplicated pregnancy, it seemed to him that it was impossible for a woman to properly nourish three people, the infant at the breast, the child *in utero* and herself. It had never occurred to him that when weaning was advised in pregnancy that abrupt meaning was meant—he thought it meant weaning the child slowly. With regard to complemental feedings, Dr. Morse emphasized the fact that he thoroughly believed in breast feeding and that he believed a great many more mothers could nurse their children than did do so, and that such women should be made to nurse their children. Of course there was a limit to the amount of milk the civilized woman of today could produce. Personally he had had no luck in re-establishing breast feeding when it had once been abandoned. There was no question but that it was better to give a complemental feeding than to alternate the breast and bottle, but one had to take into consideration the state of society in which the mother lived. If she was at home it was best to nurse the baby at every feeding time. but if she was a woman with other cares and duties it might be well to substitute the bottle at one or two feedings a day. There was a certain class of mother who produced more milk if this plan were followed than if she attempted to nurse her baby every time. The one thing, however, which increased the milk supply was to use the breast.

Dr. JAMES D. LOVE of Jacksonville, Fla., stated that in his experience he had seen uniformly bad results from the sudden withdrawal of the baby from the breast where the mother had mild typhoid fever. The danger to the baby was practically nil much less than from sudden weaning, and the mother was saved the discomfort and nervous wear and tear of having the milk withdrawn artificially; she also had the satisfaction to be derived from being able to nurse her baby. He believed that after the baby reached the age of two or three months it should have one bottle of milk daily. Provided the milk supply was not very scant the mother's health was often improved by this rest and the quality of the breast milk was materially improved thereby. He believed Dr. Morse expressed the sentiments of the section in reference to the advisability of withdrawing the baby from the breast in uncomplicated pregnancy and febrile disturbance.

Dr. I. L. VANZANDT of Fort Worth, Texas, cited several instances in which mothers with typhoid fever and women who were pregnant had been successful in nursing an infant at the breast.

Dr. ALFRED J. SCOTT, JR., of Los Angeles also cited an instance in which a mother with walking typhoid fever had nursed her baby. He had always advised the discontinuance of nursing during pregnancy though the weaning was effected gradually, but the babies in California were not subject to gastrointestinal disturbances to the same extent as in the East.

Dr. WILLIAM WESTON of Columbia, S. C., pointed out that in animals and primitive man the fact of pregnancy was not a reason for the cessation of nursing the offspring. If that were true why should one insist upon immediate weaning in more civilized people? He thought the answer must depend upon how the mother was getting on and how the baby was doing. Personally he believed that if both were getting along well one should leave things as they were.

Dr. BLOOM of New Orleans said that in his judgment the right thing to do was to wean the child rapidly at the time the diagnosis of pregnancy was made.

Dr. MULHERIN, in closing the discussion, said that he would find no fault with the textbooks if everyone interpreted them as Dr. Morse had done, but the state-

ment was made that one of the indications for immediate nursing was the occurrence of pregnancy. Personally he did not advocate nursing after pregnancy had taken place, but slow weaning. With regard to the complementary and supplementary feeding. the point to be made was that the way to increase the milk supply was not to relieve the breast of work but to make it do more work, as in that way the capacity for work was increased. In pregnancy there was seldom a toxemia that called for immediate weaning, and in the South there was great danger in sudden weaning.

How Pediatric Teaching of Nutrition May Affect the Nation's Welfare.—Dr. HENRY DWIGHT CHAPIN of New York read this paper in which he dwelt upon the important part that nutrition played in the development of the child and hence in the future of the nation. The pediatrician was the one most frequently consulted with reference to diet and nutrition in childhood, and hence was in a position to perform an important function in national affairs. That we had not given sufficient attention to the subject of child welfare in all its aspects had been shown by the results of the draft examination which revealed the fact that one in every four of our young men of draft age was physically defective. An investigation as to the extent of malnutrition among children in certain New York public schools was made and 20 per cent. of the school children were found undernourished. This condition was not limited to the poor but was found among all classes of society. The question that suggested itself was to what extent these physical defects and this malnutrition were the result of the teaching of faulty theories of nutrition. The literature of infant feeding has been based upon the theories of pediatric authorities. It was time to test these theories and see if they were borne out by experience and facts. Animal experiments had shown that poor growth and a satisfactory gain in weight might go on together. Real growth was not simply the storing of water and fat in the tissues. After emphasizing the importance of breast feeding Dr. Chapin pointed out certain errors in their teachings. We had been taught that the suitability of a food depended upon the quantity of protein, carbohydrate, fat, etc., that it contained. But it must be remembered that there were many forms of proteins, fats, carbohydrates, and mineral substances. Some proteins would produce growth and some would not, so it was easy to see how one might go wrong by basing his estimate of food values simply upon chemical composition. It was quite customary to add bicarbonate of soda to cows' milk to neutralize the acidity, but frequently cognizance was not taken of the fact that heat rapidly changed the bicarbonate of soda to carbonate. This procedure, though useful at times, must be done carefully. Again the fat soluble and water soluble vitamines of MacCollum played an important part in nutrition. Here it had been shown that the water soluble B was rapidly destroyed when bicarbonate of soda was added to the food, so that this procedure must be eradicated if milk was to have its full nutritive value. The popular teaching had been that food values were useful in proportion to the amount of heat they produced on combustion, this being expressed in calories, but it had been shown that much nutrition did not depend upon combustion. There were those who advocated cereals and milk as the best form of food for infants and children. The cereal was used not only for its nutritional value but to adapt the cows' milk to the infant's digestive tract. Milk mixed with cereal formed an efficient food provided a sufficient amount of antiscorbutis was added. The practical advantage of such a dietary was demonstrated on a large scale in Denmark during the war, where the people were given a ration of bread made of bran, wheat, and other cereals, potatoes, cabbage, and some milk. This proved a very satisfactory diet, and practically all our experience in matters of nutrition showed the efficiency of a diet of cereals and fresh vegetables. The real value of protein depended upon its containing the correct kind of amino acids and not upon whether it was an animal or a vegetable protein. Dr. Chapin quoted figures to show that as a transformer of food the animal was very expensive. A thousand bushels of grain would support five times as many people as though the same amount of grain were transformed into meat. The pediatrician could render no greater service to his country than to start children in life with foods that were suitable physiologically, simply and inexpensive. If he acquired the taste for such foods he would carry it into adult life. One of the future sources of protein food would be the soy bean, which contained much protein, fat, and heat. All possible sources of food should be searched to find other food supplies than those we now had that would be both nutritious and economical. Experience and results must be the final test in any plan of nutrition.

Dr. JOHN A. FOOTE of Washington, D. C., congratulated Dr. Chapin on his paper and on having emphasized the need of active interest on the part of this Section in public education, not only of the physicians, but of the lay public, in the matter of food values. The United States Public Health Service went a little further than Dr. Chapin had done in interpreting the statistics of he draft. Dr. Chapin said that one man in four was found to have some defect; the United States Public Health Service said one out of three men had some physical defect. When we remembered the large number of men who were examined and that this meant that there were at least a million men of draft age suffering from a physical defect which prevented them from doing the work that they might otherwise do, we could appreciate what this meant economically. Possibly the relation of these defects to the diseases of childhood was not apparent at first. Sir Arthur Newsholme, a short time ago in an address, stated that the same condition was found in England and he believed that we had not understood the importance of having the functions of child welfare week vested in local and national health departments. Dr. Foote also called attention to the need of better infant mortality and birth registration statistics.

Dr. L. W. HILL of Boston said it was the impression among physicians as well as among the laity that children needed a great deal of protein food in order to thrive and grow. He did not think the standard of two grams per kilo was correct. There were no accurate figures as to the requirements; what little we knew had been handed down from book to book and from mouth to mouth. He cited an instance of three husky boys in one family ranging in age from six to twelve years, all perfectly healthy and athletic, who had always eaten vegetables and never any animal food. These boys weighed from ten to fifteen per cent. above the average of boys of their age and were taller and larger in every way. He had had the chemist at the hospital work out the nitrogen metabolism of these boys and he found that they were receiving an adequate supply of that element.

Dr. CHAPIN, in closing the discussion, emphasized the point that there was a wide field of usefulness here for the pediatrician, not only in treating the individual case but in connection with social and economic questions. With the improvement of the condition of laboring men they had come to think they must have porterhouse steak and other foods that were luxuries. The pediatrician had the opportunity to do a great deal in cultivating a taste in early life for simple and nutritious food which would be carried up to adult life and would have a great influence in solving social and economic questions that were now causing so much disturbance in our national life.

The Clinical Value of Vegetable Oils in Certain Abnormal Conditions of Infancy and Childhood.—Dr. GEORGE DOW SCOTT of New York read this paper in which three classes of cases were studied: (1) Inanition. (2) A subnormal period following gastroenteric conditions, such as malnutrition, marasmus, etc. (3) Conditions such as secondary bronchopneumonias, in lysis or crisis following acute gastrointestinal intoxications. The fats were poor in oxygen, rich in carbon and hydrogen. After describing the physiology of fat digestion, Dr. Scott pointed out that the primary function of the fats was to furnish heat and that the higher the proportion of carbon and the lower the amount of oxygen the greater would be the heat-producing power of foods. The amount of fat needed by an infant could not be stated in terms of calories but depended upon the fat tolerance of that individual patient. The fat tolerance varied greatly in both physiological and pathological conditions. In health fat absorption varied

between 90 and 98 per cent. The excessive ingestion of fats retarded the emptying time of the stomach and delayed normal secretion so that vomiting or regurgitation of the food might occur. Healthy children assimilated solidified fats, but the sick or delicate child might reject them. Such patients thrived best on a fluid fat or oil, one the melting point of which was at about the body temperature. Such a fat was easily emulsified and digested. It was practically immaterial whether cod-liver oil, cotton-seed oil, peanut oil, sunflower, soy bean or other oil was employed so long as the little patient enjoyed it. His observations, however, inclined him to prefer olive oil, which was easily digested and absorbed and could be pushed except during the torrid heat of summer. Rosenberg had pointed out that olive oil was a strong cholagogue. The percentage of fat in olive oil was much more constant than that of cream. Olive oil consisted of stearin, olein, and palmatin. A number of cases were cited to show that given with malt extract it served to bridge over the time when the amount of carbohydrae or protein had to be limited in various conditions of malnutrition or following acute illness.

Second Day—Thursday, April 29.

Acrodynia.—Dr. WILLIAM WESTON of Columbia, S. C., contributed this paper, in which he said that the general impression seemed to have been that this was a Southern disease, or one confined to particular sections of the country. On the contrary this disease was found universally and was probably more frequent in the West than in any other section of the country. The Surgeon General's library reported a great paucity of literature on the subject. There were records of previous outbreaks in this country. Acrodynia had been confused with malaria, pellagra, and beriberi. The purpose of the paper was to ask physicians to be on the lookout for this disease in order that it might be studied and further information regarding it might be obtained. Though the etiology of acrodynia was unknown, the fact that it generally occurred as an epidemic suggested that it was probably due to some organism. The children attacked by this disease lost appetite, became listless, some manifested gastrointestinal symptoms, in some there was diminished weight, and diminished reflexes had been noted. There was often profuse perspiration and the hands and feet became cold, swollen, and tender, and in about one-half the cases were painful to the touch. Photophobia, conjunctivitis, and gingivitis had been observed. Of his eight cases all had gotten well but two. A point that had impressed him was that he did not feel that anything he had done for them had been of any benefit except in one case in which a balanced diet of vegetables, eggs, and milk had seemed to be beneficial. There were descriptions of an epidemic of this or a similar disease in Paris, in 1828. Several German writers had also described the condition under various names. It had been observed in barracks among soldiers where the conditions were the same yet in one barracks one set of symptoms would predominate and in another barracks these symptoms would be absent and another set of symptoms would be present. The first symptom was pain in the hands and feet with tingling and burning. These sensations and the pain were greatly aggravated at night and in wet weather. Many skin manifestations had been described, and edema sometimes occurred confined to the extremities. The skin dermatitis was different from that of pellagra and it did not seem to be due to any specific dietetic error. The prognosis under favorable circumstances was fairly good. There was no specific treatment known for the disease at the present time, though diet and hygiene were important factors in the treatment.

Dr. A. H. BYFIELD of Iowa City reported that during the past few years he had had 14 cases of this disease and that it was so definite, so clear-cut, and so unmistakable that the nurse had in several instances made the diagnosis before the doctor saw the child. Even when the characteristic eruption on the hands was absent the internes had been able to make the diagnosis upon the extraordinary picture of wretchedness which the child presented. One characteristic thing was that the child preferred to bury his head in the pillow and suffered from parathesia of the extremities. There were very few diseases that aroused one's sympathy to the extent that acrodynia did. The skin dermatitis was sharply differentiated from that of typical pellagra. Cases were reported in which the teeth came out. The speaker had observed no very striking change in the gums. He had observed a double keratitis and a pulling out and falling out of the hair. There seemed to be an extensive involvement of the fifth nerve. Anorexia was sometimes very striking, and in some cases this became so severe that it became necessary to resort to stomach feeding. The nature of the diease was that of a sensory polyneuritis. In the first case he saw he made a diagnosis of trophoneurosis. In his cases the question of diet had been gone into as carefully as possible, and a number of the cases were in breast-fed babies. In only one or two cases did the diet present anything that was open to reproach. All the cases had a leucocytosis, some as high as 27,000. Reflexes were sometimes present, sometimes absent. The spinal fluid findings were negative. Pellagra usually had a history of gastrointestinal disturbance at the onset. In practically none of the cases of acrodynia was this stressed, but rather a respiratory factor was prominent. Jacobi gave a brief description of acrodynia as a complication of diphtheria, and the speaker had been impressed by finding a diphtheroid organism in the nose; the diphtheroid organisms might be distinctly toxic though he knew that they were in disrepute as etiological agents at the present time. He had been impressed by the fact that though a scientific diet containing antiscorbutic vitamine was given the parathesia continued for weeks and months. He was inclined to think that respiratory infection if it was not primarily responsible at least played an important rôle; if the diet played a rôle it must have been a slight one. They were inclined to think they were dealing with a polyneuritis because at autopsy it was found that the anterior horns in the mesial aspect had lost their power to take stain and were degenerated.

Dr. JOSEPH GOLDBERGER, U.S.P.H.S., Washington, D. C., stated that he had been interested in acrodynia because of its possible relation to pellagra, though he had not seen anything that he was prepared to say was acrodynia. Some of the symptoms he thought were very like those of pellagra. The loss of weight, the edema, and the eruption were part of the picture of pellagra. The older descriptions of acrodynia emphasized certain definite things in respect to the eruption. In the older descriptions the eruption was spoken of as favoring the palmar surfaces of the hands and feet; it was known that the palmar surfaces of the hands and feet might be affected in pellagra. Dr. Goldberger said his suspicion would be that they were dealing with a nutritional condition in some way allied or related to pellagra. As he believed was the case in pellagra there was not a distinct specific condition but a combination of symptoms due to corresponding defects in diet. There was a range in dietetic defects and therefore a range in the manifestations of those defects. At a certain point the defect in the diet caused a certain clinical manifestation which might be considered as coming under acrodynia. Further along one would have pellagra and then edema. If one went still further up the scale he would find the manifestations of the gastrointestinal tract and still further along the nervous mnaifestations. One could not regard this as settled but he regarded it as a very useful hypothesis and a suggestive line of research. In studying these cases it would be extremely valuable if the clinician would record not only the clinical manifestations but would make careful note of the diet of the individual for a considerable period of time prior to the first manifestation of the disease, possibly a quantitative statement of the ingredients of the diet for a considerable period of time.

Observations on the Salt Content of Breast Milk.—Dr. WARREN R. SISSON and Dr. W. DENNIS of Boston presented this paper, which was read by Dr. Dennis. He stated that the fact was recognized that the standard amounts for fat, carbohydrate, and protein used in the diets of infants had been established in large measure. It was also recognized that a large class of infants fed on so-called rational mixtures might develop intestinal disorders. Attention had been attracted to the relative and absolute proportions of fat, carbohy-

drate, and protein with absolute disregard to the mineral content of the diet. It was assumed that the salts being in excess in breast milk had no effect on nutrition. During the last five years relatively simple methods had been devised for the determination of the mineral constituents of the blood and it had been a simple matter to adapt these for the estimation of the salts in milk with a quantity of milk as small as 10 c.c. About one year ago they started a study of the mineral constituents of breast milk and of the ordinarily used modifications of cows' milk with the idea that by a study of this kind it might be possible to trace the connection between obscure intestinal disorders and the mineral content of the milk. About 400 samples of breast milk were taken from the first day to the eleventh month. They found that during this time the chloride content was not changed and that the average was about 50 mgs. to 100 c.c., or 0.5 gram to the liter. This was about the average figure given in the textbooks. They felt, however, that these averages were of little value because of the very great variation in the chloride content in different mothers. Samples of milk were taken at different hours fo the day from 6 A. M. on, and these showed the chlorides excreted in a perfectly uniform way and with little change from day to day. In some mothers, however, particularly those who were nervous, tremendous variations occurred from hour to hour. They might start with 20 milligrams, go up to 50, and then fall back again. In looking up the histories of the infants in these cases it was found that though nursing their mothers they were not gaining as they should be. It was too early to draw any conclusions but they had found that same result uniformly. They had also examined a large number of formulas for bottle-fed infants in Boston and found that the ordinary salt content was about 75 per cent. But this was not the case with the whey mixtures used in the younger infants. In these whey mixtures values up to 200 were frequently found and these children frequently continued to have gastrointestinal disturbances. It seemed probable that there was some relation between the salt content of milk and nutrition.

Dr. Fritz B. Talbot of Boston said he was more or less familiar with this work and thought it opened up interesting possibilities. When they were feeding babies on whole milk mixtures and for various reasons put them on whey, cream and sugar, it was sometimes noticed that the babies had diarrhea, and they often noticed in private practice that babies on breast milk had more movements than they thought these babies should have. This work suggested that the chlorides were the background of the diarrhea, but it did not tell why one baby could take chlorides and another could not. Another point was the clinical observation of Dr. Sisson that the character of the nervous system of the mother who had high chlorides in her milk was apt to be less stable than that of the mother whose milk went along the level supposed to be normal. Much more work must be done to settle what this meant. It was a new field and opened interesting possibilities.

Chronic Nephritis in Children.—Dr. Lewis Webb Hill of Boston made this presentation. He stated that acute nephritis in children was usually a long drawn out affair and that the nephritis could not be called chronic until the albuminuria had existed for a year. The chronic nephritis of children differed from that of adults because in adults we were dealing with a kidney that had gradually become damaged while in children the kidneys had been suddenly damaged. In adults there were usually concomitant cardiac conditions which were as a rule absent in children. The paper dealt only with the mild type of chronic nephritis. Tonsillitis seemed to be the most important etiological factor. They had never seen a case due to dental trouble though they thought it might occur. In these mild cases there was usually a small amount of albumin, casts, and red blood cells. The blood pressure was usually normal or below normal. This form of nephritis was differentiated from orthostatic albuminuria, in which the albuminuria was temporary and due to posture and the urine did not contain red blood cells and casts. The two hour functional test of Mosenthal was studied and found to be a most practical test in children. It was found that the normal phthalein for children was higher than for adults. An excretion below 50 per cent. meant severe damage to the kidneys. Blood urea examinations were made and led to the belief that damage to the kidney in the mild cases was not sufficient to cause marked urea retention. In the treatment of these cases general hygiene was most important. The lives of these children should be carefully supervised. Plenty of rest, physical and mental, and plenty of good nourishing food were essential. The nephritic child might bathe in water 70 degrees or over but the surface of the body should not become chilled. The tonsils and teeth should receive attention. The tonsils which were the cause in many cases should be removed if there was the slightest suspicion that they might be the source of infection. It was of the utmost importance to guard against acute infections, since the kidneys were hypersensitive and should not be called upon to eliminate a toxine of any kind. It was a mistake to restrict diet too closely. The diet of these children might include meat and eggs in moderation, a moderate salt intake, and plenty of water. There were three prognostic possibilities: First, the kidney might recover entirely after several years; second, a severe and fatal chronic nephritis might follow; third, a contracted kidney might result, giving rise to the picture of chronic interstitial nephritis. He had not seen the third occur. It was quite possible to recover from the mild type of chronic nephritis. A normal phthalein output was not of much value as regarded prognosis, but an abnormal two hour test meant a damaged kidney, though not necessarily a severely damaged one.

Dr. C. M. Wahrer of Fort Madison, Iowa, said that these cases of nephritis in children were usually secondary infections following tonsillitis, rheumatism, etc. They were more frequent in boys than in girls because boys subjected themselves to greater exposure. They had been told that diet had a great deal to do with it but he would suggest warm clothing. One should be cautious in the use of drugs in these cases because an irritating drug might cause an acute axacerbation of the nephritis in chronic cases. In regard to the prognosis, his experience was that it was favorable rather than unfavorable. The majority of these mild cases usually made a recovery, but these cases should remain under the care of a physician and be watched closely for a long time.

Dr. John Lovett Morse of Boston expressed the opinion that one of the most difficult things in connection with these cases was to determine where the subacute nephritis ended and the chronic began. Almost all the cases that started as acute ran into subacute and chronic, so that one did not know what length of time made the diagnosis. Speaking of the preventive treatment of these cases, the vast majority of physicians were satisfied if they succeeded in getting the urine free from albumin once, but one could not call a patient well on one negative examination. The patient was not well until the urine was microscopically clear after centrifuging. His plea was to endeavor to prevent the development of chronic nephritis by such means as Dr. Hill had spoken of.

Dr. George Dow Scott of New York said that he had intended to say just what Dr. Morse had said, namely, that they knew very little about where subacute nephritis ended and chronic nephritis began. At the Willard Parker Hospital in New York they saw a great many of these cases following the acute infectious diseases and it had been observed that the younger the patient the more quickly recovery took place, so that the prognosis depended to a considerable extent upon the youth and the early nutrition of the patient. Dr. Scott did not agree with Dr. Hill in reference to the giving of animal proteins; they took away animal proteins and gave vegetable and fruit proteins instead. Bathing and fresh air were important. In the more acute cases the water should be warmer than need be for normal children, and the air at least 70 degrees.

Dr. H. M. McClanahan spoke of the results of early nephritis in adult life and cited cases showing that some cases apparently made perfect recoveries, while in others serious conditions developed and proved fatal. He had never seen acidosis in these cases. He believed it was more likely to occur in adults with contracted kidneys. He did not believe that chronic nephritis was

always a mild thing in childhood; they saw children with severe chronic nephritis just as they saw it in adults. So long as there was sediment and red blood cells in the urine one should be very careful in allowing the child to be up and about. They called cases chronic when they had lasted about a year but that was purely arbitrary.

Infantile Spinal Progressive Muscular Atrophy (Werdnig-Hoffmann.)—Dr. EDGAR J. HUENEKENS of Minneapolis presented this paper. After reviewing the literature of the Werdnig-Hoffmann and Oppenheimer syndromes, he discussed the evidence for and against their identity. He presented for comparison the differential diagnosis of Marburg showing that Oppenheimer had termed the condition indicated by his syndrome as amyatonia congenita and had described it as (1) congenital; (2) usually single; (3) generalized hypertonic; (4) atrophy masked and not grossly apparent; (5) tendon reflexes absent; (6) stimulated by electricity; (7) course usually marked by improvement. The Werdnig-Hoffmann description was as follows: (1) Acquired in early infancy; (2) usually familial; (3) localized atrophies, usually beginning in the pelvic region and spreading; (4) atrophy easily recognized and apparent; (5) tendon reflexes proportional to atrophies; (6) reaction of degeneration; (7) course of the disease progressive, the child becoming a mere skeleton at four or five years of age. The essayist analyzed these syndromes and expressed the opinion that they were extreme types of the same disease. He described the anatomico-pathological basis as being the same in both conditions. He then reported a case of typical Werdnig-Hoffmann type of necropsy findings which supported the conclusion that amyatonio congenita and Werdnig-Hoffmann disease were extreme types of one and the same disease. He called attention to the fact that this was the first necropsy on a typical case of Werdnig-Hoffmann disease in this country.

Dr. FRANK C. NEFF of Kansas City regretted that Dr. Huenekens did not read his autopsy findings, but felt that there was such a variation in the symptomatology that he could scarcely accept them as the same condition. He thought the diagnosis had to be based on the autopsy findings. He cited a case which he had been puzzled in classifying. It had appeared early in life but was not familial and had shown features of both conditions.

Dr. JOHN ZAHORSKY of St. Louis thought that between myotonia and Werdnig-Hoffmann disease there was a wide distinction and it would take a great deal of study on the part of the pathologist to convince him that they were the same disease. The course of the diseases was entirely different. The Oppenheimer disease was a congenital disease in which the baby did not commence to use its muscles early but gradually developed; he had such a case now which was gradually approaching normal. Another case had died not of the disease but of an intercurrent infection, while the Werdnig-Hoffmann cases went from bad to worse and died of paralytic symptoms and complications.

Dr. HUENEKENS, in closing the discussion, said he was glad Dr. Neff reported his case for he though it furnished additional evidence that they were one and the same disease. His case was a typical amyatonia congenita in the beginning. The point to be emphasized was there was no difference in the pathology between these diseases. The improvement that seemed to be noted in Oppenheimer's disease was only temporary; these patients all died later just as they did with Werdnig-Hoffmann disease.

Newer Ideas of Heart Disease Applied to Pediatrics.—Dr. RICHARD S. EUSTIS of Boston presented this paper in which he reviewed the work of Lewis, Barringer, and Rapporte with reference to the differentiation of functional and organic heart disease as it had been applied in the army and made a plea for its adoption by the pediatrician in dealing with cardiac conditions in children. He pointed out that the systolic murmur should be considered merely as a signal for a more careful examination of the heart. Systolic murmurs were of imporotance in children only where they were due to congenital heart disease. Many children with poor exercise tolerance fell into the effort syndrome group. The significance of a low pitched diastolic rumble, reduplicated second sound, presystolic crescendo were discussed. In certain respects the findings in children were somewhat different from those found in adults. The determination of enlargement of the heart was easier in children than in adults. In adults the transverse diameter of the heart was one-third to one-half the internal diameter of the chest; in children this measurement was not so certain. For this reason slight or doubtful enlargement of the heart was of little value in diagnosis. Definite enlargement meant cardiac disease. It was safe to regard as potential cardiac those children who had had rheumatism or chorea. The determination of the functional capacity of the heart was of great value. It should be remembered, however, that exercises carried out under observation often introduced a nervous element which gave a wrong impression. Dr. Hill presented an analysis of a series of 52 children to whom the principles employed in cardiac examination in the army were applied. In this series were 28 normal children, while the remainder exhibited various kinds of murmurs and there were a few suspicious cases. In the series were 19 children with systolic murmurs in whom there was no etiological factor and 15 of these were considered to be normal hearts. The series was considered too small to warrant conclusions, as definite information could only be obtained by following these children into adult life. He felt convinced, however, that if the principles applied in the army were applied to children a great many children now much restricted in their manner of life could be returned to normal life.

Dr. GEORGE DOW SCOTT said he considered it a very difficult thing to differentiate between functional and organic heart disease. It had frequently been his experience to find at autopsy that a condition which he had thought was functional turned out to have been organic, and then many times the reverse was true.

Dr. JULIUS HESS of Chicago said he believed it would be a good plan to adopt Dr. Eustis' method by which he used the exercise tests employed in the army in the study of cardiac conditions in children. Many children in whom organic cardiac disease was diagnosed on the basis of a loud systolic murmur were restricted in their lives so that they did not develop properly and their education was interfered with. It was certainly desirable to differentiate these children from those having organic heart disease. He said he felt as Dr. Scott that in the majority of cases he was not able to distinguish between functional and organic heart disease. A knowledge of the things Dr. Hill had brought out should make them much more careful in giving a prognosis on one office examination.

Dr. A. J. SCOTT, JR., of Los Angeles mentioned that in his experience in teaching he had found that the students did not know what a normal heart was. This applied not only to medical students but to men in active practice.

Dr. J. M. DODSON of Chicago suggested that better term than normal was "range of the normal." There was no such thing as a normal heart. The student was apt to take as his criterion of a normal heart the first heart he examined. There were no two hearts exactly alike, but slight shades of difference within a normal range.

Dr. ISAAC ABT recalled that twenty to twenty-five years ago the German authorities made the statement that there was no such thing as a functional murmur in a child under two years of age. That led to confusion in writing and thinking of doctors all over the world. Organic murmurs might be both congenital and acquired, and might occur at any age. With reference to diagnosing disease of the heart, it was well to remember that the heart might be diseased in any layer —the pericardium, the endocardium, or the myocardium. The myocardium was frequently affected after acute infections and there was scarcely an acute infection that did not leave its mark on the heart muscle. When in doubt as to whether there was a lesion after having made a complete and careful examination he thought one might say there was no lesion; if, however, one found certain definite changes, such as an accentuated second pulmonic, especially if there was an insufficiency of the mitral valve and some cardiac enlargement, one could be certain the lesion was organic.

Dr. EUSTIS, in closing the discussion, said he was glad to hear Dr. Scott say he had difficulty in distin-

guishing between functional and organic cardiac conditions. That was the reason he was so enthusiastic over this method of determining the condition of the heart by functional tests. Such tests must be interpreted with caution, however.

Circulatory Reactions in Normal Children After Exercise.—Dr. MAY G. WILSON of New York presented this contribution, which she said was from the Nursery and Child's Hospital and Cornell University Medical College. She stated that exercise was necessary for the development of the normal child and hence it was important in the child with chronic valvular disease to decide how much exercise might be allowed in a given case. The determination of this matter on the basis of clinical symptoms or subjective statements was open to error, hence an accurate method of determining exercise tolerance was desirable. It was well known that the heart reached the limit of its powers before the skeletal muscles. According to Mackenzie, the functional efficiency of the heart depended upon it reserve powers. The test applied was based upon the circulatory reaction to muscular exertion. Heretofore the reports of the circulatory reaction to exercise in children had been limited to changes in the pulse rate. Estimation of the blood pressure in children had not been considered to be of value. The present study undertook to ascertain whether the circulatory reactions were similar to those found in adults and whether anything could be found to act as a guide or check to determine the exercise tolerance. Observations were made on 20 normal children between the ages of six and twelve years. Repeated observations were made following the termination of the graduated exercise on pulse rate, systolic blood pressure, and clinical symptoms. Over 500 tests were made, representing 150 complete experiments, which consisted in three or four graded test exercises with one or two iron dumbells varying from three to ten pounds in weight, swung from the floor to a position over the head from ten to sixty times. The blood pressure readings were made immediately upon the termination of the exercise and at two minute intervals. The effect on pulse rate of increasing amounts of exercise was noted and the time required to reach normal. The normal curve of systolic blood pressure immediately after the termination of moderate exercise was plotted, and variations in the systolic curve after increasing amounts of exercise noted. The conclusions reached were that circulatory reactions to graduated exercises obtained in normal children were similar to those reported in adults. It was found that there was a constancy of circulatory reactions immediately following similar graduated exercises at two day intervals over periods of weeks in a given individual. It was shown conclusively that exercise tolerance could not be determined by the pulse rate. The systolic blood pressure curve, however, was significant and of great value in determining exercise tolerance. In overfatigue this curve showed an increased period of rising, a delayed rise or delayed summit, and a prolonged period of falling. In general the increase in breathlessness, dyspnea, and fatigue were directly proportional to the delayed rise and prolonged fall of the systolic curve. These experiments had also demonstrated that by means of graduated exercise the exercise tolerance of a child could be increased.

Dr. ALEXANDER LAMBERT of New York pointed out that the value of Dr. Wilson's work was that it showed that the human organism worked as a whole from the beginning of life to the end and that what was true of the adult cardiac muscle was true of that of the child. The test described did not depend upon reaching any particular number, but upon a definite blood pressure curve, and it taught what was happening in the myocardium. It taught that it was the energy content of the heart muscle and not what one heard that was of importance. Many a useful young man had been thrown out of the army because he had a murmur in the second left pulmonary space. Such a murmur was found in many children and chiefly in vigorous young adults. This murmur was caused by the cornus arteriosus rubbing against the chest well because the lung was not big enough to cover the heart, and the murmur frequently disappeared when the lung was expanded. After a child had had an attack of sepsis or endocarditis, one could judge by this method whether that individual child could take a certain amount of exercise. Mitral stenosis was more common in girls than in boys because when the mitral valve was involved a boy was not so easily controlled and broke open the slight adhesions that formed at the base of the valve, while a girl was afraid of overexerting herself and the mitral valve closed at its base.

Dr. MAUD LOEBER of New Orleans emphasized that Dr. Wilson had given them a definite guide so that they could know just what to do in regard to giving children permission to take exercise. This would be of particular value in schools or gymnasiums. The test used most frequently had been to go by the pulse rate, but this work had introduced an entirely new idea and would make them review the methods they had been using in permitting children to enter competitive tests and games. This test put the physician in a position where he could do justice to both the conscientious mother and the active child.

Dr. WILLIAM ST. LAWRENCE of New York stated that Dr. Wilson had confirmed the work of Barringer, Rapporte, and Lewis. These curves which she had demonstrated were sufficiently accurate for clinical purposes; however, their interpretation was still a matter of judgment. Dr. Wilson had studied these curves in cardiac children and had treated children by graduated exercise with the methods of Lewis, and had found them of considerable use within rough limitations. Her precise methods, however, were more satisfactory and would be a great addition to the subject.

Dr. DEBUYS of New Orleans also commended Dr. Wilson on her very excellent piece of work and agreed that it would be of a great deal of assistance in guiding the exercise of school children. A piece of work like this would undoubtedly help along in a field which offered such immense possibilities.

Dr. TALBOT also congratulated Dr. Wilson on her paper, more particularly because it was a study of the normal and because it was by the study of the normal that pediatrics would be advanced. Although he had made no actual measurements, he thought what she said of the child applied also to the infant from certain observations that he had made during metabolic experiments in infants.

Dr. F. C. FLEISCHNER of San Francisco, after congratulating Dr. Wilson, said that the important feature in all this work was that it was one more point indicating that the main thing in the observation of cardiac cases was the appearance of the child. He hoped in closing the discussion she would make mention of the color of these children. As one watched the cardiac child he was struck by the fact that frequently the effect of exertion was indicated by the color of the child. Another point was how they would be able to make mothers graduate the exercises properly in normal children. Many mothers showed no judgment in regulating the amount of exercise for their children and many young children were unduly fatigued because the inclination of the nurse rather than the exercise tolerance of the child was the guide as to the amount of exercise the child took.

Dr. WILSON, in closing the discussion, stated that she was now interested in exercises for cardiac children, and had been particularly impressed by how much many of these children could do and how little we had appreciated this fact. The curve demonstrated was not exact and to be followed by itself, but was a check on personal observation. One should observe the symptoms of overexertion in normal children and check up on his own judgment and then this method would be found to be of practical value. She had found it a good plan to do this work with the mothers present, for when they saw the work they were convinced and were willing to follow directions. When the children reached about the limit of tolerance they became flushed and when overworked presented a grayish hue.

Intubation of the Larynx.—Dr. HENRY J. CARTIN of Johnstown, Pa., presented this paper in which he reviewed a former communication reporting 317 cases of intubatino in laryngeal diphtheria. He had now collected additional cases, bringing the number up to 440. The mortality was 14.5 per cent. He made a plea for a more careful diagnosis, as he believed that many cases of so-called croup were cases of laryngeal

diphtheria, and urged the early administration of antitoxin in large doses. He gave twenty thousand units as the initial dose. Most of these intubations were performed in homes of the poorer class, where all facilities were lacking. He formerly had operated only when stenosis threatened life, but after several losses had concluded that it was better to operate early and he began to operate when there was beginning dyspnea. Some of the cases at that time might have recovered without operation, but he thought it safer not to take the chance where these children were in homes and not under the constant supervision of the doctor or nurse. On the other hand, no case was too far gone to be deprived of the chance for life that intubation might offer. The operation required skill and dexterity. He used the O'Dwyer hard rubber tubes and operated with the child in the dorsal position. After the operation the string was removed. He used rather large-sized tubes and had not found that they caused paralysis. The tube was usually removed on the fifth day. In this series of cases there were no chronic cases and no tracheotomies. Where reintubation was necessary it was usually within the first two hours following the introduction of the tube. After a detailed analysis of these cases, Dr. Cartin concluded that the low mortality, 14.5 per cent., was due to early intubation and large doses of antitoxin.

Dr. Isaac Abt of Chicago said he had had the privilege of hearing Dr. Cartin's former paper in 1917 and at that time was very much impressed with the work he was doing and with the success that attended it. This operation was not being performed as frequently as it formerly was because children were receiving antitoxin earlier and there was not so frequent need for it. Dr. Abt called attention to retraction of the intercostal muscles and retraction at the end of the sternum and upper portion of the manubrium as evidence of laryngeal stenosis. There were, of course, minor degrees of stenosis in which this picture might not be so marked. If the patient was in a hospital where he could be watched by an interne one could wait a reasonable length of time before operating, but where the patients were distributed over a wide area and more or less inaccessible one could stretch the indications for intubation. Everybody was not master of the technic as Dr. Cartin was and as Dr. Cartin had suggested intubation was becoming a lost art. The younger men knew very little about the operation or the technic. He had rarely intubated with the patient in the recumbent position, having preferred the vertical position advocated by Dr. Northrup. In using tubes of large size it must be remembered that the trauma inflicted was greater in proportion. There were rare cases in which it was impossible to intubate. Several of these were recorded in the literature.

Dr. L. T. Royster of Norfolk, Va., stated that he had had an average of about 13 cases requiring intubation every year for the past twenty years. In every community there should be one expert intubator. With proper assistance an expert should be able to perform the operation in ten seconds, and very rarely should he have to make a second attempt. He also felt that it was better to intubate early, even unnecessarily, rather than wait until too late. Many of these children did not die of diphtheria septicemia but of cardiac failure because of the additional work thrown upon the heart because it was compelled to work against a stenosed larynx. It was well never to take chances with a case of croup unless one was certain that it was a catarrhal and not a membranous croup. It was better to do a tracheotomy than to intubate the same patient eight or ten times. One should never allow the child to become cyanotic before intubating. He cited a case in which it was impossible to intubate because of a chondroma of the larynx growing downward.

Dr. A. J. Scott of Los Angeles stated that in their county hospital service they had two or three cases of laryngeal diphtheria every month and the internes got the benefit of the intubations because the attending physicians lived too far away. A great many of the cases came in almost moribund and during the attempt at intubation it became necessary to do a tracheotomy. The point he wished to bring out was that laryngeal diphtheria started out like croup and the parents did not pay any attention to it and neither did the physician. In giving antitoxin he never gave an initial dose of less than twenty thousand units when there was a beginning laryngeal stenosis, and he preferred to make the injection in the vastus externus, high up.

Dr. George Dow Scott said he had seen many of these cases when he formerly practiced in Boston and there were many at the Willard Parker Hospital in New York. Dr. Cartin's results were certainly magnificent. The cases they saw often came in late and often developed bronchopneumonia and they could do nothing with them. They also had many chronic cases in which the children continued to wear the tubes for a long time and could not speak. They now felt that the only effective way to give antitoxin was intravenously. Both Dr. Cartin and Dr. Royster had mentioned that they had never seen a case of laryngeal diphtheria in a negro. He had seen only one case but that was not intubated.

Dr. John A. Foote of Washington, D. C., said the negro did get laryngeal diphtheria and did have to be intubated. However, the number of cases was not proportional to the population. Another point to be emphasized was that intubation was the work of the physician and not of the laryngeal surgeon. As to finding someone to do this work, it was quite possible to train any physician to do this work; he had even trained a nurse to intubate with great dexterity.

Dr. Wilson of New Orleans said he had changed his opinion many times during twenty years and one point on which he had changed his mind was as to the length of time the tube should remain in place. There were different opinions on this point in different countries. In France they left the tube in only twenty-four to forty-eight hours. He agreed with Dr. Cartin that five days was about the correct time. Dr. Wilson said he never intubated with the child in the recumbent position.

Dr. Cartin, in closing the discussion said he believed Dr. Scott's location for injecting the antitoxin was better than his own. Dr. Scott had spoken of having a number of chronic tube cases in the hospital. In his opinion a chronic tube case was the result of trauma, though he might be wrong. He was formerly afraid to remove the string but after having had two accidents as the result of leaving it he now always removed it. He could not agree that intubation did not belong in the domain of the throat man. He did not always remove the tube at the end of five days. Sometimes he removed it at the end of two days and in other cases he had left it in as long as fifteen days. One of the speakers had advised practising intubation on the cadaver; in the cadaver there was no tension of the parts. He suggested getting a fairly large dog instead.

Third Day—Friday, April 30

Observations on Tumors of the Kidney in Children.—Dr. William E. Carter and Dr. Langley Porter of San Francisco made this presentation, in which they classified tumors of the kidney in children as follows: (1) Malignant tumors—sarcoma, adenosarcoma, teratoma, sarcocarcinoma. (2) Benign solid tumors—lipoma, chondroma, osteoma, fibroma, adenoma. (3) Cysts—congenital cystic kidney, hydronephrosis, pyonephrosis, hydatid cysts. The greatest number of cases of tumor of the kidney in children occurred between the sixth month and the sixth year of age. In going over the records of three hospitals and their private cases they had collected 12 cases of tumor of the kidney in the past five years. These all occurred in children under seven years of age. There seemed to be nothing in the histories of the pregnancies and labors to explain them. The most distinctive physical signs of tumor of the kidney in children were fulness at the costal vertebral space and at times intermittent hematuria. Tumor of the kidney might be confused with tuberculous peritonitis, but usually fulness at the costal vertebral angle served to make the differentiation. Other symptoms and signs were asthenia, pain, presence of varicocele, Lucas-Championnère, sign, secondary blood changes, and digestive disturbances. Kidney tumors were differentiated from adrenal cystoma by the eye symptoms. Frequently metastases occurred early and were sometimes observed before the original

growth made itself manifest. The treatment was surgical. The twelve cases were reported in detail.

Dr. L. T. LeWald of New York reported one case of kidney tumor in a baby six months old in which there was a hydronephrosis and referred to two other cases of cystic kidney in babies, all of which were operated upon successfully, though the impression was given by a urologist and other physicians who examined them that they were inoperable.

Sir Humphrey Davy Rolleston expressed his admiration for the paper of Drs. Carter and Porter, which he said showed not only a very extensive acquaintance with the literature of this subject, but a great deal of personal observation. He then discussed the difficulties surrounding the study of the pathology of tumor kidneys in children and their classification, referring particularly to the difficulty of determining in some instances whether the tumor was of embryonal origin, and of drawing the dividing line between sarcoma and leucemia before the blood changes became marked. He also spoke of rabdomyosarcoma, which he said had impressed him as being very rare in children. He had never come across a kidney tumor in a child containing striated tissue. In discussing the clinical aspects of kidney tumors in children he pointed out that the position of the colon, in front of or below the kidney, might be of aid in differentiating between renal and adrenal tumors. In malignant tumors producing secondary growths often the first symptoms appeared in the eyelids, and eye symptoms pointed to a tumor arising from the medulla. There was also an interesting group of tumors arising from the cortex which gave rise to one or two changes. There might be a precocious growth of hair or a change in the muscle tissue with a deposit of fat infarcts, producing the infant Hercules type. In connection with tumors of the cortex, another interesting point was that the question had come up whether they might not arise from bits of embryonal adrenal tissue in the kidney cortex, and if such was the case whether they were not comparable to tumors arising from the adrenals.

The Temporary Teeth: Disorders Due to Their Neglect.—Dr. J. Ross Snyder of Birmingham, Ala., read this paper. He declared that pediodontia was still in its infancy but merited culture and development. The care of the child's teeth was a subject that until recently was ignored by the pediatrist and neglected by the dentist. The dentist was not altogether to blame if he gave more attention to the apparently more urgent and more lucrative demands for his services from adults. The majority of dentists had neither the time nor the inclination to treat temporary teeth. The early care of the child's teeth was a matter in which the pediatrist should assume greater responsibility. It had been estimated in New York that 98 per cent. of all teeth were perfect when they emerged from the gums and that by the time the children reached the first grade in school 98 per cent. of them had bad teeth, and one-third had abscess conditions. Equally bad conditions had been revealed by the inspection of the mouths of school children elsewhere. Much time was spent in the preparation of the food supply so that it should be free from contamination and properly prepared, yet when it passed through a neglected mouth it might become infected and give rise to gastrointestinal disturbances. In the presence of an unclean mouth infection occurred more easily. The premature loss of the deciduous teeth was the most frequent cause of malocclusion and deformities of the face and jaws. There was great need in every community of education as to the need of early dental hygiene and prophylaxis. The education of parents in this matter could not be left to the dentist but was a responsibility which the physician, and particularly the pediatrician, should assume.

Dr. Julius P. Sedgwick of Minneapolis said he was very glad to hear this paper, for frequently they had cases which were obscure in which the diagnosis was cleared up by examining the teeth carefully. He cited an instance of one child sent from Oklahoma to Minneapolis to recover from malaria. This child's teeth were properly cared for and the malaria disappeared. They had in their children's clinic attached to the University a dentist who cared for the children's teeth. In their private clinic they also had a dentist, and they found that many times he helped to make the diagnosis in obscure cases. As to the prophylaxis, Dr. Snyder was quite right; children should be sent to the dentist early and regularly.

Dr. Isaac Abt of Chicago called attention to the fact that more dentists now hesitated to extract the temporary teeth because if they were removed there was no room left for the eruption of the permanent teeth, and malocclusions and deformities resulted. In addition to what had been said of the influence of proper feeding on the teeth there were other diseases of infancy that had an effect on the teeth later on. Tetany in infancy might be responsible for poorly developed teeth, enamel erosions, and lamellar cataract. The question was one which deserved further consideration. He suggested that some of the men who had the opportunity to see a number of children study the relation of malocclusion and other dental conditions in relation to constitutional states, growth, nutrition, development, blood conditions, etc.

Dr. C. H. Wahrer of Fort Madison, Ia., asked what was to be done when the dentists took the stand that they had in his State. There the State Dental Association had gone on record as saying that the dentists were not going to take orders from the physician because they knew more about dentistry than the doctors. At one time the idea that the teeth were responsible for all sorts of diseases was ridiculed and now perhaps the physician had gone too far to the other extreme, but between the extremes lay much truth, and by the use of good judgment one could certainly arrive at the truth.

Dr. L. R. DeBuys brought out the point that the care of the teeth should begin when the first tooth erupted. Too frequently parents waited for the appearance of several teeth before they began to use the tooth brush. Another point that had impressed him was the slightly elevated temperature found in the mouths of those who had dental caries over a long period. In such cases the mouth temperature should be disregarded and the rectal temperature employed.

Dr. Fritz B. Talbot said Dr. Abt had spoken of a case of tetany having poorly developed teeth. The recent work of Howland on the blood calcium showed that the blood contained a diminished amount of calcium during the acute stages of certain diseases. There was a direct relation between the teeth and digestion, and there was scientific proof that the digestion had a great deal to do with the teeth.

Dr. E. C. Fleischner of San Francisco suggested the axiom "Every tooth is either good enough to fill or poor enough to pull." A carious tooth corresponded to a sequestrum of bone in another part of the body and should be treated on the same principles as such a sequestrum would be treated.

Dr. Snyder, in closing the discussion, emphasized that the physician should not condemn the dentist until he had taken a little more care himself.

The Coagulation Time of the Blood in the New-Born with Special Reference to Cerebral Hemorrhage.—Dr. Frederick C. Rodda of Minneapolis read this paper in which he stated that his interest in this subject had been aroused by autopsy findings. In the post-mortem examination of infants dying of cerebral hemorrhage over 50 per cent. had been found to follow non-instrumental deliveries and many followed normal and easy births. In these cases the blood was found slightly or not at all coagulated. He had also been struck by the fact that cerebral hemorrhage was by far the most frequent cause of death in the new-born. In many cases at post mortem no torn veins were found in the cerebrum or cerebellum to account for the hemorrhage and multiple hemorrhages in these cases were found in portions of the body where it was inconceivable that they could be explained by trauma. Over 25 per cent. of all infants dying of cerebral hemorrhage showed this picture of multiple hemorrhages. An analysis of cases reported in the literature deepened the conclusion that these hemorrhages were due to factors other than trauma. Further study led to the conclusion that there was a disturbance in the coagulation time of the blood in the new-born. It was found that the average coagulation time in the new-born was seven minutes. (*American Journ. Diseases of Children*, April, 1920.) In some

infants the bleeding time was prolonged. In icterus, melena, jaundice, syphilis, and non-traumatic cerebral hemorrhage, the coagulation time of the blood was prolonged. In melena it might be delayed to ninety minutes. In these cases the subcutaneous injection of normal blood was effective in cases in which there was delayed or slow bleeding. A careful study of the blood and spinal fluid was made in cerebral hemorrhage and it was found that the average clotting time was 13 minutes; in one case, on the first day it arose to 90 minutes and after transfusion dropped to eleven minutes. Where the blood clot could be localized in the brain as was sometimes possible, operation was justifiable.

Dr. ISAAC ABT of Chicago said they were accustomed to think of cerebral hemorrhage as the result of trauma and frequently the obstetrician was blamed for damage for which he was not responsible. Dr. Rodda had brought out the most frequent cause, and the reasons for it. This contribution to their knowledge should be helpful in the clinical management of these cases. It showed the importance of ascertaining the coagulation time of the blood in babies that showed a tendency to bleed. If one could detect oozing by estimating the coagulation time of the blood extensive hemorrhage into the meninges might be prevented in many instances. If one recognized that there was slow oozing into the subdural or subarachnoid space an injection of blood might be made into the muscles or a transfusion into the longitudinal sinus. Another point of importance was that surgery in some cases was successful, and when one considered the severity of these cases, if the seat of the hemorrhage was localized it was quite possible that surgical interference was justifiable, if not indicated. If nothing else was done a decompression to relieve the pressure on the cortex might be advisable.

Dr. JOHN A. FOOTE of Washington, D. C., considered this work of Dr. Rodda's of great importance and particularly so when one took into consideration the influence of infant mortality at the time of birth on the general infant mortality rate, and the fact that 50 per cent. of the infant deaths during the first month occurred during the first two days of life. The condition described by Dr. Rodda was found in a large number of cases in routine autopsies where no symptoms had been present so that a standard and rapid method for obtaining the coagulation time of the blood would be very useful. He had found it necessary in some cases to use thromboplastin and he had used blood transfusion with good results.

Dr. H. B. HAMILTON of Omaha, Neb., said it had been his good fortune to see some of Dr. Rodda's work and he felt that it would be a great aid not only in reducing infant mortality but in lessening the morbidity, the physical deformities and perhaps the deformities of mental and moral character that followed a failure to recognize and treat these cases of cerebral hemorrhage. He had seen some cases of cerebral hemorrhage due to the use of pituitrin by the too enthusiastic obstetrician. In cases associated with intracranial pressure it might be necessary to resort to extreme measures. If the hemorrhage was localized he thought it was sometimes justifiable to operate. Some one had suggested repeated lumbar punctures where the hemorrhage was localized and the question of opening the cisterna magna had been discussed. This he felt was rather a formidable procedure, but possibly even an unsuccessful operation was preferable to the condition in which some of these children had to live.

Dr. RODDA, in closing the discussion, again emphasized the frequency with which cerebral hemorrhage occurred and the difficulty of explaining it where labor had been normal. Lumbar puncture might give good results if the bleeding occurred below the infratentorium. In discussing the possible causes of delayed bleeding, he said he had noticed in taking blood for the purpose of estimating the coagulation on time, that if the little clot that formed after the withdrawal of blood was brushed off fresh bleeding occurred; it was possible that after such a small clot had formed in the brain of an infant crying or vomiting might dislodge the small clot and start fresh bleeding. Surgery to be effective should be done early and before it was undertaken a transfusion should be done. If, however, operation had been delayed for fourteen days it was not necessary to give a transfusion.

The Antiscorbutic Value of Proprietary Baby Foods.—Dr. JOSIAH J. MOORE of Chicago described feeding experiments with white mice and guinea pigs in which various proprietary infant foods were employed. The proprietary foods employed were divided into two groups, namely, those that were supposed to be complete foods without the admixture of milk, and those to which cows' milk was added. Certain of these foods were found sufficient for the maintenance of white mice but were inadequate in antiscorbutic properties when fed to guinea pigs. Frequently the animals gained rapidly for a short time but they all developed scurvy later. The only difference noted between the foods that were modified with milk and those to which no milk was added was that scurvy appeared earlier when the latter class of foods were used, but they all eventually succumbed. It was observed that the foods modified with milk induced more rapid growth than those not thus modified. It was also found that normal adult guinea pigs did not develop scurvy on these diets as soon as did young, growing animals. It might be argued that the findings in guinea pigs did not form a criterion as to what would happen in the human infant, for it was known that the guinea pig required more antiscorbutic food than the infant, but the experiments were suggestive and confirmed the findings of other investigators as to the need of antiscorbutic food for infants. All infants receiving proprietary foods whether or not modified by the addition of cows' milk should receive an antiscorbutic.

Dr. JULIUS HESS of Chicago said he had had occasion to follow some of Dr. Moore's work and he regretted that one part of the work was not sufficiently near completion to be reported. He had been verifying some of the work done by Dr. Hess of New York. The work was done on guinea pigs, though this animal was far from ideal and the results could not be definitely compared with the results in the human. Unless the guinea pig was fed considerable roughage it had intestinal stasis and this had a profound influence on scurvy, and then too the guinea pig was very susceptible to infection. In the foods not containing milk the shortage was not in one only but in several elements and unless milk was added they were by no means complete foods. Manufacturers knew this and these foods were not put on the market as complete foods but most of them while calling for the addition of milk did not advise the addition of sufficient milk and did not make provision for an adequate amount of antoscorbutic food to guard against the milder forms of scurvy. Antiscorbutics should be given to infants earlier than most writers advised, and if a proprietary food was used the child was susceptible to scurvy much earlier than if cows' milk were fed.

Studies of the Effect of Diphtheria Toxin on the Heart.—Dr. HUGH MCCULLOCH of St. Louis read this paper in which he stated that it was a well recognized fact that during the course of infectious disease in childhood certain changes in the heart muscles occurred due to the action of toxins. Diphtheria toxin acted on highly specialized tissue in the body producing parenchymatous degeneration with secondary interstitial changes. A very important effect was on the heart muscle. This action was not a local infection, but an action of toxins on the muscle cells. Occasionally at autopsy they found a case in which these changes in the heart muscle could not be demonstrated and yet these children during life had shown the signs of myocarditis. They felt that in such cases functional changes must be responsible for the acute cardiac failure, breathless, and cyanosis which was observed. A study of this question led to the conclusion that the effect of the toxin might be on the whole heart muscle or on the structures controlling the rate and propagation of the impulse from auricle to ventricle and through the walls of the ventricles. Experiments had been carried out on animals to show the effect on the heart under such conditions and electrocardiographic tracings had been made. The conductivity might be interfered with at any point along the path of the impulse, giving rise to auricular flutter, paroxysmal tachycardia, or ventral fibrillation. The electrocardio-

graphs frequently showed a change in the ventricular complex. The essayist presented an analysis of a series of 80 cases. Those cases in which the muscle alone showed changes might recover provided the cardiac reserve was preserved. It seemed that functional changes rather than organic were responsible for some of the cardiac conditions seen in diphtheria and it seemed altogether probable that these conditions led to chronic cardiac disease subsequently in life.

Dr. FREDERICK C. RODDA of Minneapolis emphasized the point that it was the diminution of the cardiac reserve that was responsible for the fatal ending in so many of these cases. He felt that the application of the electrocardiograph to the study of cardiac disease in children would show a great deal in the future with relation to heart diseases due to other causes than dipththeria.

Dr. TALBOT of Boston said that when any new method came into use it took many of them some time before they could understand the technicalities that must be mastered before they could make use of it, and there was no doubt but that by the use of the electrocardiograph they were receiving a great deal of new knowledge which would be of the greatest value in the recognition and treatment of cardiac conditions. It was a valuable thing which the future would bring into greater and greater importance.

Intramuscular Blood Injections as Nutritional Aids.—Dr. THOMAS D. PARKE of Birmingham, Ala., reported four cases of ileocolitis in which nourishment and even water could not be retained when given by mouth. These cases were treated by hyperdermoclysis and intramuscular injections of citrated blood administered daily, the average injection being 10 c.c. of blood. Although these cases were too few to warrant definite statements he felt that the blood injections had been responsible for tiding these children over a critical period until feeding by mouth could be resumed. Where many injections had to be given it was sometimes difficult to find a muscle. He had made injections into the pectoralis, the hamstring muscles, and the gastrocnemius. Fifty c.c. was the largest amount given at one injection.

Dr. FRITZ B. TALBOT of Boston said it was well to bear in mind that there were a great many things that played a part in the recovery of a child. Among these was the fluid intake and output of the body. The fluid output in cases of diarrhea was extraordinarily great. It was surprising how much could be lost in twenty-four hours and if nothing was going into the body a great deal of tissue was being lost. Great emphasis should be placed upon giving enough liquid in these cases to maintain the body.

Dr. PARKE, in closing the discussion, said he was glad Dr. Talbot had called attention to the water intake, for that was most important. In these cases he gave injections of normal salt solution, six or eight ounces at a time.

Local Anesthesia in Infancy and Childhood.—Dr. ROBERT E. FARR of Minneapolis presented this contribution which was illustrated with lantern slides. He said he thought it was quite generally known and appreciated that novocaine was the safest anesthetic known, therefore if one could use novocaine he should not use a more dangerous drug. It was also known that many children were in a bad condition following the use of a general anesthetic, and that the nature of the anesthetic often decided the issue. The psychological effect did not play as important a part in local anesthesia in children as it did in adults. The illustrations showed how the child could be restrained on an arm table set at right angles to the operating table. The child's feet were attached by bandages to the operating table, and the nurse held the arms above the elbow. In this way children even several years old could be held quite well. As a rule the child needed restraint only while the anesthetic was being given. They had been doing many different kinds of operations under anesthesia. Recently they had been using local anesthesia in operating for harelip and for abdominal operations. The apparatus for giving the local anesthesia was very simple. They were always prepared to reinforce the local anesthesia with general anesthesia; but it was rarely necessary to do this. The infiltration was made beneath the skin and when the reflexes were abolished abdominal operations could be performed without extrusion of the viscera. Local anesthesia was particularly applicable to operation by the Rammstedt method for hypertrophic pyloric stenosis. If there was pain the procedure could not be called anesthesia. Dr. Farr reported a series of 129 cases of children operated under local anesthesia and in only nine was there any pain; when this occurred it was due to an error in technique. The operation for hypertrophic plyoric stenosis could be done under local anesthesia in 12, 15, or 18 minutes, and with the danger of a general anesthetic eliminated it was possible that borderline cases might come earlier to operation. The solution used was a 0.6 per cent. solution of one per cent. novocaine in Ringer's solution.

Dr. MARTIN B. TINKER of Ithaca, N. Y., expressed the opinion that local anesthesia in children was a life-saving procedure. He said he had been enthusiastic over it for many years. The patients in whom local anesthesia was used were surprisingly free from the after effects that were present in general anesthesia, and it was generally conceded that children took a general anesthesia poorly. He had amputated two fingers with local anesthesia and the patient was perfectly satisfied. The point to be emphasized was that any local anesthesia that was not satisfactory to the patient was not local anesthesia. If the child struggled and cried that was not anesthesia at all. It was understood that a general anesthesia should be given at any time if the local anesthesia was not satisfactory. Another advantage in the use of a local anesthesia was that the surgeon was more likely to handle the tissues gently and that was even more important in children than in adults. In hypertrophic pyloric stenosis Dr. Bevan and other surgeons in the surgical section had favored the use of local anesthesia, and thought that a general anesthesia should not be used in these cases. Still another point in favor of local anesthesia was that the loss of blood was less than with general anesthesia. Local anesthesia was unquestionably the anesthesia of choice if the child was not of the nervous type, but in children from two to seven years of age who were nervous there might be some question whether the shock from the local anesthesia was not greater than from a general anesthetic. However, as a rule, the nervous shock was greater from general than from local anesthesia.

Books Received.

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REPORT OF THE PHILIPPINE HEALTH SERVICE For the Fiscal Year from January 1 to December 31, 1918. Prepared under the Direction of VICENTE DE JESUS, M.D., Acting Director of Health. 332 pages. Published by Manila Bureau of Printing, 1919.

CANCER COMMISSION OF HARVARD UNIVERSITY. Seventh Annual Report of the Collis P. Huntington Memorial Hospital for Cancer Research and of the laboratories of the Cancer Commission of Harvard University, 1918-1919 (for the Year Ending June 30, 1919). 59 pages. Published at Boston, Mass.

THE TREATMENT OF SYPHILIS By Dr. H. SHERIDAN BAKETEL. 167 pages. Published by The Macmillan Co., New York.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By Dr. G. W. NORRIS, and Dr HENRY R. M. LANDIS. 844 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

PASTEUR, THE HISTORY OF A MIND. By EMILE DUCLAUX. 363 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

AUS 25 JAHREN ORTHOPÄDISCHER ARBEIT. By Dr. OSCAR VULPIUS. 80 pages. Published by Urban & Schwarzenberg, Vienna.

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Original Articles.

THE EVALUATION OF RECENT INVESTIGATIONS CONCERNING THE WATER METABOLISM OF THE BODY IN RELATION TO THE DIGESTIVE SECRETIONS AND THE FUNCTIONS OF THE BLOOD.

BY JOHN C. HEMMETER, M.D., PH.D., SC., LL.D.,

BALTIMORE, MD.

BEFORE going into the subject of the rôle of water in the metabolism of the body, it is necessary to ask the question *"What is water"?* It would be easy to answer that it is a liquid substance of a formula OH_2 and that by a suitable apparatus a weighed quantity of water may be split up into two parts of hydrogen and one part of oxygen, the resultant separated gases having the total weight of the original quantity of water used.

Ordinarily such an answer would suffice; but physical chemistry and physiologic chemistry have broadened our views concerning the structure of water. It may be regarded as a mixture of units of varying molecular complexity. This interpretation is now widely accepted by physical chemists. These units may be expressed by the following formulas (OH_2), $(OH_2)x$, $(OH_2)y$.

This fundamental unit (OH_2) is designated as as "hydrone." Water, however, cannot be a mere assemblage of molecules which are all alike and which are represented by the conventional formula OH_2; this is fictional water and actual dry steam. In dry steam the individual separate physical units are, for the most part at least, molecules of this simple order of complexity.

The simplest constituent of water may be termed "hydrone." Water, it may be supposed, consists of hydrone in admixture with various polyhydrones formed by the association of two or more molecules of hydrone. How many of these and what the limit of association may be, we do not know and cannot say at present. The state of water, even at steady temperatures, must be one of constant flux, of oscillatory change from form to form about a point of equilibrium. Any interfering substance introduced into the turmoil, it must be supposed, will disturb this equilibrium—presumably in the direction of an increase in the proportion of the simpler molecules; and as the simpler molecules are the more self-attractive, the liquid complex would tend, if opportunity were given, to attract such molecules to itself from outside until equilibrium were restored.

In a recent address by Prof. Henry E. Armstrong, Cantor lecturer to the Royal Society of Arts, England, March 31, 1919, he states that hormones act mainly by causing disturbances in water, and as we are composed largely of water, changes producible in water may concern us very closely. The extent to which water enters into the composition of the various organs of our body, will be brought out in the following portions of this communication.

It will have to be added that enzyme action in the living body is impossible in the absence of water; in fact, all chemical action requires the presence of water, and even where we would least conceive water to be playing a rôle; for instance, during the process of incineration, for here the first steps in the process consist in the separation of the water which is not detectable by our senses, as a rule.

This article is not a communication of an original research, but as the researches concerning this subject have become so large in number that their application to the understanding of life processes has become difficult for reason of the very largeness of their number, a sifting of the experimental bio-chemical results and their application to the various functions of the human body is necessary, and may become necessary every few years. Otherwise, we shall become lost in a mass of detailed experimental results, each conclusion being isolated as long as it is not fitted into the synthetic structure of physiology.

The authors from which I have quoted are given in the text.

Water metabolism as such is not dealt with as a subject by itself in any of our modern text-books on physiology, which refer to it under such headings as "absorption," "digestion," and the "passage of dissolved substances through membranes," etc.

It has now become necessary to have perspective of the entire subject of water metabolism, irrespective of the single or special function which water may perform in one or other of the many life processes. Some of the results of research on water metabolism may be found in such books as Macleod's "Physiology and Biochemistry in Modern Medicine" and Lusk's "The Science of Nutrition." H. J. Hamburger's book entitled "Osmotischer Druck und Ionenlehre in den medicinischen Wissenschaften," has been a mine of brilliant and valuable investigation containing the proof of basic principles of osmosis that can be found in no other work. Otto Cohnheim, "Die Physiologie der Verdauung und Ernährung," presents the matter of water metabolism as it concerns the digestion in such a masterful manner, and gives so many excel-

lent references, that I have quoted him literally in many places.

Water Metabolism.—Blood, lymph, and tissue fluids are solutions in water. Living protoplasm also consists chiefly of water. In the case of muscles, various measurements show that they consist of approximately 78 to 79 per cent. water. As furthermore the muscle contains solid supporting fibers, it follows that contracting tissue itself has a still higher percentage of water. The glands consist of matter more solid; in the embryonic organism, which lacks supporting tissue, skeleton and fatty tissue, the percentage of water reaches almost 90. The percentage of water in protoplasm, then, may be said to be between 80 and 90. H. Bischoff and Voit state that the average percentage of water in man is 60; lean people have a little more; stout ones somewhat less. More than half is contained in the muscles. The percentage of water in the body is not the same at all times, but at different times it varies considerably. This, however, is not the case with blood or the actual protoplasm, but rather with certain water reservoirs of which I shall soon have to speak in detail. The percentage of water in the body depends much upon whether these are filled or empty.

Water is brought into the body: (1) by drinking, (2) by absorption of water contained in solid food, (3) through formation of water when the hydrogen of food stuffs is oxydized.

Water leaves the body: (1) in urine, (2) in feces, (3) in the water vapor from the lungs, (4) in the perspiration from the skin.

Besides these, the body has an intermediary water-movement, which, as a rule, considerably exceeds the total circulation. This first is the secretion and then the resorption of the digestive juices. We are not well informed as to whether an active exchange of water takes place between blood and tissue, and among the tissues themselves, perhaps between the cells and the tissue fluids. The lymph which streams back into the blood through the thoracic duct seems in the case of man to amount to about 2 or 3 liters per day.

The amount of water which a man takes in during a day in his food and drink varies greatly, as it is determined essentially by the amount of perspiration which he produces, and this depends upon the muscular work and the temperature without. People who live under normal conditions and who are moderately active, says Forster, take up 2215 to 3538 grams of water a day, and 288 to 468 cm. of oxydized hydrogen must be added. Vozarik's figures are similar.

In the last few years, Chittenden, Atwater, and Benedict have made numerous experiments in America, where people as a rule are lighter and thinner, and their results are somewhat lower—1250 to 3000 cm. Chittenden even had cases of 660 to 900 cm. a day where there was little food and slight bodily exercise. In the case of the large figures, we must not forget that many fluids are taken for pleasure, and much more is taken into the body than it actually needs. People who drink much beer seem to require more water when they abstain. Bodily exertion, especially in hot weather, when much is demanded from the physical regulation of temperature, brings the daily consumption of water up to many liters a day. Atwater and Sherman noted water-consumption of more than 8 liters a day in the 6 day cycle races; there may be still more in over-exertions in the hot sun. In cases of diabetes insipidus and developments from injuries to the head there has been observed a water-consumption of more than 20 liters per day, which the organism receives without harm.

It is important to discover the total amount of water which the body circulates, but still more important to see in how short a time our organism can receive large quantities. You all know how much water one can pour down when very thirsty; and you know from your own experience, or from observing other people, that to manage 3 or 4 liters of beer is rather a matter of minutes only. What becomes of it all? It is known that pure water passes quickly through the stomach (*Cohnheim's "Rinne"*) whether it be filled or empty. The fate of the various drinks is not known to us, but those that are very dilute will scarcely act differently from pure water; when there is much sugar, it may happen that resorption is somewhat delayed. Water, sugar, and the salts contained in milk also are quickly absorbed. Thin soups quickly leave the stomach. In the case of thicker soups and broths, a separation probably takes place in the stomach which lets the water pass off rapidly. Fluids, therefore, never gather in the stomach, and the small intestine is always quickly emptied. Even the greatest quantities of water which the organism takes up in a short time pass through at once into the secretions, excretions or water reservoirs.

The body in turn can reabsorb from the secretions considerable quantities of water in a short time.

The water which leaves the body in the feces normally plays but a small part—perhaps 100 g. per day. The water discharged through the urine is figured on the average as 1200 to 1500 c.c. This is essentially a secondary process which depends on the presence of diuretic substances, through which the superfluous water is removed from the body. It may amount to several liters when beer or tea have been taken, but may shrink to 466 c.c. and also less, when the food contains little nitrogen and salt. The kidneys are able to excrete great quantities of salt and urea in case very little water is taken in food, etc., or when this has been reduced through sweating. In a manner largely independent of its physiological processes, the body emits water through the lungs. The air which is breathed is generally of lower temperature than the body and not entirely saturated with water vapor; it is heated in the lungs to 37° C., and is nearly saturated as it comes in free contact with the moist surface of the lungs. The climate, therefore, is the chief determining factor in the secretion of water through the lungs, and only muscular work with its consequent increase of the expansion and aeration of the lungs somewhat increases the amount of water excreted. It is estimated that in man about 300 g. of water a day evaporate through the lungs. Zuntz and Schumburg estimate 108 to 274 g. of water excreted through the lungs according to the atmospheric conditions during a march of 6 or 7 hours, covering 25 km. with

infantry pack. There may be more in mountain climbing; it has not been determined what the due influence of a lower barometric pressure is upon the exhalation of water vapor.

The excretion of water in digestion and sweat meets urgent demands of the body. There is far more water in the digestive secretions than has formerly been supposed. A man in one day secretes about two liters of gastric juice, about one and a half liters of saliva, one to one and a half of pancreatic juice, and a considerable amount of intestinal fluids—altogether about six liters or more of digestive juices with about 11 g. chlorine. If you reflect that man has only three liters of blood serum with perhaps 10 g. of blood chlorine, you can see what demands are made of his organism in the provision of this quantity of water and salt. Although the secretion requires many hours, and the water and the hydrochloric acid secreted in the stomach rapidly pass from the small intestines back into the blood, yet one can easily prove on dogs that the process of secretion suffers considerably when the body lacks water. It may even happen in experiment with animals that a diet of meat is not dissolved in the stomach, but lies long undigested, and then passes the pylorus but little changed. We all are familiar with the ceasing of the salivary secretion during violent thirst.

But the most important function of water in the whole organism is the part it plays in regulating the physical temperature. It is a matter of common knowledge than when the temperature of the body threatens to rise above the normal height, the water evaporates and then cools the body, cooling by evaporation. This evaporation takes place on the skin; the sweat glands operate, and the sweat evaporates directly from the skin or from the outer clothing. We can determine by simple calculation what quantities are concerned. About 600 calories are required in the slow ascent of a hill of 500 m. height on a good road. Zuntz estimates that only one-third of this is used for mechanical work and the rest for heat. 400 calories would raise the temperature of the human body (the specific heat of which is somewhat less than that of water) about 6 to 7 degrees centigrade. The evaporation of 690 gr. of sweat would be required in order to prevent this, assuming the latent heat of water at 37 degrees and 580 calories for 1 kg. The human body is also able to increase its radiation of heat prior to evaporation by dilating the cutaneous capillaries and thus increase the evaporization through conduction and radiation. When the outside temperature is low, the body can be relieved of a very large part of the superfluous heat. However, in the summer exhalation can be increased only in the uncovered portions and the amount of sweat, which is lacking in the computation and is generally more than equalized because a part remains in the clothing, and the body in its clothing must excrete much more water in order that a given quantity of water evaporates. Even when the clothing is physiologically more appropriate, a man will excrete at least the specified 690 g. of sweat when he ascends a height of 500 m. in the summer; when clothing is inappropriate, a great deal more.

The importance of our clothing for the regulation of heat and for the evaporation of water from the skin, has, of course, long been recognized through experience. The work of Rubner and his pupils, which ought to be thoroughly studied by every student of medicine, has first shown this with precision. These investigations contain a wealth of proof how, although the clothing is of use in protecting us from cold, during summer this function is reversed; how the cooling off of the body becomes more difficult through the clothing. It is immaterial whether the heat is produced through high temperature without, as in Rubner's experiments, or by the body itself through muscular work. The same experimental human subject emitted through the skin with muscles at rest, but in high temperature during one hour:

	Nude, Grams.	Clothed in Woolen Shirt, Grams.
At 30 degrees centigrade.....	25	85
At 31 degrees centigrade.....	40	100
At 32 degrees centigrade...	55	110
At 33 degrees centigrade....	70	120
At 34 degrees centigrade.....	90	125

In a series of experiments in which the action of the clothes was replaced by greasing the skin, a thermal equivalent, Walpert made the following table, which clearly shows that more sweat was produced than was evaporated, although the air was kept but half saturated with water vapor.

In one hour the skin emitted:

Normal

30 deg. C.; 132 g. of which 13 g. were not evaporated.
35 deg. C.; 243 g. of which 85 g. were not evaporated.
39 deg. C.; 393 g. of which 211 g. were not evaporated.

Greased

30 deg. C.; 165 g. of which 51 were not evaporated.
35 deg. C.; 351 g. of which 191 g. were not evaporated.
39 deg. C.; 457 g. of which 241 g. were not evaporated.

From experience you know how a mountain climber or cyclist who is not clothed appropriately becomes bathed in perspiration. White shirts and smooth lining in our clothes block air passages and water vapor when they have become wet: in this case perspiration is not evaporated and therefore does not achieve its object. The skin is, as it were, in a vapor bath, and the sweat glands must work to the utmost in order to prevent the congestion of heat and a rise of temperature in the body.

Digestion and nutrition have the same effect on the production of heat as muscular work, and the same effect upon the sweat secretion when the temperature without is high. *A full meal is able to increase the secretion of sweat in man by one-half and even more.*

The following table shall serve to give an idea of the water secretion of the body under various conditions:

At rest 14 deg. C., clothed, 42 g. water per hr. (*skin and respiration*).
At rest 25 deg. C., clothed, 85 g. water per hr. (*skin and respiration*).
At rest 37 deg. C., naked, 296 g. water per hr. (*skin respiration*).
At rest, corpulent subject:
At rest 38 deg. C., naked, 345 g. water per hr. (*skin and respiration*).
At rest 20 deg. C., clothed, 108 g. water per hr. (*skin and respiration*).
At work 12 deg. C., clothed, 360 g. water per hr. (*skin and respiration*).
Trades (shoemaker), room temperature 126 g. per hr. (*skin and respiration*).
Trades (bookkeeper), room temperature 53 g. per hr. (*skin and respiration*).

At rest, stomach empty, 27 deg. C. temperature, 31 g. per hr.—skin only.
At rest after albuminous meal, 27 deg. C. temperature, 48 g. per hr.—skin only.
After march of 24.75 km., with 27 kg. baggage, 16 deg. C. 2069 sweat.
After march of 24.75 km., with 31 kg. baggage, 14 deg. C. 2451 sweat.
After march of 24.75 km., with 22 kg. baggage, 26 deg. C. 3447 sweat.
After long march of more than 202 km. in 26 hr. 58 min. at 8 deg. C. 5618 grams sweat. Caspari in Pflügers Arch. 109, p. 473.
Marches of 20-22 km. at 2-5 deg. 175-830 g. skin and respiration.
800-900 m. ascent, 18 deg. below, 93 deg. above, 6 persons active.
789-1692 g. sweat.
800-900 m. ascent, 15 deg. below, 3 deg. above, 6 persons active.
119-759 g. sweat.
1150-1750 m. ascent, 6 persons active, each four marches, 1231-2746 g. sweat.
Zuntz, Löwy, Müller, Caspari in *Höhenklima* Berlin, 1906.

It is clear from this how much water the body secretes as perspiration under given circumstances. The figures here given are surely not the upper limit: in fatiguing climbs, in the glaring sun, 4 to 5 liters are secreted in a few hours. On the other hand, the secretion of water is reduced to very small values during rest and cool weather, and the excretion then probably takes place through the lungs exclusively. The skin is not an organ through which the body rids itself of superfluous water. The copious drinking of water does not increase the secretion of sweat, and even when the body is swamped with liquids, when the kidneys are working to the utmost the serous cavities and intestines are filled with water and the digestive glands are saturated, nevertheless the skin remains dry. The sweat glands, in common with other glands, function only upon specific nervous impulses, which are transmitted to them through sympathetic paths from the thoracic part of the spinal cord. Their physiologic stimulation is known to be a rise in blood temperature, and the interesting observations of Kahn show that they function when the temperature of the blood which passes through the brain is raised. The conducting path from the brain to the sweat glands is therefore by means of nerve fibres. The stimulus, however, exerts itself directly in the brain, exactly as in the case of the breathing centers. This explains why the sweat excretion as a rule takes place over the whole body and not locally.

A suppression of sweat secretion would result in overheating of the body, and further serious consequences. This cannot be directly observed in laboratory experiments on animals, as their physical temperature regulation is different than that of man. The dog does not sweat, but he gives off heat in water evaporation. His breathing becomes extremely rapid and panting, and water evaporates from his open jaws and his lolling tongue—he sweats, as it were, with lungs and jaws. The innervation of the lungs takes place through the N. Vagi. Pawlow, who first successfully performed a double section of the vagi of the dog, noticed that such dogs behaved quite normally; but if they are allowed to run and leap for even a short time, death from overheating will result. The case of a man is known who had a congenital absence of sweat glands. He was perfectly well in cool weather.[1] In heat and during strenuous physical labor, his temperature rose alarmingly. When the temperature rises during fever, there seems to be a lack of function in the sweat production. Occasionally, we can observe conditions in man which result from insufficient cooling, called sun-stroke, a critical rise in temperature, which occurs in the body when the sweat glands do not function because the water reserve of the body is drained.

Where do the sweat glands, as also the digestive glands, obtain their water, and what becomes of water that is drunk? The water that is absorbed passes directly into the blood, whence the glands receive their water. But when more is consumed, the blood cannot be the reservoir as man has but two and a half to three and a half liters of serum. This was mentioned above. The perspiration which he can emit without receiving fluids amounts to more than the total serum; the digestive juices are more than twice as much, and a man may drink in a very short time a quantity of fluid equal to his serum. This experience of daily life was bound to suggest that somewhere in the body water reservoirs must exist. Magnus has actually found them.

Magnus injected diluted and concentrated salt solutions into the veins of dogs. He determined the composition of the blood and the diuresis which resulted during the injection and at intervals afterward. It was found that very considerable quantities of water and salt leave the blood in a few minutes. One dog received an amount equal to almost three times his blood; 2260 cm. very diluted salt solution; when the injection was completed, the blood contained 272 cm. Another dog received 8.75 g. sodium chloride in a concentrated solution, an amount more than twice the salt present in the blood: five min. after the injection, there remained only 1.92 g. in the blood. The water and salt, however, had not passed into the urine; for during the first experiment only 220 cm. of water; in the second 0.5 g. sodium chloride had been discharged with the urine. 1767 cm. of water, with 6.33 g. NaCl could not be found in the blood or urine, they must have passed elsewhere in the body, *i. e.* into the tissues. The experiments of Magnus proved a further fact. As you know, blood contains a certain amount of NaCl and through this and some other salts it has a specific molecular concentration, or osmotic pressure. The vol. of the blood corpuscles and the normal concentration of salt secretions is adjusted to this osmotic pressure, which is maintained by the blood with the utmost regularity. When Magnus injected a concentrated solution of salt, not only did the superfluous salt pass into the tissues, but at the same time water was osmosed into the blood. When a diluted solution of salt was injected, the equalization of the dilution did not take place through water discharge from the blood to the tissues, but also through the entrance into the blood of salt from the tissues. The results of these experiments is therefore: the body has available reservoirs of water and salt into or out of which water and salt can pass and by means of which the concentration of i.e. the osmotic tension of the blood can be kept constant.

These reservoirs are the muscles. According to the experiments of Magnus and Engel, all organs of the body take up some superfluous water when the body is flooded with it. The other organs, however, do this to so small extent (excepting, perhaps, the skin) that the muscles alone figure as physio-

logic reservoirs. There has been no investigation as yet as to whether certain muscles are especially concerned, whether it is the contractile muscular fibre with its fluid contents that thus varies its water contents, or whether the tissues perhaps function as water reservoirs. We only know that the exchange between blood and reservoir takes place in a few minutes and in precisely such a manner as though a simple diffusion membrane were located between the reservoir and the blood. No special regulation between the capillary endothelial cells or other cells could be observed.

The fate of water injected into the circulation in quantities above the vascular capacity has been investigated in this country by Dr. Horatio C. Wood, Jr. (Transactions of the Amer. Therapeutic Society, May 5th, 1905, pg. 28) whose results differ somewhat, though not essentially from those of Magnus. He does not give the complete experimental details of his procedures but the deductions are of importance.

The following were the conclusions which appeared to him to be justified by the evidence he obtained: "(1) The injection of a .7% solution of sodium chloride in any quantity up to four times the total volume of blood has no effect upon the blood-pressure in the normal animal. (2) When the quantity of fluid injected is not more than the total volume of the blood, the greater proportion of the fluid apparently remains in the vessels for a considerable period of time, the pressure in the arteries being kept at the normal height probably by vascular dilatation. (3) When the quantity of injected fluid is greater than the total volume of the circulation, the excess escapes very rapidly from the vessels. (4) This excess does not pass out through the kidney, at least for some time after the injection. (5) A very large amount of the fluid escapes into the gastro-intestinal tract; some apparently leaks through the vessel's walls, especially into the lungs, giving rise to pulmonary œdema. (6) In conditions of low pressure, due either to hemorrhage or to vasomotor paresis, and sometimes in that caused by depressant poisons, the injection of physiological salt solution is capable of increasing the arterial pressure to a point approximately normal. (7) In the great majority of instances this rise is permanent, although in one or two cases, for some reason not determined, it lasted but a few minutes. (8) The rise produced by salt solution is brought about through purely mechanical influence. (9) The subcutaneous injection produces an elevation of blood-pressure in conditions of circulatory depression, but it is much slower in its action than the intravenous infusion. An effect from hypodermoclysis may be expected in about half an hour. (10) No distinct difference in the immediate effects are demonstrable between solutions containing 0.5 or 0.7% of sodium chloride, nor do variations in temperature between 86° to 112° F. apparently affects the results."

The first object of these water and salt reservoirs is to keep the concentration of salt in the blood constant. The concentration of the albumen and the relation between serum and the building up processes which does not concern the osmotic pressure of the blood may vary temporarily; these differences are slowly effaced by the activity of the kidneys. Drinking water, therefore, temporarily dilutes the blood without; however, affecting the salt constituents. The chief part, however, of the water which is beyond momentary need, passes into the water reservoir which in turn enable the organism to deliver the necessary quantities of sweat, digestive excretion, and urinal water. Plehn has shown that man functions precisely as does the dog. (*Deutsches Arch. f. klin. Med.*, 91, 1, 1907.)

As I have said before, the osmotic pressure of the blood serum seems mainly to fill and empty the water reservoirs. However, a series of data seems to admit the possibility of a more complicated control of the exchange of water. It is well to recall that in a case of alcoholic drinks at least, the time for absorption from the digestive tract differs according to the presence or absence of thirst. Let me remind you of the frequent experience of marching or climbing that thirst is better endured when satisfied at long intervals, than when it is quenched frequently. The exchange of water, especially the amount of water discharged through the sweat, seems to be capable of diminution by habit and training. When water leaves the blood, there seems at first to be no reaction, no sensation. It is only when the water reservoirs begin to empty, that the general feeling of thirst is aroused. And it is well known that man drinks without thirst and beyond his thirst. Pure cold water and many other drinks seem to be luxuries to many people. No exact figures can be given on the capacity of the reservoirs. The highest observed by Magnus was 1800 cm. in a dog of 12.8 kg. (28 lbs. 3 oz. 4 drams). The highest delivery was 215 cm. in a dog of 1141 kg. (2515 lbs. 7 oz. 1½ drams). The highest observed retention of salt was 6.3 g., and the loss of salt was much less. Experiments with the secretion of digestive juices, when the latter were removed from the body, show that the chlorine is used sparsely when as little as 3 g. NaCl is removed from a dog of 20 kg. (44 lbs. 1 oz. 3¾ drams). Man can excrete 3—4 liters without difficulty; perhaps considerably more. The upper limit is not known and is probably variable. The water reservoirs are the cause of constant changes in the weight of the body. A man's weight loses several kgs. (7—8 lbs.) through water excretions in strenuous muscular work in the heat, but the albuminous and fatty contents of the body need suffer no change. Such considerable changes, as a rule, are equalized in 24 hours, but these transient fluctuations need be considered in the investigation on metabolism and dietetic treatments. The scales will show considerable increase and decrease which depends solely upon the different amounts in the water reservoirs.

To this I should like to add a few remarks on the influence which the water consumption, a lesser or greater water percentage of our food, is capable of exerting upon functions and phenomena of the body. I do not refer to the excessive diminution of the water which results in thirst, which may be caused by habitual use of very dry or salty food. It is clear that emptying the water reservoirs must disturb the water metabolism and digestion. The blood can not suffer condensation, nor protoplasm the loss of water, hence thirst

brings with it an increased discharge of nitrogen, i. e., collapse, nervous disturbances, death. The question of the effect that physiologic variations in water metabolism exert is much more interesting. Very often the statement is made that drinking or not drinking water has a decided effect upon the albumious or fatty metabolism and deposits; rules for the amount of water figure extensively in many dietetic treatments and popular precepts. It is interesting, therefore, to ascertain the state of our knowledge on the influence which the absorption of water has upon the body.

According to the preceding, the influx of actual addition of the water supply, even in longer periods, cannot be great, consisting essentially in the secretion by the kidneys of *more* or *less* concentrated urine. The regulation of the water reservoirs precludes every other influence, and the resarches of Rubner, Straub, and Heilner, have not revealed a constant or decided influence of the water supply on nitrogen and carbonic acid elimination. Chittendon also found no change in the function of the body in experiments which he continued several months on the effects of diminishing the albumen and food supplies as well as also diminution of water in the food. It is of course, possible that an influence exists which can only be demonstrated under deflnite pathologic conditions; but I should like to refer to the great uncertainty of therapeutic use of water which is not denied by critical clinicians. In some experiments, the workers are dealing not only with increasing or diminishing the water supply, but also with alcohol and other drinks. The suggestive action of every change in the habits of drink must also be considered. Copious fluids are said to flush out and thus aid the organisms. This is doubtful, however, as we know too little about these particular actions of the kidneys and other glands; about osmotic and dialytic exchange between blood and tissues. Copious fluids, on the other hand, are said to deluge the organism, to overload blood and muscles. There are certain popular doctrines which seem to date from antiquity that assert that vigorous muscles contain little water; weak muscles more. In accordance with these maxims, it was recommended that athletes and gymnasts drink less water. The question resolves simply to this, that slaughered meat is valuable if it contains much fat, less valuable if little fat, *i. e.* much water. On the other hand, the water contents of muscles and protoplasm in life have been shown to be very constant. It is doubtful whether the organism can ever be drained other than temporarily; the existence of a "plethora," *i. e.* an increase of blood, has never been proved. The water reservoirs may be drained for a time and the weight of the body much decreased; but the next occasion will probably fill them. Whether they can be surcharged pathologically, no one knows. Medical prescripts on drinking water and on fluid supply are quite dubious. If it is not a question of suggestion or symbolism, physicians will do well to let the thirst of a patient govern his drinking of water, and let other excellent devices of the body regulate the water exchange automatically.

From the aforegoing experiments, it must be clear that deprivation of water in cases of high blood-pressure is not a logical therapy, and in my experience this is borne out by extensive clinical observation. Only when there is evidence of acute nephritis is the exclusion of water a correct plan of treatment; in chronic nephritis water is not only permissible, but is benencial.

Water metabolism in relation to blood volume and absorption of water by alimentary tract to make up deficiencies in the blood volume.—This subject has recently become one of great importance, because of the treatment of exhaustive hemorrhages due to wounds received in battle. It received the attention of P. Rous and G. W. Wilson, (*J. A. M. A.*, 1918, vol. 70, p. 219) who found in animals that when the total hemoglobin was reduced to one-fourth of the original normal amount, that the animal could still recover if the blood volume was maintained. But when the amount of the total hemoglobin fell to one-fifth of the normal, the animal did not survive even though the blood volume was kept normal.

The subject has been carefully studied upon wounded soldiers by Oswald H. Robertson and Arlie V. Bock, both Captains in the Medical Corps of the U. S. A. and published in the *Jour. of Experimental Medicine*, vol. 29, p. 2, Feb. 1, 1919.

The hemoglobin is the oxygen carrier of the blood. If it is reduced, let us say to one-fourth its normal amount, the processes of the organism oxidation might still be carried on fairly satisfactorily if this reduced amount of hemoglobin could be made to pass through the lungs four times as frequently as it did in the normal animal. In an animal (dog 5 kg. in weight) with a normal blood volume, and only 25% of its normal hemoglobin, this quantity of hemoglobin would pass through the pulmonary alveoli once in a minute; but this is the time required for a normal blood volume with a normal amount of hemoglobin. If now, the same amount of oxidation has to be done with only one-fourth the amount of hemoglobin, this quantity of hemoglobin would have to be forced through the lungs four times in one minute. These are not actual figures from physiology, but just examples to facilitate the conception of the problem. If a hemorrhage, however, has reduced the hemoglobin to one-fourth its original volume, and the amount of blood plasma has correspondingly diminished, it would not be wise to restore the water of the blood to the normal without restoring the hemoglobin to the normal, also. Assuming that we could restore the blood volume to the normal, and not the hemoglobin, the circulation time would still be one minute and in that time the fourth of the normal hemoglobin could not accomplish sufficient of oxidation because it would pass through the lungs only once instead of four times in a minute.

Robertson and Bock have shown that the extent to which the blood becomes diluted through restoration to its volume after hemorrhage, depends within certain limits, on the total amount of hemoglobin remaining. They observed in patients, with a very low hemoglobin per cent., that the blood volume did not show a marked increase until the amount of hemoglobin rose, no matter how much fluid they were given.

There appear to be two forces at work; one

favoring dilution, and the other inhibiting or checking dilution of the blood. The one which tends to restore the blood bulk, so that the circulation has a sufficient volume to work with effectively, and the other, a mechanism which apparently tends to prevent the blood from being diluted too much, with a consequent lowering of the hemoglobin per cent. Until a very low per cent. of hemoglobin is reached by bleeding an animal or traumatic hemorrhage in man, the former force is stronger, and the blood dilutes to a volume needed for good blood pressure.

There seems to be a point at about 20 per cent. hemoglobin where the force that inhibits dilution becomes the more effective and the blood does not dilute any further, even though the volume may be so small as to be barely compatible with life.

Robertson and Bock give illustrative cases of these processes.

"Case 4 (Text-fig. 4) showed a condition of profound anemiahemoglobin 20 per cent. A fairly large fluid intake was maintained, yet the blood showed no tendency to dilute, even though the volume was less than 68 per cent. of the normal. Case 5 (Text-fig. 5) shows a first hemoglobin reading of 26.5 per cent. and 30 per cent. from vein and ear respectively. At this time the blood volume (estimated) was 2,605 cc., or 56 per cent. of normal. This volume was evidently too small for the circulatory needs, and dilution was permitted to occur until the hemoglobin remained practically stationary, the volume having increased meanwhile sufficiently to bring the blood pressure up to normal."

In order to illustrate the value of a large intake of fluid by the mouth and rectum, indeed its superior value to transfusion for the purpose of restoring blood volume after hemorrhage, I will quote the operations of Robertson and Bock in their summary (l. c. page 166).

"Blood volume tests made on a number of soldiers recovering from hemorrhage have shown that in many instances dilution of the blood occurs very slowly. The principal reasons for this seem to be (*a*) an initial lack of reserve fluid of the tissues, and (*b*) the absence of any subsequent attempt by the body to make up this fluid deficiency.

"By putting such patients on a large fluid intake by mouth and rectum it has been found that their blood volume can be promptly and greatly increased. Hemorrhage cases transfused, yet still showing a low blood volume, were first treated in this way. Then the effect of forced fluids without transfusion was tried. Immediately after a hemorrhage, or as soon as the patient came under observation, he was given large quantities of water by mouth, and salt solution by rectum. Under such treatment the blood pressure soon began to show a progressive rise, the volume increased, and the red cells became more evenly redistributed, as shown by the relative hemoglobin percentages of the capillary and venous blood. These changes were often well marked after only 2 or 3 hours of the treatment.

"More than this, forcing fluids in cases where the amount of bleeding is difficult to estimate on account of the presence of a high hemoglobin percentage is of distinct value, since the dilution of the blood which results, serves to show the extent of the hemorrhage through the drop in hemoglobin that it entails.

"In attempting to determine the condition of the patient after hemorrhage with a view to deciding the most suitable form of treatment, it is of much importance to learn the total blood loss—which is often not even indicated by the hemoglobin concentration of the remaining blood. With a total hemoglobin reduced to 25 per cent. or under transfusion is needful. New blood is necessary, not only to supply more oxygen-carrying cells, but also because it actually enables the circulation to increase its volume. For, as has been pointed out in Paper 1, by Robertson & Bock (*l. c.*), the hemoglobin percentage must be above a certain point if a rapid restoration of the blood volume by means of the organism's own activities is to come about. With the total hemoglobin about 25 per cent. the chief need is for increased blood volume, and if the patient's condition demands an immediate and large addition of circulating fluid, gum acacia solution should be given. If the condition is not so urgent, forced fluids by the alimentary tract are indicated.

"The blood volume can be considerably reduced and yet a normal blood pressure maintained. It is pointed out that the vasomotor mechanism which has adapted itself to the diminished blood bulk may in any individual case be very near the margin of its compensatory power. Increased strain in such instances may cause a failure of this mechanism with a resulting fall in blood pressure.

"The beneficial results of forced fluids after secondary hemorrhage suggest the value of the early use of fluids by the alimentary tract in cases of primary hemorrhage."

Schema for Clinical Investigation of Human water Metabolism. Determination of normal weight and specific gravity of the body.

S. G. of a body is the ratio of the mass of that body to the mass of an equal volume of water. The human body must first be weighed in air and then, when it is submerged in water, the difference between these two gives the weight of a mass of water whose volume is equal to that of the solid weighed. To determine S. G. of human body it is only necessary to divide the weight as observed in air by the loss of weight when submerged in water.

Deductions and Conclusions.—1. Necessity of determining the General Water Metabolism in all complete diagnostic surveys of the body.

2. Degree of sweat elimination at given temperature and in given time and the measured water intake. Analysis of the sweat.

3. Amount of blood in body and the amount of electrolytes it contains. Blood specific gravity.

4. Degree of water elimination through the kidney. Analysis of urine and its chemical constituents.

5. Rate of absorption of water from gastrointestinal tract.

6. Elimination of water, etc., through lungs. Respirometer studies at given temperature, measured blood pressure, and known water intake and output.

7. General H_2O intake and output at given age and temperature.

8. The blood pressure and heart condition by auscultation, percussion, radiograms and electrocardiograms.

9. The specific gravity of the entire body and the specific gravity and osmotic pressure of all obtainable body fluids.

10. The study of sweating and of the secretion of urine. Diarrheas—Profuse spitting or expectoration after nerve disturbances.

Diminished quantity of any of these secretions after nerve disturbances. Relation of the endocrine systems to these secretions.

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SPLENOMEGALIC HEMOLYTIC JAUNDICE:

CASE REPORT FOR CONGENITAL TYPE.

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Two types of splenomegaly with hemolytic jaundice are recognized: (1) the congenital or familial or Chauffard-Minkowski, and (2) the acquired or Hayem-Widal. Chauffard has said that in the congenital or familial cases the subjects "are more icteric than sick," and frequently come for treatment for other things, considering the jaundice as a family idiosyncrasy not interfering with perfect health. This type is compatible with long life, and in one case reported, the patient reached the age of 70 years.

In the Chauffard-Minkowski type there is present a chronic jaundice which may not be apparent except upon close inspection. The jaundice varies in its intensity from time to time, and is often found increased following undue fatigue, biliary colic, or exposure to cold. Bettman's patient even experienced attacks of hemoglobinuria brought on by exposure to cold, and Wiesom, in cases of children, found that a cold bath brought about a daffodil color in the skin. Symptoms of cholemia such as itching, multiple hemorrhages, bradycardia, etc., are never present, and it seems to have been definitely proven that the jaundice is not due to biliary obstruction, although gallstones are frequently found at autopsy or operation. Note the 17 cases reported from the Mayo Clinic in 1917 (4 of the acquired type). Twelve splenectomies were performed. In 58 per cent of these gallstones were present.

The cause of the jaundice has not been definitely determined. Is it due to the constant destruction of circulating erythrocytes with the consequent liberation of hemoglobin, or is it due to the damming up of hemoglobin in the liver itself? Whipple recently has shown that bilirubin can be formed by the action of the endothelium of blood vessels entirely isolated from the hepatic circulation.

Rarely all the signs and symptoms of the disease may be present except the jaundice, as in the family described by Chauffard. In this case an eighteen year old son evidenced all signs except jaundice. The mother was a typical hemolytic icteric.

Attacks of gallstone colic or perisplenitis are common, or, as in the case here reported, several "bilious" attacks during a year may occur. In these attacks diarrhea, headache, and slight fever may be present. The urine is generally highly colored, due to the presence of urochrome. Urobilin or urobilinogen are present, and very rarely bile. The stools are of normal color. Both urobilin and bile are always present, and it has been shown by Moller that the total urobilin excretion in urine and feces is greatly increased.

Krumbhaar studied 158 cases in which blood counts were available, and found 55 belonging to the acquired type, 103 to the congenital or familial type. Of these 103 only 23 failed to give a positive family history, whereas of the 80 familial cases 35 developed after birth. The average blood count of the 103 congenital and familial types was 3,340,000 (1,800,000 to 5,700,000) while the average for the acquired type was 2,032,000 (510,000 to 4,500,000). A secondary anemia is nearly always present. A severe anemia in hemolytic icterus may very closely resemble a pernicious anemia. Widal and Weissenbach have reported a case of this type. However, in the usual Biermer type of pernicious anemia the resistance of the red cell is increased, icterus is absent, and the spleen shows but slight enlargement. In chronic splenomegalic hemolytic jaundice the red cells show a predominating microcytosis, and only slight poikilocytosis and anisocytosis. Chauffard tested the degree of the fragility of the red cell when subjected to varying strengths of hypotonic salt solution, a test first suggested by Ribierre in 1903.

Various agents, such as snake venom, bacterial hemolysins, saponin, and specific hemolytic immune sera, have been employed experimentally in the study of hemolysins. Hypotonic salt solution is most commonly used. In general, an increase or decrease of resistance to hypotonic salt solution is an index as to the increase or decrease of resistance to any of the other agents. The use of hypotonic salt solution is entirely satisfactory, then, as a test for erythrocytic fragility.

Normally, when erythrocytes are subjected to hypotonic salt solution hemolysis begins at .45 and is complete at .35. In chronic splenomegalic hemolytic jaundice hemolysis begins at some higher point and not infrequently at .6 or .7. It has been shown that the fragility test is much more sensitive when washed red blood cells are employed.

The cause of the fragility is unknown. Widal, Abrami, and Brulé produced experimentally in animals a lessened resistance of the red cell by intraperitoneal injection of toluylendiamin. The degree of resistance could be increased or decreased by a concomitant increase or decrease in the dosage.

In this disease we may surmise a circulating toxin producing a destruction of the erythrocytes together with bone-marrow stimulation and the liberation of immature, less resistant erythrocytes. However, no such toxin has ever been isolated. It is remarkable that the congenital and familial cases show a greater degree of compensation than the acquired. The anemia is less severe and the patients are less toxic, as if a gradually developing resistance to a circulating toxin had been established.

Does the hemolysis occur in the spleen or in the

general circulation? Minkowski, Chauffard, and Vaquez believe that the abnormally fragile corpuscles are destroyed in the pulp of the spleen. Widal and others believe that the destruction occurs in the general circulation, the débris accu-

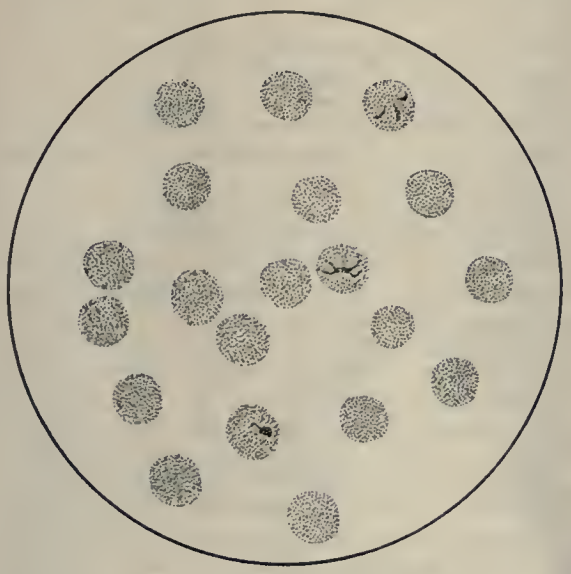

FIG. 1.—Normal, granulated.

mulating in the spleen. The occurrence of siderosis in the kidneys favors the circulatory origin.

Normally, less than one per cent. of erythrocytes show reticulation, whereas in chronic splenomegalic hemolytic jaundice they are present in amounts up to 40 per cent. A detailed study of this phenomenon was made by Vaughan in 1903 although it was originally described by Pappenheim in lesser detail. It was shown that the blood of the newborn shows an average of four per cent. reticulation; in pernicious anemia with active regeneration, 18 per cent. In splenomegaly with hemolytic jaundice the percentage ranges from 10 to 40. The degeneration is entirely independent of the basophilic granulation of Grawitz demonstrated in fixed blood smears stained with ordinary blood stains, or the Schüffner's granules appearing in the malaria-laden erythrocyte stained by the Romanowsky method.

The appearance of the reticulation is thus excellently described by Thayer and Morris:

"Many of the red blood cells which are of a slightly grayish color, and barely visible, having lost their refractiveness with their hemoglobin, show a fine granulation of a bright red color. These dots, generally arranged about the periphery, are sometimes scattered throughout the cells in the form of a definite granulation. The granular corpuscles are usually somewhat larger than their neighbors. The distribution of the granules is irregular. Sometimes scattered, they are usually collected in groups of two or three. Sometimes they are arranged in the form of a wreath or crown at the periphery of the corpuscle. They are generally distributed in such a manner as to suggest filaments wound around within the cell, and showing varicosities. They are unequal in size and of irregular form. Not infrequently this granular network is gathered together toward the periphery or near the center of the cell in such a manner as to suggest grossly a nucleus. Sabrazés has called these corpuscles reticulo-filamentous. The apparent reticulum is very adherent to the red blood corpuscle. If a dried and stained specimen be washed with pure water, the corpuscles lose their blue color, while the granular filamentous appearance remains. Indeed, in some cases, the reticulum may be found outside the corpuscle, lying between other well preserved elements. According to Fiessinger and Chauffard, the average diameter of the reticulated cell is 8.1 micra as compared with an average diameter of 6.3 for the non-reticulated cell."

The presence of reticulated erythrocytes in excessive amounts generally signifies active blood regeneration, and this regeneration is manifested in the Chauffard-Minkowski type in this manner rather than by the presence of a great number of nucleated erythrocytes as occurs especially in pernicious anemia. Again, the presence of nucleated erythrocytes in the circulation does not always mean excessive blood regeneration, since it occurs in certain rare conditions such as tumors of the bone-marrow. Reticulation is easily demonstrated in the following manner:

Method of Rosin and Bebergeil.—A one per cent. alcoholic (95 per cent.) solution of brilliant cresyl blue is used. A drop of this mixture is placed on a slide and is then converted into a thin smear by drawing the ground edge of another slide across the glass surface. The slide should be slightly warmed to make evaporation of the alcohol rapid. Evaporation of the alcohol leaves a thin film of dye on the slide. A small drop of blood is placed on a cover slip and the cover is then inverted and placed on the slide so that the blood lies between the cover and the slide. A thin film of blood is thus obtained. The blood plasma dissolves the dye which is then taken up by the red and white cells. The edges of the cover slip

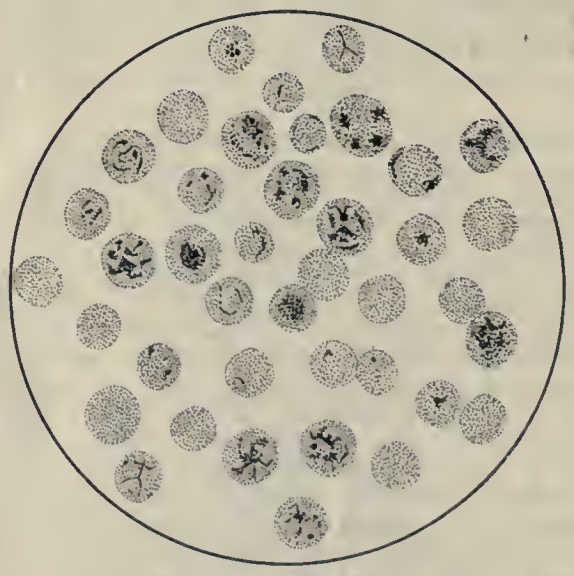

FIG. 2.—Red cells of various sizes showing more or less reticulation.

are sealed to the slide with vaseline, or preferably heated paraffin. If the slide is correctly made it should show a single layer of cells, none of which are crenated.

Solutions of less than 1 per cent. of brilliant

cresyl blue will show reticulation in the red blood cells but not as well as the saturated solution (1 per cent.) In normal blood the percentage of reticulated cells is roughly 0.1-0.5 per cent. It is probably nearer 0.1 than 0.5 per cent. In normal blood, several fields will require examination before any reticulated cells are discovered.

Neither Fig. 1 nor Fig. 2 shows cells from a single field, but an attempt has been made to show the general types of reticulation. Where the reticulation is very heavy, the plasma also may be slightly tinged with the dye. In Fig. 2 one-third of the red cells show some reticulation. The red blood cells of Fig. 2 show considerable variation in size, the largest ones in general being the most heavily reticulated.

Polychromatophilic degeneration is generally present. An occasional megaloblast or normoblast may be seen in the dried stained specimen. Nothing unusual is found in the white and differential count. The blood platelets are present in normal amount. Coagulation time is normal. The

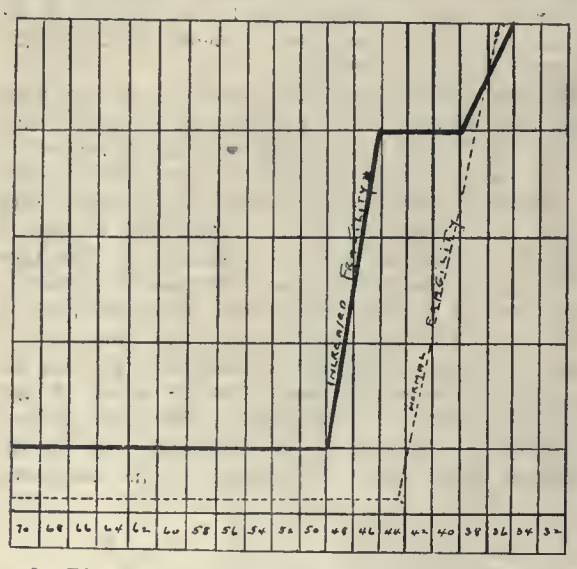

FIG. 3.—Diagram of fragility with the use of hypotonic salt solution.

blood serum is hypertonic, resulting from the exosmosis of inorganic salts from the fragile erythrocyte (Troisier). The serum is of a clear, yellowish color. The bilirubin test is positive. Urobilin is generally undemonstrable.

The acquired or Hayem-Widal type does not present a definite disease picture to the same extent as does the congenital or familial type, but rather an interesting syndrome. Soon after the observations of Chauffard, a similar syndrome was reported by many observers as occurring in adult life. It was seen to follow ischiorectal abscess, severe nervous shock, gastroenteritis, hemorrhage following miscarriage, etc. At other times, apparently the disease began independently, and without exciting cause. Transient jaundice, increased fragility of the erythrocyte, secondary anemia with reticulation of the erythrocytes, may occur in cancer of the stomach, cirrhosis of the liver, malaria, repeated hemorrhages in cancer of the bladder, streptococcus infection, uncinariasis, syphilis, pulmonary tuberculosis, and jaundice of the new-born.

Definite crises occur in the acquired type of the disease. Attacks of abdominal pain are followed by a great increase in the intensity of the jaundice, and this is followed by a severe secondary anemia. These attacks have been called by the French "crises of deglobulization."

Krumbhaar has noted the following conditions in which enlargement of the spleen may occur. In one group may be classified:

(1) Various hemolytic anemias of specific origin (*Dibothriocephalus latus* and uncinariasis).

(2) Lesions of the spleen associated with thrombosis of the portal vein or artery.

(3) Splenic types of cirrhosis of the liver.

(4) Leukemia, pseudoleukemia, and changes secondary to obstruction or infection, as in heart disease, typhoid fever, kala azar, syphilis, etc.

In another group:

(1) Gaucher's disease.

(2) Banti's disease.

(3) Von Jaksch's disease.

(4) Chronic splenomegalic hemolytic jaundice.

(5) Pernicious anemia.

In the acquired type the onset is sudden, and the patients are always distinctly ill. They present the picture of a grave anemia which shows some resemblance to pernicious anemia. The erythrocytes are fragile, but to a lesser degree than in the congenital or familial type. It is very essential, then, to demonstrate the fragility with washed corpuscles. The phenomenon of autoagglutination is present in the acquired type, but not in the congenital or familial type.

Five theories have been offered as to cause:

(1) Congenital communication between the bile passages and lymphatics (autopsies have disproved this).

(2) Hayem believed the disease was due to syphilis. The absence of a positive Wassermann in the majority of cases would seem to disprove this theory.

(3) Icterus and splenic enlargement due to chronic cholangitis. This is difficult to imagine, because the condition dates from birth and continues throughout life, yet leaves no indication at post mortem.

(4) Minkowski's theory of congenital perverted function of the liver cells by virtue of which bile is secreted in part to lymphatics instead of into the bile capillaries. This might account for the jaundice but not for the enlargement of the spleen.

(5) The best theory was offered when Chauffard discovered the increased fragility of the red cell. The cause of the fragility remains to be discovered. (1) Is it a congenital defect of metabolism leading to production of toxic substances deleterious to the red cells, or is it (2) a congenital defect in the blood-forming organs?

Pathology.—Hemosiderin may be found in the liver cells, and also in the kidneys, but to a lesser extent. The splenic enlargement is due both to passive congestion and to siderosis. Fibrosis is not present.

Treatment.—Splenectomy brings about more gratifying results in this disease than in any other disease in which great enlargement of the spleen is a prominent feature.

Elliott and Kanavel collected 48 cases up to the year 1915. Splenectomy was performed upon all of these with only two deaths. The blood was restored to normal to a great degree. It was found that the fragility of the erythrocyte was lessened to a great degree, but was never entirely restored to the normal.

In Sir Spencer Wells' case increased fragility was noted 27 years after operation; in Roth's case, 3½ years following operation.

During the first few days following splenectomy the jaundice increases, but in nearly all cases is entirely absent at the end of two weeks. The "crises of deglobulization," with the accompanying malaise, headache, and fever, cease entirely.

W. J. Mayo, writing of splenectomy, says that the mortality of splenectomy depends more on the type of cases accepted for operation than on the technical difficulties of the operation itself. If the patient is in good general condition, a small, movable spleen can be removed with a death rate so low as to be almost accidental. If the spleen is enlarged, but has considerable latitude of motion, splenectomy may be performed with almost no mortality beyond the possible accidents of a serious operation; but if the spleen is large and adherent, and the patient is suffering from a high grade of anemia with myocardial and renal changes, marked by edema of the lower extremities, or is suffering from ascites, jaundice, high temperature, etc., etc., mortality will necessarily be high. Even under these conditions, surprisingly few patients die directly as the result of the operation.

Report of Case.—Miss H. C., age, 18 years; female; single, student; nativity, California.

Family History.—Father alive and well at 52 years; mother alive and well at 42 years; one brother alive and well at 16 years; one brother alive and well at 14 years. There is no history of splenomegalic hemolytic jaundice in the family.

Previous Diseases.—Measles at 4 years; mumps at 6 years; whooping cough at 6 years; tonsillitis, repeated attacks between 8 and 9 years of age; epistaxis repeated during the year 1917; "biliousness," once or twice yearly experienced "bilious" attacks. These were ushered in by nausea and vomiting, but abdominal pain was never at any time present. "Influenza" in October, 1918, complicated by a bronchopneumonia of moderate severity. No sequelæ. Menstruation began at 13 years; always regular. Injuries: at the age of 10 years fell from a "swing" striking upon the head. Was unconscious for a period of one-half hour. Habits: exemplary.

Present Complaint.—Lassitude. This complaint had never been serious enough to call for treatment. The disease was discovered during the course of a routine physical examination given all entrants at the University of California.

Physical Examination.—General appearance: Medium build. Skin and mucous membranes pale. Conjunctivæ icteric. Psychic: normal. Heart: There is a faint systolic (hemic) murmur at the mitral orifice, not transmitted to the axilla. Lungs: normal. Spleen: Greatly enlarged, and extending three fingers-breadth below the umbilicus. No other glandular enlargement. Liver: cannot be palpated. Reflexes: normal. Sensory: normal. Urine: negative. Blood: Hemoglobin, 55 per cent.; Reds, 2,400,000; Whites, 8,900; polys., 70; small monos., 26; large monos., 4; eos., 0; Platelets, 300,000. Malaria: negative. Poikilocytosis and anisocytosis: moderate. Increased fragility of red cells. Reticulated red cells: 40 per cent. Stool: no ova or parasites; urobilin present. Occult blood: negative. Blood serum: Wassermann negative.

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THOMSON BUILDING.

THE PROPHYLAXIS AND TREATMENT OF GALLSTONE DISEASE.

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SURGERY has a distinct place in the treatment of gallstones, but the treatment of gallstone disease may with truth be said to be entirely medical. Upon consideration of post-mortem records it is seen that from 6 to 10 per cent. of all cadavers show the presence of biliary calculi and when it is shown that not more than 1 person in 20 of those who harbor gallstones becomes aware of their presence as evidenced by symptoms, in many instances insufficient to require operation, it is readily demonstrable that the field of surgery is decidedly limited, although of great importance in selected cases. Keeping these facts in mind, and remembering the distinction between gallstone disease and gallstones, more will be expected of the internist and fewer disappointments will be attributed to the failure of surgery.

The general medical treatment of gallstones, and the various manifestations of the same may be considered under the following heads: The prevention of stagnation of bile; the prevention of the occurrence of catarrhal inflammation of the gall-bladder and bile ducts; the removal of catarrhal inflammation when it has appeared; the attempts to remove calculi from the gall-bladder and the ducts; diet, spa treatment, vaccines, and local therapy.

Stagnation favors infection, cholecystitis, and hence the production of gallstones, or if these are already present, an immediate attack of colic. It is therefore important that stagnation should be prevented as far as possible and for this object the following methods may be adopted:

1. Exercise leads to increased movements of the diaphragm and liver and so to an increased flow of bile into the duodenum. Horseback riding is perhaps the best, but bicycling, climbing, rowing, and tennis are excellent. Deep respirations should be practised, so as to induce vigorous movements of the diaphragm and the liver. After pregnancy the lax condition of the abdominal wall which favors enteroptosis, hepatoptosis, and stagnation of bile may be met by massage of the abdominal muscles, care being taken not to bear directly on the gall-bladder, since cholecystitis may thus be set up.

2. Attention should be paid to the dress; the corset, tight waist bands, and heavy skirts should be avoided.

3. Meals at short intervals are more effective than large meals at long intervals. In addition some supper should be eaten before going to bed. When food passes into the duodenum, bile is driven out of the gall-bladder into the duodenum.

4. Vichy, Carlsbad, or hot water containing sulphate or phosphate of soda may have a good effect and act as a cholagogue. In order to get the maximum effect from the water, it should be taken before meals when the stomach is empty. The water should not be taken in excessive quantities or too hot, otherwise dilatation of the stomach may occur.

5. Although a number of drugs have been credited with the power of increasing the secretion of bile, it is now generally agreed that salycilate of soda and bile salts are the only drugs. Salicylate of soda also acts as an intestinal antiseptic tending to diminish intestinal catarrh.

In the prevention of catarrhal inflammation it should be remembered that indigestion and gastritis, by leading to gastroduodenal catarrh, might set up catarrhal inflammation of the bile ducts, which must be treated by careful dieting, drugs, and the prevention of constipation. For this purpose my usual prescription is an old formula of the late Dr. William Hanna Thomson, consisting of phosphate of soda, 2 oz., salicylate of soda, 3 drams, and benzoate of lithia, 1 dram, divided into twelve powders, one powder to be taken in a glass of hot water and sipped slowly on rising every morning. A half tumbler of natural Carlsbad water with a little hot water before breakfast or one or two drams of Carlsbad salts dissolved in hot water are useful. The Carlsbad salts are better borne by the stomach if a little infusion of quassia or chinchona is added to the draught. After taking the salts, the patient should walk about, or better, practise systematic exercises with deep inspiratory movements to favor the descent of the diaphragm, and should not have any food until an hour after the draught has been taken. Worry and anxiety are frequent causes of dyspepsia, and in this way may be instrumental in favoring infection of the ducts and gall-bladder. Focal infections such as pyorrhea, sinusitis or a chronic appendix may be the starting point of a cholecystitis, and this way predispose to the formation of calculi.

It is important to remove catarrhal inflammation of the biliary and intestinal tracts, because calculi are formed as a result of catarrhal cholecystitis and are likely to keep up the irritation and predispose to attacks. The methods already referred to by which the flow of bile is increased and the bile passages washed down are of use in removing catarrhal inflammation of the gall-bladder and bile ducts. The abdomen should be kept warm to avoid chills, and in cases where there is tenderness over the gall-bladder, poultices, hot packs or fomentations, or heat by means of the thermophore may be applied over the right hypochondrium.

The treatment of gallstones consists in treatment for relief of the painful acute attack and treatment of the patient between attcks. In acute biliary colic the pain is so agonizing that it often needs the hypodermatic administration of morphine for its relief, or the patient may be kept lightly under the influence of chloroform inhalations. I personally have discarded morphine as a dangerous and habit forming drug, and in its stead employ a tablet of 1/150 grain of atropine dissolved under the tongue, or a suppository of extract of belladonna, 1 grain. Amyl valerate in 15 grain capsules repeated every 4 or 5 hours may prove effective and should, if possible, always be given in preference to any opium derivative. Antipyrin given early in the paroxysm may prove useful, and hot applications, unless contraindicated by cholecystitis, may be tried over the hepatic region. In less severe cases, the patient may be put in a hot bath and given tincture of belladonna, eight minims in about a teaspoonful of spirit of chloroform. The vomiting accompanying the attack hardly requires any special treatment. Bismuth, soda, or dilute hydrocyanic acid may be given. I employ hot water containing bicarbonate of soda, which relieves purposeless retching by giving the stomach something to bring up. If retching persists, and the patient is in a state of collapse, iced champagne may be given. Within the past year a new remedy made its appearance which has given me quite some satisfaction in relieving, and sometimes preventing, attacks of biliary colic. This drug is benzyl benzoate, which has been extensively described by D. I. Macht of Baltimore.

Treatment between Attacks.—According to the surgeon, an operation will be the best way to relieve or cure the patient. The surgical treatment, as previously asserted, should be confined to those instances of the disease in which mechanical removal of the foreign body is necessary, the procedure in each case being adapted to the patient in hand. It is difficult to see how operation can do more than relieve the condition present at the time of the undertaking, for even removal of the gall-bladder can hardly prevent the further formation of calculi in the bile ducts. It is within the medical man's power to advise a change in the patient's mode of life which will tend to prevent or diminish the liability to catarrhal inflammation of the gall-bladder and bile ducts. The points to be borne in mind are to prevent stagnation of bile in the biliary tract, or to obviate or remove any inflammatory condition of the mucous membrane of the duodenum, biliary papilla, bile ducts, etc. Gentle exercise, in the fresh air if possible, to favor the passage of bile into the intestines is advisable. When this is not practicable, breathing exercises to increase the movements of the diaphragm and liver should be instituted. Stooping over desks and working in cramped positions must be corrected, while the use of tight corsets, belts, etc., should be discontinued. The patient should be warmly clad to avoid chills.

In attempts to remove calculi, numerous drugs have been tried. A very famous ancient remedy was Durande's ether and turpentine mixture, fifteen drops of the former and ten of the latter in a capsule. I have found it to be ineffectual and nauseating. Olive oil has been widely used to relieve the symptoms or in attempts to remove calculi, but there is no evidence that olive oil given by mouth much less by rectum, can act on calculi in the gall-bladder. In fact, a well known fallacy about some of the good effects ascribed to olive oil is that the

oil itself may be digested and altered so as to imitate softened calculi when passed by the bowel. Some of the good effects of oil may be due to its soothing and antispasmodic action on the intestine. Since the bile acids dissolve cholesterin, any increase in the secretion of the bile, such as is induced by salicylates or by the administration of bile by mouth, may be regarded as a means of dissolving calculi. Since protein food increases the percentage of bile acids in the bile, meat has been regarded as an important element in the diet of patients suffering from gallstones. The use of bile acids and their salts is more scientific than the administration of bile itself because they are the physiologically active principle of this substance, and any danger from the introduction of poisonous bodies from the bile, which really is an excretion, is thus avoided.

Acid sodium oleate, like salicylic acid, is excreted by the epithelium of the bile ducts and so assists in disinfection. If the acid sodium oleate is carefully prepared and is combined in a pill with salicylic acid obtained from natural sources, also phenophthalein, and menthol, which is a carminative, acts as an intestinal antiseptic, increases peristalsis, and allays nausea, it will be an efficient agent in combatting gallstone disease. The dose of these pills is 4 to eight pills daily with a full glass of hot water. Following this medication the elimination of gallstones of the hepatic variety is generally rapid. In order that the process may be painless, amyl valerate, 15 minims in capsules, may be given two hours before breakfast and after supper. I have found that a combination of sodium phosphate, sodium bicarbonate, and sodium sulphate, equal parts of each, given in hot water before meals, has given satisfactory results and caused expulsion of sand and stones. In other cases, I have employed a capsule of sodium succinate, sodium glycocholate, sodium benzoate, and phenolphthalein. Still in others I have prescribed eunatrol (sodium oleate) both in pill and emulsion, with marked success. Oleic acid, eight minims in capsule morning and evening, has given satisfactory results.

Where there is much bloating of the lower intestines, enemas containing a half to one teaspoonful of turpentine and not over a quart of water in volume can be given one to three times daily. The patient on arising should drink slowly 10 to 12 ounces of hot water containing a powder of either sodium phosphate, sodium sulphate, and sodium bicarbonate, or of other salts which will regulate the stools and overcome constipation. For gastric distress or flatulency a prescription containing some carminative and antifermentative may be given. Other drugs should be prescribed according to indications.

The secret of successful treatment is to gain the patient's confidence and cooperation, and the persistency of treatment, as I have found that each patient is a law unto himself and that the same drug will not act the same way in a similar case in another patient.

As to the kind of food most suitable for patients with gallstones, considerable divergence of opinion has been expressed, but a variety of flesh food, broiled or boiled, may be employed. All fats should be interdicted so far as possible. Alcoholic drinks must be forbidden. Sugar in any form must be limited. Frequent small meals are desirable, because in this way the duodenal papilla is made to open reflexly and the bile allowed to pass into the intestines. It seems that increased cholesterol in the circulation plays a part in gallstone formation and therefore under this head comes the interdiction of yolk of eggs, peas, fatty meats, and all fried foods. I have used such methods and I can point to innumerable persons who undoubtedly have been gallstone sufferers and who are free from symptoms.

It has become apparent that the important feature of the treatment of gallstone disease is the regulation of catarrhal conditions and inflammations in the portal system and dependent organs as above outlined. In some cases it is advisable to suggest spa treatment, and success is based upon the fact that at the resort the patient's habits of life are regulated, the diet is controlled, and the use of the salines diminishes congestion and inflammation in the portal area. Of these Neuenhar, Kissingen, Vichy, and Carlsbad in Europe have been the favorite health resorts of many. Since the war prevented these migrations Saratoga Springs has become a popular health resort. During the summer I refer there as many as forty to fifty patients who are to undergo the cure. It is important that these patients place themselves under a physician's care and receive proper directions as to diet, baths, and drinking the water, as often more harm than good may result from improper treatment.

Vaccines constitute a specific form of therapy if the causative organisms have been isolated. We can readily accomplish this by means of a duodenal tube, and in this way the bile can be studied directly as is gastric secretion, and the various forms of chemical analysis can be applied to the material removed. We can examine the bile for cholesterol, bile-pigments, etc.; the microscopic examination will show the presence of mucus, pus, and blood; the bacteriologic examination will determine the presence of pathogenic organisms. These procedures depend on an accurate method for obtaining the bile. It will be necessary to examine the patient on a fasting stomach; the mouth is rinsed with an antiseptic solution and a sterile duodenal tube is passed into the stomach. The aspirated bile is studied as above described and then cultured and the pathogenic organism or organisms are isolated and an autogenous vaccine prepared. In several of my cases a pure strain of colon bacillus was isolated and in others staphylococci of various strains were recovered.

In some patients we may find foci of infection elsewhere and therefore make cultures from the nose, throat, teeth, or urine. When a definite strain is located in the gall-bladder we make a polyvalent vaccine consisting not merely of the organism isolated from the bile but of the same organism found elsewhere. A difference of virulence undoubtedly exists and this method contributes to the likelihood of an effective antigen.

Autogenous vaccines are preferable to stock vaccines, but the presence of organisms elsewhere which are persistent and suspicious in the mind of the clinician, should be borne in mind. I believe that the good results obtained have always been due to this precaution.

Small doses, frequently repeated, are given, and

increased until a definite reaction is obtained. Strong reactions are to be avoided, although some of the best results have been obtained following a strong reaction with active temperature rise and severe general reaction. A strong reaction indicates that the next dose should be reduced. There is no rule as to the amount of vaccine. If about four steadily increasing injections are given without reaction, the vaccine treatment is to be discarded. In some cases there is distinct reduction in the virulence or growth ability of the organisms without their disappearance.

Occasionally definite organisms are found and vaccine is prepared and given, but in spite of reactions no improvement occurs.

Local treatment through the duodenal tube connected with a Murphy drip has been employed by me with marked success. This method consists in passing a duodenal tube in the usual way and after obtaining bile the end of the tube is connected with the Murphy drip and the medication or cleansing solution allowed to run through at a rate of from 40 to 60 drops a minute. When bile can not be aspirated I employ a 25 per cent. solution of magnesium sulphate which, according to Meltzer, causes a complete local relaxation of the intestinal wall, relaxes the sphincter of the common duct and permits the ejection of bile, and in some cases permits the removal of a calculus of moderate size wedged in the duct in front of the papilla of Vater. The various solutions are used according to their purposes. Solutions of the various silver preparations, such as argyrol, protargol, and even nitrate of silver, may be used. Methylene-blue, salicylic acid, and urotropin have also been employed by me. As a rule these disinfecting solutions should be used in a concentrated form to prevent absorption from the intestinal tract. Concentrated solutions of sodium bicarbonate, sodium phosphate, sodium sulphate, and fairly strong dilutions of liquor antisepticus alkalinus may be employed for their cleansing and mucus-dissolving action.

Externally hot applications to the epigastrium or the hepatic region are valuable. Hot compresses and fomentations should be ordered for the patient's use at home. Heat from a therapeutic (carbon) lamp followed by high frequency currents applied over the hepatic region and epigastrium have given satisfactory results.

616 Madison Avenue.

HUMPED, HOOKED, AND BULBOUS NOSES: THEIR ETIOLOGY AND TREATMENT.

By WILLIAM WESLEY CARTER, A.M., M.D., F.A.C.S.,

NEW YORK.

THE true aquiline nose is curved like the beak of an eagle; it is hooked at the extremity, and is frequently bulbous at the tip. In its exaggerated form it constitutes a deformity which we must all frankly admit is a menace to the happiness and in many an instance to the business prospects of its possessor.

On account of general familiarity with the deformity and other equally laudable considerations, I have decided not to demonstrate results in this presentation of the subject by means of photographic illustrations. I may state, however, that in all of my cases the deformity has been corrected, and that neither at the time of the operation nor subsequently have undesirable complications arisen. The ease, safety, and certainty with which this defect may be remedied induce me to bring before my readers the methods I have used successfully in correcting so many of these cases.

The aquiline deformity is strongly characteristic of certain races, but in some families, without racial inclination, there is a predisposition to its development. Trauma, especially repeated injuries as in football players, is unquestionably an etiological factor in some cases. The etiology, especially from an histological point of view, is very interesting and is of importance in considering the correction of this defect.

Hereditary influences, by far the most frequent factor and the most important consideration, begin as a rule to assert themselves about the time of puberty, and from that time even up to middle age the deformity may increase. As age advances the increase is only apparent and is due to the disproportion arising between the nose and its facial environment, owing to the relatively more rapid shrinkage of the soft tissues of the face occurring at this period of life, while the firmer structures of the nose remain practically the same.

Viewing the development of this deformity from an anatomical and histological point of view, I am forced to conclude, from a study of the effect on the development of the nose of diseases and injuries which affect the growth of the septum, that the exaggerated, aquiline hooked nose is due to an inherent tendency on the part of the septum to extraordinary growth in its vertical diameter. It has long been my belief, a belief founded upon a close study of the dynamics of nasal development, that the growth of the septum is the chief factor in the development of the flattened nose of the infant into the more prominent organ of the adult. The pressure exerted by this structure during its period of growth is in an upward and forward direction, with little or no force horizontally in the direction of the tip. An exaggeration of these forces in the direction indicated produces the aquiline nose, and the relatively less pressure towards the tip leaves the latter on a lower level, producing a hook-like effect.

In considering the mechanics involved in the production of this deformity, we must remember that the vomer and the arch of the hard palate offer a point of unyielding resistance to the vertical force exerted in that direction by the growing septum; this force, therefore, must find expression in the direction of least resistance, and results in raising the dorsum of the nose to a higher level.

Is it possible to prevent the aquiline deformity? Is it feasible to remove the possibility of the development of this deformity by a free resection of the septum at the right time, thus anticipating the action of the offending forces in those hereditarily predisposed? This question presented itself to me most forcibly while I was studying the dynamics of nasal development and preparing the material for a paper on this subject which was published in the *Annals of Otology, Rhinology, and Laryngology* in December, 1914. Believing as I do even now that this subject, like matrimony, should be approached

discreetly, advisedly, solemnly, and in the fear of God, I hesitated even to mention the deductions I had made and which were strongly impressed upon my mind. I determined, however, to watch two patients, one 14 and the other 16 years of age, upon whom I had done free resections for deflected septa. Both of them were strongly predisposed by heredity to aquiline deformity, but as yet had shown no signs of its development. One of these patients I had under occasional observation for three years and the other for four years after the operation, and neither showed any signs of developing the deformity. I realize that this experience is merely suggestive and that it does not entitle either my views or my methods to acceptance, nor is it sufficiently convincing to induce me to advise the submucous operation solely as a preventive measure in those predisposed by heredity to this deformity. However, the idea is worthy of serious consideration, for it is founded, I believe, upon sound mechanical principles and a correct interpretation of the forces which enter into the development of a normal nose. As the operation involved is simple and if properly performed is never followed by bad results, and as the procedure is frequently necessary in order to relieve nasal obstruction, there is no reason why the submucous operation should not be tested out as a precautionary measure against the development of this deformity, and it is my intention to do so whenever the opportunity presents itself.

The traumatic variety of the aquiline deformity is not so common and is as a rule more irregular in its outline than the hereditary form. Apparently it is due not to an overgrowth of the septum but to a proliferative periostitis or perichondritis over the dorsum of the nose. This may result from one very severe injury, but it is more frequently due to repeated injuries such as are received by football players. In the case of the fullback on one of our famous football teams, recently operated upon by me, I found a growth of tissue of the consistency of cartilage and fully ¼ of an inch in thickness over the dorsum of the nose. This had to be removed before the correction could be made. In this instance the septum took no part in the production of the deformity, for it was crumpled up. The overgrowth of tissue was entirely extraneous to the nasal cavities, and was due to a proliferative periostitis or perichondritis.

Only yesterday there came to me a young woman, a Gentile, with no hereditary tendency to this deformity, who gives a history of having had a perfectly straight and satisfactory nose up to three years ago; shortly before this she had fallen and injured her nose very badly. She soon noticed a change in the contour of her nose; this has steadily increased, until now there is a pronounced aquiline deformity. In this instance the septum apparently took part in the process; this, however, is unusual in traumatic cases.

Treatment.—The only effective treatment for this deformity is operative. This is extremely satisfactory. No scar is left, as all of the work is done from within the nose. The strength of the nose is not impaired. In many instances it is necessary to shorten the tip and reduce the bulbous extremity of the nose. The entire operation, as a rule, is done at one sitting, and either local or general anesthesia may be employed. I have found no difficulty in doing the operation under novocaine and adrenalin, if a small dose of morphine and atropine is administered beforehand.

Instruments.—The following instruments were specially designed for this operation, and were made under my personal direction: A submucous knife; a longitudinally concavoconvex saw; a spatula-shaped knife having three sharp cutting edges; a curved rasp with specially designed teeth; modified Adams' forceps; copper splint for nose.

Operation.—After the proper antiseptic precautions have been observed, an incision is made through the mucous membrane of the roof of the left nasal cavity at a point corresponding to the interval between the upper and lower lateral cartilages. The spatula knife is then introduced and the tissues of the nose are elevated over the entire dorsum, care being taken to keep under the periosteum over the nasal bones. The saw is then introduced and the entire hump sawn off. This frequently leaves the dorsum of the nose flat, which is most undesirable; so I have devised a little instrument for removing the upper edge of the septum; the lateral walls of the nose can then be approximated at the apex by bending them inward by means of the Adams' forceps. This produces the rounded apex to the dorsum of the nose. There still remain, however, numerous little irregularities which must be smoothed down with the rasp; this instrument is most useful; the teeth are so arranged that the fragments of detritus are thrown toward the center, and clogging does not occur.

There are some cases which are not easily amenable to correction by means of the operation I have just described; I refer to those noses having very pronounced humps and broad, massive bases. To truncate the nasal cone under these circumstances would not produce a pleasing effect; so the following operation, which I regard as more difficult, but which I have found most satisfactory, should be performed: A high submucous operation on the septum should first be done. This should not include the upper edge of the septum which forms the keystone of the nasal arch.

The tissues over the sides of the nose are then elevated, and a wedge-shaped piece is removed from either nasal process of the superior maxilla. The dorsum of the nose is then forced down by means of the Adams' forceps, thus reducing the deformity.

When the nose is too long, which is frequently the case, it is shortened by removing a fan-shaped piece from the septum and pushing the tip of the nose up and sewing it in position. This last operation is done after the dorsal deformity has been corrected. After all of the blood and detritus have been removed from the sacs made by this extensive submucous and subcutaneous dissection, the nasal cavities are lightly packed with sterile vaseline gauze, prepared as I have previously described, and a well-fitting and properly padded copper splint applied; this splint remains on as a rule for four or five days or until healing is complete.

I have operated upon about fifty cases by the methods I have described and the results have been most satisfactory.

2 West Sixty-seventh Street.

REMARKABLE VITALITY IN THE LARVA OF AN INSECT (*ALAUS OCULATUS*).

By R. W. SHUFELDT, M.D.,

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ENTOMOLOGISTS have long been familiar with the tenacity of life exhibited on the part of certain insects or their larvæ, and in the past many authors have published accounts having reference to it. It is a well known fact that such insects as wasps, for example, will sit up as though nothing had happened and preen themselves an hour or so after decapitation. Ants sometimes exhibit a similar disregard for the loss of their heads; and even such delicate creatures as butterflies furnish instances of this phenomenon in the insect world. Only a short time ago, the writer was arranging upon a spreading-board a series of butterflies he had captured, and among them was a fine male *Papilio turnus*—our Tiger Swallowtail. Being pressed for time, this specimen was held in the usual way—by the four wings shut up together over the back, while the entire body was given a bath of pure chloroform. Apparently, this instantly deprived it of life, and it was at once arranged with insect pins on the spreading-board. A couple of hours afterwards, this particular Papilio had not only survived the effects of the anæsthetic, but he had mustered the strength to pull out all the pins, including the one in the body which had held him in place on the spreader, and he was found on the floor, staggering along in an effort to escape.

However, here is a case that is far and away ahead of anything of the kind ever brought to the attention of the writer. Early in May, 1919, he was

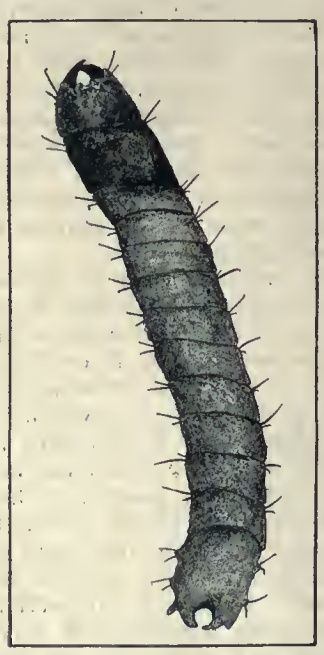

FIG. 1.—Larva of the Click Beetle; enlarged four times. From life, by the writer.

collecting forest insects near Dyke, Virginia, accompanied by his wife. Upon tearing the bark from a large, dead oak, various insects or their larvæ were exposed, being duly secured and consigned to the cyanide bottle as rapidly as possible. In turning over a bit of rotten wood, a dark yellow-colored larva, about three and a half cms. long, was exposed. It was very hard and shiny, its body being vertically compressed and composed of some twelve joints, the anterior one black, as was

FIG. 2.—The Click Beetle (*Alaus oculatus*); natural size. From life, by the writer.

the additional forward one, which bore the sharp, inwardly curved, needle-pointed, mandibular forceps. This specimen was picked up in the usual way—to be consigned, with the others, to the cyanide-jar; but the fellow fastened himself on the side of one of the collector's fingers with the above described jaws, holding on with the most remarkable strength and pertinacity. The blood flowed freely from the puncture, and no little pain accompanied the bite. By the aid of a pin, and with some difficulty, this vicious and slippery larva was compelled to let go its hold, whereupon it was put into a covered pill-box along with a lot of damp, rotten wood for further investigation. It remained in its close quarters all night. A day or so later it was dipped in pure formalin, and put aside with a number of beetles similarly treated, the latter being immediately killed by the bath. Not so, however, this yellow larva; so he was subsequently given a dip in 95 per cent. alcohol for fully a minute. This seemed to stiffen him out, and the entire lot was sent down, in a sealed glass vial, to Dr. E. A. Schwarz at the U. S. National Museum for identification. Dr. Schwarz very kindly returned them in the same receptacle in a few days, pronouncing the yellow larva to be one of our common Elaterid, the Eyed Click Beetle (*Alaus oculatus*). These specimens were then placed in a little tray, awaiting their turn to be pinned and placed in the collection, which task was begun the next morning. To the infinite surprise of the writer, the Click Beetle larva was as lively as the day it was captured! This appeared to be so unusual, that the specimen was removed to a small glass jar containing about an inch of damp, coarsely powdered and rotten wood, and in this it seemed to be perfectly at home. At the end of a week it presented no changes what-

ever—its form, color, and viciousness being the same as when it was captured. Thus it remained without any apparent alteration until the first part of July, 1919, when it was put into a cylindrical glass vial, seven and a half cms. high, with a diameter of one and a half cms. This was *tightly corked* with a sound cork, one and a half cms. thick. It is fair to presume that no fresh air could gain access to the interior of this vial, which was perfectly clean and transparent, admitting of a full observation of the behavior of the specimen within. For a while it remained quiet; but by next morning it had made up its mind to try to effect its escape, and consequently it attacked with its powerful jaws the edges of the inner surface of the cork. It was interesting to note the practical manner in which it cut into it. However, the task was a good one, and would have been well accomplished had he not been taken out about July 12, 1919, and returned to his old quarters in the jar containing the powdered, rotten wood, he having been in the sealed tube about 10 days without a change of air, and with no food or water. On the forenoon of the 10th of August, 1919, the specimen was as lively as the day it was captured, the only observable changes being a slight shrinkage in size, and a marked fading in color, it now being a pale, yellowish white. When placed on the table in front of the writer, it crawled actively away with the three pairs of legs on the leading segments of the body, viciously turning about if interfered with in any way. Being teased with an insect-pin, it seized the latter with its jaws, and held on to it with the most marked determination. For over three months this larva had had no water or other fluid to drink —in fact it has not been near any fluid since it was immersed in the formalin and the alcohol several months ago, as described above. On the morning of the 17th of July, 1919, the writer collected another very perfect specimen of this larva, and at once sealed it up in a glass tube of the same sort in which the first larva was kept. This specimen made no attempt to escape by cutting through the cork with its mandibles; it was kept without food or fresh air until the 4th of August, 1919, upon which date it died, having been in the tube 18 days under the conditions imposed.

This, of itself, is rather remarkable; and why it did not stand the test which the first specimen was subjected to would be extremely difficult to define. It may have been a much older individual, though nothing about it would lead one to suspect that that was the case. It was certainly much later in the season when it was collected, and it may have been suffering from some disease not distinguishable to the human eye.

These are the only specimens of the larvæ of *Alaus oculatus* that the writer has experimented with, and he believes that the matter merits further investigation. As this larva, so far as known, is not an enemy to any of our forest or shade trees, its destruction does not concern us; but there may be others, of different species, that are enemies of trees, in which case the above facts and information are likely to prove of some value.

Most elaterid larvæ are known as wire-worms, and have the appearance of the one here shown in Figure 1; they either live a subterranean life and feed upon the roots of grasses or other plants, or they live as did the one described above before capture. Few of the forms are predaceous. The drawings illustrating this article were made by the author, and are from specimens of the insects themselves. As this article goes to press, it may be stated that the first specimen described lived until the latter part of August, 1919, gradually drying up from the middle of that month, until it ceased to exist.

3356 Eighteenth Street.

Medicolegal Notes.

Exclusion from School on Account of Communicable Disease.—In order to prevent the spread of a communicable disease, trachoma, a North Dakota county board of health issued an order requiring school officers to deny admission to public schools to children who were affected with the disease or who were suspected of being affected, and who were not at the time under treatment. A survey was made by a representative of the Federal Government, which resulted in finding within the county 120 positive and 350 suspected cases of trachoma. The North Dakota Supreme Court held that the order of exclusion was reasonable. Where qualified physicians disagree upon the diagnosis of a diseased condition of particular persons, the health authorities and a school board, whose duty it is to execute the orders of the board of health, are justified in acting upon the opinion of their own competent experts. In such a case mandamus would not issue as a matter of right, but only in the exercise of a judicial discretion, and this discretion should not be exercised in a way that might result in needlessly exposing healthful children to a disease as serious as trachoma.—Martin v. Craig (N. Dak.) 173 N. E. 787.

Question Whether or Not Disease Was Chronic Held, on Evidence, for Jury.—In an action against a hospital association for breach of contract to render the plaintiff medical and surgical treatment and furnish hospital facilities, it appeared that in replying to the plaintiff's request for care and service the hospital virtually refused to treat her on the ground that her disease was chronic and not subject to treatment under the contract. The evidence introduced indicated that in 1910 the plaintiff suffered from prolapsus uteri, and that as a result of an operation she was completely cured of that trouble, and was in sound health when she became a party to the contract in 1911; that this condition continued for about two and a half years; that later, when the plaintiff did hard work or lifting, she had temporary prolapsus, but that her condition always became normal upon ceasing such work. The effect of the plaintiff's testimony was that she had frequent recurrences of the trouble at intervals, but that it was not permanent. It was held that whether the plaintiff's ailment was chronic was a question of fact for the jury, who were instructed, in substance, that the burden of proof was upon the plaintiff to show that she was not suffering from a chronic ailment.—Coffey v. Northwestern Hospital Assn., Oregon Supreme Court, 183 Pac. 762.

Purchase of Opium by Registered Physician for Personal Use.—The Federal District Court for the District of Montana holds that an indictment charging that the defendant, as a physician registered under the Harrison Narcotic Act, by means of the prescribed forms, obtained opium for his own personal use, did not charge an offense under section 2 of the act, which, to be constitutional, must be construed as in aid of the revenue feature of the act, viz., to create and safeguard revenue. "How the purchase herein alleged," the court said, "could in any wise affect the revenue is inconceivable. Nothing in section 2 forbids purchases for any lawful use. Among such may be purchase to destroy, or to absorb the supply, or to prevent purchase by others, or to obstruct illegal traffic, all of which are lawful purposes, and none of which are within section 2, even as purchase for personal use is not."—United States v. Parsons, 261 Fed. 223.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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EXPERIMENTAL PNEUMONIA.

ALTHOUGH pneumonia is one of the most frequent of the infectious diseases as we meet them under ordinary circumstances, and has been especially prevalent during the past two years, and although it has been made the subject of much careful study, our exact information concerning it is still very limited. In spite of the fact that the causative organism is well known the immunological aspects of lobar pneumonia are yet obscure. Although the pathological changes that occur in the organs during the course of the disease have long been recognized and studied, diagnosis and prognosis are still uncertain. One reason for this state of affairs is that until recently it has been impossible to produce in animals a pneumonia that resembles clinical lobar pneumonia as it occurs in man. During the past winter Blake and Cecil carried out an intensive study of the disease and devised a means of producing it at will in monkeys. The observations of these experimental infections have furnished a large amount of data which the authors have assembled in a series of papers of which the first two have recently appeared (*Jour. Exper. Med.*, 1920, xxxi, 403 and 445). It is worth while to present their findings briefly. For the complete presentation of their evidence and the discussion of their conclusions it will be necessary, and profitable, to read the original papers.

In the first place they have been able to produce lobar pneumonia in monkeys consistently by the intratracheal injection of small doses of a broth culture of the pneumococcus, irrespective of its type. The disease thus produced is identical both clinically and pathologically, with lobar pneumonia as it occurs in man. Neither subcutaneous nor intravenous injection resulted in pneumonia though several of the animals thus treated died with pneumococcus bacteriemia. The throats of several monkeys were sprayed with broth cultures of pneumococci but none of these animals developed pneumonia although these organisms could be identified in the sputum for at least a month. Nevertheless, at least one animal developed pneumonia after having been confined in a cage with other animals suffering with the disease. It would seem then that the mere presence of a virulent strain of this organism in the upper respiratory tract is not enough to produce a pneumonia even though it must be through that tract that infection normally occurs. When virulent organisms gets a foothold beyond the larynx, then infection almost surely follows.

Immediately after the injection there is a sharp rise in the number of leucocytes in the blood and pneumococci may be obtained by blood culture before the appearance of any clinical evidence of infection. After this initial leucocytosis, which is accompanied by a polynucleosis, there is often a fall in the number of leucocytes, the lowest point corresponding to that at which the organisms are most numerous in the blood culture. With the onset of the crisis and the approach of recovery, the leucocytes again increase. In severe and prolonged infections there is evidence that most of the polynuclears are immature and in the more severe cases there may be complete exhaustion of the bone marrow. In rare instances when the infection is especially severe there may be but little leucocytic reaction. Occasionally there are nucleated red cells and myelocytes in the blood stream.

The evidence that pneumonia is bronchogenic rather than hematogenic is confirmed by the evidence the authors obtained in study of sections of lungs removed at autopsy. It was found that the initial lesions were an invasion of the interstitial framework of the lung with an accompanying involvement of the lymphatic system. The organisms soon get into the blood stream by way of the lymphatics and reach the pleura by way of the perivascular, peribronchial, and septal interstitial tissue. Consolidation appears first at the hilum and gradually spreads out from there until the entire lobe is involved. The complications found were similar to those seen in man—empyema, pericarditis, and pleurisy. Resolution was frequently accompanied by a varying degree of organization of the grosser framework of the lung, while in several instances there was found a definite organizing pneumonia as in one animal which died on the thirty-seventh day of his disease.

Studies of this type comprise our chief source of exact information which is necessary in the rational treatment of disease. Many of their observations on animals can readily be repeated on man and should prove a vigorous stimulant to that form of investigation. The remaining papers of this series will be awaited with interest.

MENSTRUATION AND LACTATION.

FAR from being a rarity, menstruation in nursing women is a fairly frequent phenomenon. Out of a total of one hundred wet-nurses, about forty-five have their menses during lactation, and in the majority of them menstruation returns between the third and sixth month following delivery.

Those having their menstruation are usually the ones that appear to be in robust health, and the few who enjoy only a mediocre health are in a decided minority. The nurslings of the latter are more subject to the usual affections of infancy. In a good nurse the menses are about as abundant, last about as long, and have the same regularity as before fecundation.

The composition of the milk of a menstruating nurse should be considered at two different epochs —during the intermenstrual period and during the menstruation. The intercalary milk is absolutely like the milk before the advent of the menstrual function. According to the results obtained from analyses conducted by Gillet, the menstrual milk, instead of being more serous as most observers maintain, is, on the contrary, of higher specific gravity and richer in nutritive principles; the quantity of butter increases, that of sugar diminishes; the decrease in salts is insignificant. The return of the menstruation in a good nurse produces no appreciable effect on the health of the infant, who continues to gain weight after the normal standard; at least this has been the experience of many observers. The loss of salts is so slight that it can exercise no influence in the production of infantile rickets. There is no relation of cause and effect between menstruation in the nurse and convulsions in the nursling. Out of a total of one hundred infants suckled by menstruating women, 17.9 per cent. were slightly indisposed during the menstrual period; but before this should be incriminated as the cause, pathological factors, such as dentition, must be eliminated. The milk being richer in nutritive principles during menstruation, the colic and diarrhea may very likely be due to indigestion, especially in greedy infants and when the time of nursing is not regulated.

Given the fact that the return of the menstrual function appears to occur especially in the more robust nurses enjoying flourishing health, it may well be asked if it would not be preferable, in the interest of the infant, to choose a wet-nurse in whom the menstrual function has returned. Contrary to the general belief, the majority of nursing mothers who become pregnant should continue lactation, which will have no disastrous effect upon the nursling; but also it must not be forgotten that simultaneous pregnancy and lactation are for the mother two serious sources of fatigue; therefore the physician must use his judgment in advising weaning.

Is Influenza-Pneumonia Contagious?

The above question is asked by Motzfeldt in the *Norsk Magazin for Laegevidenskaben* for February, 1920, lxxxi, 2. This malady, if such it can be termed, was known to Sydenham, who pronounced it quite distinct from ordinary pneumonia, while during the period 1830-1837 there was much discussion as to the autonomy of influenza-pneumonia in France. During the pandemic of 1889-90 bacteriology was available and appeared to show that grippe pneumonia was due to the exciters of ordinary pneumonia, while influenza *per se* was due to Pfeiffer's bacillus. There was some attempt to show that the latter could itself cause the pneumonia of influenza (Leichtenstern, Wassermann). But the percentage of these patients to develop the complication was often very small. The author now passes to epidemic and contagious pneumonia as an autonomous malady. As early as 1867 numerous Scandinavian physicians believed that pneumonia was sometimes transmissible. The most recent laboratory and clinical work has led to the isolation of cases of pneumonia and the obligation of reporting all cases, without reference to epidemic incidence of influenza. Influenza-pneumonia has been recently pronounced an especially contagious form of the disease. This does not mean merely that the patient communicates influenza to others, but that those exposed may at once develop primary pneumonia. The author sent out a questionnaire to obtain first hand data. It appeared that in 33 per cent. of smitten families during the pandemic more than one case of pneumonia appeared. Of 174 influenza families comprising 858 members, 79 of the latter developed pneumonia, or 9 per cent. of all exposed. Of the 858 members 409 developed influenza, and of the latter, 79, as stated, developed pneumonia, or 19 per cent. of all infected.

Serotherapy of Typhoid Fever.

A TRUE serotherapy of typhoid fever, not to be confounded with a vaccine or proteinic therapy, is making headway in France according to an article by Rodet and Bonnamour in *La Presse Médicale* for January 31, 1920, xxviii, 9. Originally begun in 1907, it has slowly undergone an evolution until it may be accepted as a dependable resource. The authors have already published a series of 127 cases and since then the total has been increased to 240. The gross mortality in the first series was 11 per cent., but in a certain number of cases death was plainly due to some factor which could not have been reached by a specific serum. Just as in diphtheria and tetanus we deduct these septic cases and others due to associated affections, so in typhoid fever we may take the same liberty and this will reduce the death rate to 5 per cent. from the typhoid bacillus or its toxin. Unfortunately the second series of cases was vitiated because coinciding in part with the influenza pandemic, and the mortality instead of being lower as was anticipated was considerably higher. The total mortality for the two series from the specific cause went as high as 11 per cent. In the second series typhoid and grippe cases were sometimes confounded and hence the typhoid patients did not receive the best treatment, and in other cases there was probably a symbiosis as shown by the fact that typhoid subjects had complications which rather suggested influenza. The authors, therefore, were tempted not to publish the second series, but decided to give it for what it might be worth. But they believe in the future of the serum because it modifies the temperature curve in a specific manner and attenuates the toxic phenomena so markedly that in some cases one may speak of a veritable detoxication. Again

the serum gives results at any stage of the disease and not merely at the outset. The serum is so bland that no disturbances have been seen and hence there are no contraindications.

Uniovular Twins.

Uniovular, homologous, or monozygotic twins have always been objects of universal interest, but not much appears to be known of their intimate nature or genesis. They are always of the same sex and their frequency in comparison with ordinary twins is placed at about 7 to 1, although this is subject to revision, and we only know for certain that they are considerably less common than biovular twins. In the *Annales de gynécologie et d'obstetrique* for January, 1920, xiii, 12, Deluca and Widakowice of Buenos Aires publish a paper on the origin of these twins. The authors anticipate by the statement that thus far the hypothesis of Broman is the most plausible, he holding that they originate either from the conjunction of a spermatozoon with two tails—or two pairs of centrosomes—with an ovum having either a single or double nucleus. The various other hypotheses are enumerated and the authors add their personal investigations in connection with the incidence of bicaudate spermatozoa. Since 1881 it has been known that spermatozoa with a double centrosome are more common than usual in syphilitics. In the normal subject Broman estimated the frequency as 1 or 2 per 1000. The authors having examined many South Americans make this frequency about 6 to 1000. A study of average syphilitics gives a frequency of 13 to 1000 and of hereditary syphilitics as 32 to 72 per 1000. Spermatozoa with three or four tails are occasionally seen, but are excessively rare, although much less so in syphilitics. It is well established that uniovular twins show a decided tendency to appear in the progeny of syphilitics, so that Broman's hypothesis appears the more plausible.

Seniculture.

A writer in *Le Caducée* for March 1, 1920, xx, 5, calls attention to the recently published work by Professor Lacassaigne with the suggestive title, "Green Old Age." The author is eminent as a hygienist and the reviewer makes use in this connection of the neologism of "seniculture," as the cult of keeping old age green and making green old age possible. The term is, of course, cognate with puericulture, which is at present used chiefly in the sense of the prenatal care of the next generation. As puericulture is preeminently a matter for good legislation without which it cannot exist, so the author maintains that seniculture must be rendered real by the enactment of laws. Before we have laws we still have to accumulate and digest all possible facts about old age, not only physical but psychical. The next step is to formulate a sound hygiene of old age. The cult requires that the Minister of Public Health recognize it in the same way that he recognizes puericulture. The reviewer says that a movement of this sort might be construed as a tribute of gratitude to the grand old man Foch for his contribution to civilization. Naturally private as well as public movements should be initiated to foster this movement and societies of seniculture should be established. The reviewer does not descend to the concrete in his short outline of Lacassaigne's book beyond a mention of printed instructions or tracts to be given out to the old men of the nation. Every State or province should have its society for seniculture.

News of the Week.

Missouri Surgeons to Organize a State Clinical Congress.—At a meeting of Missouri surgeons, held in St. Louis on May 2, a Missouri section of the Clinical Congress of the American College of Surgeons was organized. An Executive Committee was appointed to arrange plans for the first meeting which will probably be held in the early fall. This committee is composed of Dr. Harvey G. Mudd of St. Louis, Dr. William H. Luedde of St. Louis, and Dr. Jabez N. Jackson of Kansas City.

American Officers of the Great War.—The aim of this Society of men who formed the officer class in the Army, Navy, or Marine Corps, during the war is to take such united action as shall be advisable or necessary in protection of the interests they may have in common. There are already more than 17,000 members. A New York Chapter is being formed, Dr. Howard Lilienthal, of 52 East Eighty-second Street, being chairman of the committee to interest the medical profession. Application blanks for membership may be obtained from Dr. Lilienthal.

New Home for Medical Society.—The corner-stone of the new building of the Medical Society of the District of Columbia, at 1718 M Street, Washington, was laid on the afternoon of May 6. Dr. C. W. Richardson presided at the ceremonies. The corner-stone was laid by Dr. Francis R. Hagner, president of the society. Addresses were made by other officers and trustees.

Campaign against Cancer.—The American Society for the Control of Cancer held a special meeting at the New York Academy of Medicine on May 13, at which Dr. Harvey Gaylord of Buffalo spoke on the "Less Familiar Problems of Cancer," and Dr. Howard Lilienthal discussed the subject of "Cancer from the Standpoint of the Clinical Surgeon." This meeting was the opening event of the campaign against cancer that is to be carried on in this city during the last two weeks in May, when a large number of meetings will be held in different parts of the city. Dr. Frederick T. van Beuren is director of the campaign. Twenty-five physicians have agreed to deliver addresses to lay audiences during the campaign.

Bronx Hospital Opened.—The Bronx Hospital, at 169th Street and Fulton Avenue, was formally opened with exercises on the afternoon of May 9. Among the speakers were Hon. George McAneny, Dr. John W. Brannan, and Dr. A. A. Berg. Dr Emil Juper is superintendent of the institution, and Dr. A. A. Berg and Dr. Martin Rehling chief surgeons.

Oppose Chiropractor Bill.—At a hearing before

Governor Smith, on May 13, on a bill providing for licensing chiropractors in the State of New York, Dr. Augustus S. Downing, Deputy State Commissioner of Education, and Dr. Hermann M. Biggs strongly opposed the bill, holding that it would be a serious blow against all public health effort. Representatives of the Health Officers' Associations, the State Charities Aid Association, the New York City Department of Health, and the New York Academy of Medicine also voiced their opposition.

Florence Nightingale Centenary.—A Florence Nightingale Centenary Dinner was held last week at the Hotel Biltmore, New York, at which a movement to increase the nursing forces of New York City was launched. Among the speakers of the evening were Surgeon General Merritte W. Ireland, Dr. Livingston Farrand, P. Whitwell Wilson, a member of the British Parliament, Homer Folks, and Miss Annie E. Goodrich. Announcement was made that Governor Smith, on the one hundredth anniversary of the birth of Miss Nightingale, would sign the Nurses' Practice Bill, designating and licensing trained nurses, and making it unlawful for anyone to practise nursing before graduation from a nursing institution.

Intensive Course in Syphilis.—The Rochester Health Bureau announces an intensive course of one week in syphilis, which will be held at the State Hospital and the general hospitals and dispensaries. The course includes: (1) The history and municipal control of syphilis; (2) Clinical lectures, demonstrations, and participation in dark field work, the taking of Wassermann reactions, the preparation of arsphenamine and the technique of its administration, methods of giving mercury, spinal puncture, and the cytology and chemistry of the spinal fluid. The course, which is free, will be given twice. The first course will be given from June 14 to 19, inclusive, and the second from June 21 to 26, inclusive. Applications must be in by June 12 and 18, and must be addressed to the Health Bureau, Chestnut and James Sts., Rochester, N. Y.

Vacancies in United States Public Health Service and Panama Service.—The United States Civil Service Commission announces the following examinations: A vacancy in the Panama Canal Service, for which examinations will be held on July 7 and Sept. 6, 1920. Applicants must have graduated from a recognized medical school whose graduates are eligible for commission in the United States Army, and must have had at least one year's post-graduate hospital experience. The examination is open to men and women. The position pays a salary of $225 a month with increases. Another examination is announced to fill the position of physician in the Indian Service, acting assistant surgeon in the Public Health Service, surgeon in the Coast and Geodetic Survey, and positions requiring similar qualifications. The entrance salary in the Indian Service ranges from $1,000 to $1,200; in the Public Health Service, from $480 for part time to $2,400 or $3,000 a year for full time; Coast and Geodetic Survey, $1,020 per year, with an allowance for subsistence at $1 per diem while on shipboard. These positions are open to both men and women. Competitors will not be required to report to any place for examination, but will be rated on their physical ability, education, training, and experience. There is also a vacancy for a bacteriologist at St. Elizabeth's Hospital, Washington, D. C., at $2,500 a year, with temporary increase granted by Congress of $20 a month. For this vacancy male eligibles are desired, though vacancies requiring similar qualifications, will be filled from this examination, at this or higher or lower salaries, for which women may be eligible. Competitors will not be required to report at any place, but will be rated on their physical ability, education, training and experience. Applicants for any of these positions should apply at once for Form 1312, stating the title of the examination desired. All applications should be mailed to the Civil Service Commission, Washington, D. C., except those for the position of bacteriologist, which should be sent to the Secretary of the Fourth Civil Service District, Eighth and E Sts., N.W., Washington, D.C.

Prohibition That Does Not Prohibit.—A few weeks since the report went out that the alcoholic ward at Bellevue Hospital was to be closed for lack of patients, that the Municipal Lodging House was practically vacant, and that the number of "alcoholics" in the city hospitals had been diminished to from one-fifth to one-third their former number. Bird S. Coler, Commissioner of Public Welfare, now asserts that the wards are not only not empty, but that the number of patients is increasing and that many of these persons are in a serious condition owing to the fact that they are getting much worse liquor than when the traffic was regulated. He threatens to send out inspectors if there is no better enforcement of the prohibition within the next thirty days. It is notorious that any one wanting a drink of whiskey in this city can get it without difficulty if he has the price; but a sick person who may need alcohol to save his life is allowed only one pint in the course of ten days, or an ounce and a half a day.

Dr. Lawrence F. Flick of Philadelphia has been awarded the Laetare Medal of Notre Dame University in recognition of his work in medicine and Catholic history.

Dr. Louis Pearce of the Rockefeller Institute for Medical Research has sailed for England *en route* to the Belgian Congo for the purpose of studying the chemotherapy of African sleeping sickness.

Colonel James D. Heysinger of Portland, Me., has received from the French Government the decoration of the Order of University Palms, which carries with it membership in the French Academy.

Dr. William W. Blackman of Brooklyn has been appointed to the newly created office of president of the New York Homeopathic Medical College and Flower Hospital.

Dr. Reid Hunt of Harvard was elected president of the United States Pharmacopeial convention, on May 12, to succeed Dr. Harvey W. Wiley.

Dr. Stanley H. Osborne, formerly epidemiologist of the Massachusetts State Department of Health, has been appointed director of the Division of Preventable Diseases in the Connecticut State Department of Health.

Dr. John A. Ferguson of Brooklyn has been appointed a member of the Board of Education of New York City.

Dr. William H. Dieffenbach of New York City has removed to 50 Central Park West.

Sir Archibald E. Garrod, K.C.M.G., M.D., F.R.S., has been appointed to the Regius Chair of Medicine at Oxford to succeed Sir William Osler.

Births in Registration Area.—According to statistics just completed by the Census Bureau, births in the registration area of the United States, which covers about 53 per cent. of the country's estimated population, during the year 1918, exceeded deaths by 34.4 per cent. There was a total of 1,363,649 births in 1918, which was a small decrease compared to 1917. Of every 100 infants born in 1918, ten died before reaching the age of one year, a fractional decrease over 1917. The mortality rate among male infants was 23 per cent. greater than among females. The birth of 15,342 pairs of twins and 147 sets of triplets was reported.

Want Woman on Staff of Isolation Hospital.—At the annual meeting of the Medical Women's National Association in New Orleans, during the last week in April, this organization advocated the appointment of a woman physician on the staff of the Isolation Hospital in New Orleans.

Institutions for Children Show Lower Mortality and Morbidity Rates.—The New York Department of Health presents an analysis of medical work during 1919, under the supervision of the Division of Institutional Inspection, showing that advances have been made in the institutional care of children. During the past year, the number of deaths in homes for children was reduced approximately 44.3 per cent. The incidence of communicable diseases showed a decrease of about 31 per cent. Non-communicable diseases diminished 4.5 per cent., while the death rate was reduced over 14 per cent.

Medical Society Elections.—THE AMERICAN MEDICAL EDITORS' ASSOCIATION, at its annual meeting held in New Orleans April 26 and 27, 1920, elected the following officers for the ensuing year: *President,* Dr. H. S. Baketel, New York; *First Vice-President,* Dr. Frank Lewis, New York; *Second Vice-President,* Dr. F. H. McMechan, Avon Lake, Ohio; *Secretary and Treasurer,* Dr. Joseph MacDonald, Jr., New York.

THE AMERICAN ASSOCIATION OF ANESTHETISTS, at its annual meeting held in New Orleans April 26 and 27 elected the following officers for the ensuing year: *President,* Dr. Joseph F. Lumbard, New York; *First Vice-President,* Dr. F. L. Richardson, Boston; *Second Vice-President,* Dr. Eleanor Seymour, Los Angeles; *Secretary,* Dr. F. H. McMechan, Avon Lake, Ohio.

THE PLYMOUTH DISTRICT MEDICAL SOCIETY, at its annual meeting held at Brockton, Mass., April 15, 1920, elected the following officers for the ensuing year: *President,* Dr. Francis J. Hanley, Brockton; *Vice-President,* Dr. Richard B. Rand of North Abington; *Secretary-Treasurer,* Dr. Wallace C. Keith, Brockton.

THE NORTH CAROLINA HEALTH ASSOCIATION, at its annual session held in Charlotte, April 19, 1920, elected the following officers for the ensuing year: *President,* Dr. R. L. Carleton, Winston-Salem; *Vice-President,* Dr. L. J. Smith of Wilmington; *Secretary-Treasurer,* Dr. G. M. Cooper, Raleigh.

THE NORTH CAROLINA HOSPITAL ASSOCIATION, also in annual session in Charlotte April 19, 1920, elected the following officers for the ensuing year: *President,* Dr. J. M. Parrott, Kingston; *First Vice-President,* Dr. J. R. Alexander, Charlotte; *Second Vice-President,* Dr. P. R. McFadden, Concord; *Third Vice-President,* Miss Gilbert Muse, High Point; *Secretary and Treasurer,* Dr. John Q. Myers, Charlotte.

THE NORTH CAROLINA MEDICAL SOCIETY, which met in Charlotte April 20, elected the following physicians to the State Board of Medical Examiners for the next six years: Dr. L. A. Crowell, Lincolnton; Dr. L. L. Glenn, Gastonia; Dr. J. B. Murphy, Wilmington; Dr. C. A Shore, Raleigh; Dr. W. M. Jones, Greensboro; Dr W. P. Holt, Duke, and Dr. K. P. B. Bonner, Morehead City.

THE BERKSHIRE DISTRICT MEDICAL SOCIETY, at its annual meeting in Springfield, Mass., April 30, elected the following officers for the ensuing year: *President,* Dr. Ayres P. Merrill; *Vice-President,* Dr. George P. Hunt; *Secretary,* Dr. O. L. Bartlett; *Treasurer,* Dr. Charles T. Leslie.

Obituary Notes.—Dr. H. HOLBROOK CURTIS died at his residence in New York city of diabetes with complications, on May 14, aged 63 years. Dr. Curtis was born in this city on December 15, 1856, the son of Judge William Edmond Curtis. He was graduated from Yale, in 1877, and from the medical school of that university, in 1880, after which he spent several years studying in the universities of Vienna and Paris. Dr. Curtis was a member of the American Laryngological, Rhinological, and Otological Society and a former president of the society; a member of the American Medical Association, and of the New York Academy of Medicine; a Fellow of the Royal Medical Society of England, and a Fellow of the American College of Surgeons. He was visiting surgeon to the New York Nose, Throat and Lung Hospital, consulting otologist to the Nassau County Hospital, consulting laryngologist to the Minturn Scarlet Fever and Diphtheria Hospital. He was also vice-president of the American Social Science Association and Secretary of the National Institute of Social Sciences. For many years, until his health began to fail, Dr. Curtis was a frequent contributor to the medical literature in his special field.

Dr. SAMUEL C. HELMICK, a graduate of the Miami Medical College, Cincinnati, Ohio, in 1871, died from heart disease at his home in Commercial Point, Ohio, April 28, aged 71 years.

Dr. JOHN C. DACOSTA, JR., died at Philadelphia on April 26 at the age of 48 years as a result of injuries received in an automobile accident. He was graduated from Jefferson Medical College in the class of 1893. He served as first lieutenant in the United States Army during the Spanish-American War and he was for a time Associate Professor of Medicine in Jefferson College, Assistant Physician to Jefferson Hospital, Consulting Physician to the Northwestern Hospital, and Hematologist to the German Hospital. He was a member of the Philadelphia County Medical Society, the Medical Society of the State of Pennsylvania, the Pathological So-

ciety of Philadelphia, and the American Medical Association, and a Fellow of the College of Physicians of Philadelphia. He was the author of several medical works, including a treatise on Physical Diagnosis, the fourth edition of which was recently published.

Dr. EWING JORDAN, librarian of the University of Pennsylvania, died at Philadelphia on April 28 at the age of 63 years. He was graduated from the medical department of the university in the class of 1871 and he served for a time as first assistant physician to the Pennsylvania State Hospital for the Insane at Norristown.

Correspondence.

DUCTLESS GLAND PATHOLOGY IN U. S. SOLDIERS DURING THE EUROPEAN WAR.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Being interested in material on diseases of the glands of internal secretion in U. S. soldiers in our army camps and at the front during the European War, I should feel much indebted to any physician who has served as a medical officer in the Army during the war who might be able to supply me with any information in regard to this matter, particularly statistical relations, semeiology, the incidence of these diseases in drafted men and in enlisted men who were subsequently on duty, and the measures taken in dealing with such cases. Any help I may receive in this matter will be highly appreciated and acknowledged.

JAMES ROBB CHURCH,
Colonel, Medical Corps, U. S. Army.

ARMY MEDICAL MUSEUM.
WASHINGTON, D. C.

RETURNING TO SENSIBLE THERAPEUTICS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It is a source of gratification to note in our exchanges the increasing number of communications from medical men who are giving us their experiences in the treatment of various affections successfully with certain drugs or favorite combinations that they have used during many years until now they feel very sure and confident of the results expected. In these days of new and accepted theories, we may have gained something worth holding, but it is very certain that we have drifted far away from more good remedies than we have found in the substitutes that we are trying to push into recognition.

As practitioners we too often lose sight of the fact that the human machine is a most sensitive and watchful organization, and one that is so responsive to varied influences that it is difficult to determine at all times just which of our agencies produced the good or bad results. For this reason we should know that the theoretical formula from the laboratory, and this, that or the other specific, may be good, but can never be depended upon as a cureall. Many physical and mental conditions must be taken into consideration when administering remedies, and these remedies will be affected in their action by influences operating on the patient.

Very often we have heard practitioners extolling the merits of certain remedies and declaring how they seldom or never failed them in certain diseases. We often see the same thing in our medical journals from honest practitioners who believe in what they say; and yet we frequently have felt at first that they were deceived in their observations or were over-coloring things in their enthusiasm. But when we have taken a broader and more liberal view, we have concluded that the doctor possibly gave his patient, along with the drug, a portion of his own faith and hope and so directed his mind in the proper channel that just what was expected of it was realized fully. I should dislike to be ridiculed as a faith-healer, or a Christian Scientist, for I am a very big believer in drug action when properly prescribed, but I am going to run the risk and tell my readers that I have very little faith in drug action upon any human being who does not think my remedies are going to do him any good. "Thy faith hath made thee whole" is an expression that we could have honestly quoted to many of our patients after the administration of many and sundry remedies, and it is one of the best adjuvants we have to combine with any drug we may administer. But we are not talking about faith alone as a remedy, but of the actual faith that the experienced doctor has in articles of the materia medica, based upon his sufficient experience that amounts to actual knowledge.

It looks to us like a return to reason and sound therapy, when we see our journals carrying articles from such splendid and experienced practitioners as Dr. Beverley Robinson of New York, in which he introduces our old friends mutton suet with benzoin, epsom salts and glycerine locally, and pinches of cubebs for sore throat, with local applications of tr. iron and glycerine. W. R. D. Blackwood of Philadelphia is another man who can take a few common remedies and do more with them than any man I ever knew. It is because he has learned by experience what he can do with drugs when using them as indicated. He has faith in his drugs and in himself, and he knows what he can do. W T. Marrs of Peoria, Ill., is also a man who can think and observe and he has common sense enough to be guided by his experience. He is not ashamed of using a little spts. turpentine, camphorated oil, castor oil, glycerine or sage tea, and he is psychologist enough to make almost any combination work. He is the author of "Confessions of a Neurasthenic" and he can take these "nerves" cases at any angle and knock the spots out of them by simply looking them fiercely in the eye, and slipping them an assafoetida ball on the sly. A. J. Jameson, M. D., of Sentinel Butte, N. Dakota, has an excellent article along these same lines in the *Medical Summary*, of Philadelphia, in which he tells us so many things we can do with echinacea, and mentions his successes in treating infections and preventing same. These physicians and others like them are successful in the practice of medicine and they are drug healers of the highest order, and they are students of human nature, and sympathetic psychologists; and are men who think and observe and attach importance to their experiences. We have been led to make these comments because we feel that we have all strayed after new things and im-

provements and have left too many good and tried remedies behind until they are forgotten, and as many know we have become to an extent tacit, if not active, acknowledgers of therapeutic nihilism—a fatal attitude toward any step of progress in the healing art.

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OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, April 30, 1920.

Criticisms of Panel Practice.—A good deal of discontent prevails among panel practitioners as to the working of medical practice under the amended insurance act. One practitioner has voiced his grievances in the law press, reference to which is made in the *Medical Press* of April 26, 1920. According to the experience of the writer, 5 per cent. of his panel patients had no attendance, 3.5 per cent., 100 or more attendances, and the whole list averaged 12 attendances per annum, while his services were paid for at the rate of sevenpence per attendance. At the rate of 33 prescriptions weighing one ounce, he found that in one year his prescriptions in weight amounted to 448 lbs. He states that some patients are of the opinion that the doctor's fee of one penny and a half penny, equivalent to three cents a week, savors too much of charity, and distrust the quality of the drugs supplied at two shillings (50 cents) per head per year inclusive of the druggist's fee. The result is that they become the private patients of another medical man, as their own panel doctor refuses to attend them as private patients. He denies that the average practitioner is financially better off since the act came into force. "It is surprising," he adds, "but the fact is that the wives and children do not seek medical aid more frequently than before the act, although many wives are now on the panel." The act indeed, seems to be open to criticism on several counts and it is more or less obvious that it requires further and considerable amendment.

Some of the Work of the International Health Conference.—During the international conference which sat at the British Ministry of Health for several hours of each day of the week ending April 17, some important points in connection with the health of the world were discussed and considered. As Parliamentary Secretary to the Ministry of Health Viscount Astor presided over the sittings of the conference, and on April 17, discussed with a newspaper representative some of the developments anticipated as an outcome of the conference. Referring to the work which had already been done, he said that the League of Nations recognized among other things that the Signatory Powers should interest themselves in matters affecting the health and welfare of their peoples.

The war had proved that all the countries of the world are interdependent; that modern communications had closely united all parts of the globe; that particularly there is a constant and rapid movement by rail and ship of people from country to country which facilitates the spread of epidemic diseases. Corporate bodies, as nations are, were recognizing that the individual obligation by which man was to be his brother's keeper and concern himself in the welfare of his brother applied to countries also. The decision of the League of Nations to cooperate in matters affecting public welfare was, he said, of the utmost importance in the progressive development of civilization. Early this year the Council of the League of Nations asked Dr. Addison, as Minister of Health, and in recognition of the fact that the United Kingdom was the first country to establish a specific Ministry of Health, to summon a conference and prepare proposals for the establishment of an international health organization. The conference was attended by representatives of France, Italy, Japan, the United States, and Great Britain. Belgian and Brazilian representatives were unfortunately prevented from attending at the last moment. In addition to these delegates, the League of International Red Cross Societies, the International Labor Bureau, and the Office Internationale d'Hygiène Publique were represented. Viscount Astor declared that the results of the deliberations exceeded all anticipations in the rapidity with which progress has been made and the proposals of an international health organization agreed to.

Briefly the proposals which it is intended to submit to the Council are: (1) That there should be an executive with a bureau and staff at the seat of the League. (2) That the Office Internationale in Paris, which has done so much in the past, should form a part of the organization; and as such the Office have expressed their desire to advise on such technical matters as might be referred to them. (3) That means should be found for cooperation between the new organization and the already established voluntary League of Red Cross Societies and the International Labor Bureau. In addition to working out the permanent structure, the conference has cooperated in advising on such measures as are immediately feasible in combating typhus in Poland and preventing its spread throughout Europe. That country is without sufficient means to establish any satisfactory barrier against the westward spread of the disease. Not only is there difficulty owing to the indeterminate state of Poland's eastern boundaries but there are difficulties also arising from lack of medical personnel, sanitary stores, and money. The delegates to the conference were as follows: France, M. Brisac, M. Leon Bernard, M. Boujard, M. Thiebault; Great Britain, Dr. G. S. Buchanan, C.B., Dr. Steegmann, Sir George Newman, K.C.B.; Italy, Dr. Lutrario, Dr. Bruno Fornaciari, Dr. Druetti; Japan, Dr. Yoneji Miyagawa, Mr. Kakichi Kawarata; America, Surgeon General Rupert Blue; League of Red Cross Societies, Colonel R. P. Strong, U. S. A.; Office Internationale d'Hygiène Publique, Dr. Potterin; Secretaries Dame Rachel Crowdy (League of Nations), Mr. L. G. Brock, Ministry of Health, Polish Ministry of Health, Dr. Chodzko.

Honor for Sir James Barr.—Sir James Barr, the well known Liverpool physician, has been appointed a Knight of Grace to the Order of the Hospital of St. John of Jerusalem in England.

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 6, 1920, clxxxii, 19.

1. The Product of a Urological Clinic. William C. Quimby.
2. Social Service and the Clinic. Alfred C. Reed.
3. The Technique of Lumbar Puncture. Lawson G. Lowrey.
4. A Milk-Borne Epidemic of Typhoid Fever and the Demonstrated Value of the Widal Reaction in Detecting a Typhoid Carrier. Edward B. Bigelow and Gustaf L. Berg.
5. The Use of Blood and Blood Serum in the Treatment of Disease. C. K. Johnson.

3. The Technique of Lumbar Puncture.—Lawson G. Lowrey emphasizes certain points in the technique of lumbar puncture which, if observed, made the procedure a simple one. One of the most important points in satisfactory technique is that the needle shall be sharp, since with a sharp needle there is much less probability of excessive pain to the patient. The site of election for lumbar puncture is between the third and fourt lumbar vertebræ, this space being usually the widest. In children one must remember that the spinal cord extends to a lower point than it does in the adult. The third lumbar space is as a rule on a level with the crest of the ilium. This constitutes a useful guide in fat people. One must be careful to find the midline and to allow for spinal curvature if it exists. With the index and middle fingers of the left hand the operator locates the point at which he wishes to do the puncture. With the elbow raised these two fingers are applied to the midline from the left side of the patient. Having found with the middle finger the spinous process below which we wish to insert the needle, the index finger is then pulled downward on the spinous process of the next vertebra, thus rendering the skin tight and leaving a space between the two fingers, corresponding to the intervertebral space into which the needle is thrust. Most of the difficulties in puncture, which are not to be explained by lack of cooperation on the part of the patient, are due to the failure of the operator properly to direct his puncture. Having found the proper place, the needle is quickly thrust through the skin, and then further progress may be made more slowly. Pain in the lumbar region comes: (1) when the skin is pierced; (2) if the periosteum is touched; (3) referred pains occur if bundles of nerves are struck. Care must be taken that the needle goes in straight and not to one side. If it goes in at one side it should be withdrawn and redirected. Care must be taken not to overrun and go into the bone or intevertebral disc at the front of the canal. In many instances it has been found that twisting the needle without varying its depth of introduction assists in the flow, though it is not clear why this is so. One should not withdraw more than 10 c.c. of fluid, except in cases which are to be treated. It is very rare indeed for a paretic or other case of neurosyphilis to suffer any discomfort after lumbar puncture. Patients with normal meninges, however, often have headache and sometimes nausea and vomiting.

New York Medical Journal.

May 8, 1920, cxi, 19.

1. Acidosis: Its Mechanism. Recognition and Clinical Manifestations. George Morris Piersol.
2. The Drugless Therapy of Diabetes. Henry S. Stark.
3. The Limitation of Starvation in Diabetes Mellitus. Thomas W. Edgar.
4. A Case of Diabetes Insipidus. Truman G. Schnabel and Arthur H. Gerhard.
5. Advantages of Class Instruction in the Treatment of Diabetes. N. W. Janney.
6. The History of Diabetes Mellitus. Philip Horowitz.
7. The Obligations of Medicine in Relation to General Education. William C. Braisted.
8. Diabetes in Association with Toxic Goiter. J. Christopher O'Day.

2. The Drugless Therapy of Diabetes.—Henry S. Stark states that he has experimented with many drugs in the treatment of diabetes and has recorded their effects, among them opium and its derivatives, arsenic salicylates, the coal tar preparations, potassium permanganate, antisyphilitic drugs where lues was an etiological factor, jambul, yeast, lactic acid bacillus, a number of proprietary preparations, and finally a whole galaxy of organotherapeutic drugs. As a result of these observations the conclusion is forced upon him that we cannot point to any drug which has a decided antiglycosuric effect, though we have a number of drugs which can provoke glycosuria. In order to test out the value of animal extracts and hormones he treated 20 diabetics with various pancreatic extracts, such as pankreon, 12 grains three times a day for four weeks, or pancreatin, 12 grains, three times daily. He has fed a number of diabetics with pancreas of the sheep daily for a number of weeks. As a result of all this he confesses that nothing more encouraging than a temporary or psychical improvement could be recorded. The only effect he did observe was a somewhat better digestion of fats, which was to be expected, in view of the fact that the pancreatic juice is largely concerned with fat metabolism. With thyroid and adrenalin he obtained no better results than with pancreatin, and the resort to pluriglandular therapy has not cleared the situation much. He expresses the opinion that the physician who views his diabetic patient as a psychological study will get further in relieving him than will he who religiously resorts to the drugs shelf. Diet, he agrees, is the mainstay of treatment, not the dietary methods formerly in vogue, but one that conforms with our modern conception of food metabolism. This allows a patient as much carbohydrates as he can assimilate, is satisfactory as to quantity and kind, and approaches the standard of a balanced ration. The writer discusses the dangers of a onesided diet, and considers the drugless therapy of diabetic coma.

3. The Limitation of Starvation in Diabetes Mellitus.—Thomas W. Edgar believes that too much stress is being placed upon the sugar content of the urine in diabetes, while other manifestations of the disease are neglected. He says we are treating diabetes (by starvation) in a manner that is neither actually nor relatively conducive to the health and economic status of our patients, to say nothing of the hardships inflicted. According to the rule in all seemingly chronic progressive diseases, and diabetes is no exception, the general practitioner bases his treatment on the hypothesis set by the investigator or research worker, who is too often a laboratory enthusiast without clinical experience. Pancreatic extracts are being placed on the market for the diabetic on the supposition that the pancreas is the exciting factor in the production of the disease, yet no definite lesion has been demonstrated to exist in the islands of Langerhans. The writer points out certain possible errors in the statistics that purport to show marked reductions in the number of deaths under the starvation treatment, and questions whether starvation is a harmless procedure. Personally he feels that it is dangerous and should never be indulged in without the supervision of a competent physician. Prognosis in a case of diabetes, whether severe or mild, should not be based on the rapidity of sugar reduction, but on the amount of food that can be ingested without the production of an excess of the lower fatty acids. Frequent starvation not only reduces the action of internal secretion to a minimum quantitatively during resistance, which in this case is carbohydrate, but drains the body of its glycogen content. This removes all available stimuli which might otherwise cause activity. The caloric power of the organism is reduced in its production of heat and energy. Resistance is lessened; metabolism is weakened; undernutrition invites infection, and tolerance decreases progressively. The writer records rather startling results from the use of a serum, which is prepared from the blood of rabbits after they have undergone a series of maneuvers capable of activating the various internal secretory glands to increased action. The serum contains the internal secretions in hormone form. With this serum he has been able to increase the carbohydrate tolerance of certain cases from 25 to 60 per cent., and in some cases cause an absolute arresting of the disease, as evidenced by loss of all subjective and objective symptoms, as well as gain in weight, which has been progressive.

Journal of the American Medical Association.

May 8, 1920, 74, 19.

1. Clearness in Medical Speech. James S. McLester.
2. Treatment of Malignant Tumors of the Antrum. G. B. New.

3. The Immediate Sterilization and Closure of Chronic Infected Wounds; A New Method Applicable to Wounds of Bones and Soft Tissues. W. Wayne Babcock.
4. Granuloma Inguinale in the United States. Douglas Symmers and Albert D. Frost.
5. The Tripod Method of Walking with Crutches as Applicable to Patients with Complete Paralysis of the Lower Extremities. Robert W. Lovett.
6. Meckel's Doverticulum: Report of Case. Daniel L. Borden.
7. The Catalase Content of the Cerebrospinal Fluid. Abraham Levinson and Frank C. Becht.
8. The Roentgen-Ray Treatment of Verruca Plantaris. H. H. Hazen and F. J. Fichenlaub.
9. Significance of Different Types of Pneumonia Following Influenza: A Therapeutic Indication B. S. Kline.
10. Venereal Prophylaxis. P. M. Ashburn.
11. Occurrence of Bilateral Sympathetic Ophthalmoplegia: Its Significance in Lethargica Encephalitis. Williams B. Cadwalader.

1. Clearness in Medical Speech.—James S. McLester. (See MEDICAL RECORD, May 8, 1920, page 803.)

2. Treatment of Malignant Tumors of the Antrum.—G. B. New states that the usual treatment of malignant tumors of the antrum by resection of the upper jaw is followed by very frequent early recurrences, and a small percentage of cures. At the Mayo Clinic, during the past three years, 18 cases of malignant tumor of the antrum have been treated by the use of heat in the form of a soldering iron used as a cautery at a dull heat. The soldering iron is carried up into the antrum, and the entire growth is thoroughly cooked for from thirty to forty-five minutes. Radium salts or emanations in tubes are introduced into the antrum at the point at which it seems most needed, either at the time of the operation or from ten days to two weeks later, after some of the slough has cleared away. This method of treating malignant tumors of the antrum has been followed by no operative mortality and no postoperative chest complications. Of the 18 patients treated in this way three are dead, two have had extensive recurrences, and 10 are well and have had no recurrences over a period of from eight to twenty-eight months.

3. The Immediate Sterilization and Closure of Chronic Infected Wounds.—Dr. W. Wayne Babcock describes this method which he has used in more than 100 chronic wounds of soft tissues, and in about 250 cases of chronic osteomyelitis. It consists in four procedures carried out in one operation under anesthesia: Chemical sterilization of all sinuses and wound surfaces by the injection and application of a saturated solution of zinc chloride. 2. Delineation of infected areas by the injection or application of an alkaline ethereal solution of methylene blue. 3. Mass excision of the entire area of infection. 4. Wound closure with obliteration of all dead spaces. The zinc chloride is thoroughly injected under pressure or packed with small moist pledges of gauze into all sinuses and cavities, and rubbed very carefully over the scar and skin adjacent to the wound. When injected under pressure the general circulation must be protected by a tourniquet. The antiseptic staining solution, consisting of 20 mg., or c.c., of saturated alcoholic solution of methylene blue, 3 mg., or c.c., of caustic potash, and 5 mg., or c.c., of ether, made up to 100, is thoroughly applied to all eroded surfaces and injected under pressure into cavities and sinuses. As soon as this solution has evaporated, the exposed granulating surfaces are left dark blue, black, dry, bloodless on manipulation, and sterile. The coloring penetrates to a depth of 1 to 3 mm. Outside of this is a much wider zone of a vascular, grayish white tissue that has been sterilized and devitalized by the zinc chloride. The entire field is again painted with iodine, the instruments changed, and all infected tissues as indicated by the blue color excised.

7. The Catalase Content of the Cerebrospinal Fluid.—Abraham Levison and Frank C. Becht describe experiments in which the method of Becht was used and present tables which show that in nonmeningitis cases in which the number of cells in the spinal fluid is small, the catalytic power of the fluid is negligible; that in three cases of tuberculous meningitis and one case of anterior poliomyelitis, the amount of oxygen released was greater than in nonmeningitis cases in two instances, and in two quite comparable to the amount released in nonmeningitis cases; that in 10 observations on suppurative meningitis there was an increased amount of oxygen by no means comparable to the number of cells, but a fluid with a large number of cells was usually one with a high catalytic power. A perfectly normal fluid free from cells and coagulum was found to contain no catalase. The writers believe that the catalyse test as applied to cerebrospinal fluid is of no practical value.

The Lancet.

April 17, 1920, cxcviii, 5042.

1. Milroy Lectures on the Higher Fungi in Relation to Human Pathology. Aldo Castellani.
2. A Review of "Heart" Cases in the Egyptian Expeditionary Force, 1916-1918. A. L. Krogh, W. T. Richie and E. H. White.
3. Accessory Food Factors (Vitamines) in the Feeding of Infants. Edward Mellanby.
4. On the Relation of Lipochrome Pigments to the Fat-Soluble Accessory Food Factor. O. Rosenheim and J. C. Drummond.
5. Treatment of Bilharzia Disease with Tartar Emetic in South Africa. F. G. Cawston.
6. A Note on the Value of Blood Transfusion Before Operation in Severe Secondary Anemias. Herbert Williamson.
7. The Medical Problems of Life Assurance. T. D. Lister.

3. Accessory Food Factors (Vitamines) in the Feeding of Infants.—Edward Mellanby discusses the relation between the fat-soluble A factor and the antiscorbutic factor in connection with infant feeding. He calls attention to the fact that according to MacCollum's rat-feeding experiments, the fat-soluble factor is absent from all vegetable fats. In rickets experiments, however, it seems definite that the amount of antirachitic factor is fairly high in some vegetable fats, such, for instance, as peanut, cottonseed, and cocoanut oils, and is only present to a small extent in palm kernel, linseed, and badassu oils. A second point the writer emphasizes is that fat soluble A does not appear to be necessary for growth in the case of puppies as it is in rats; the growth was often just as good when the diet was very deficient in this factor. It seems most likely that both (1) the difference in distribution of the fat soluble factor and the antirachitic accessory factor in vegetable fats, and (2) the importance of the fat-soluble factor for the growth of rats and its probable unimportance in the growth *per se* of puppies and children—could be explained by variations in the general and intermediate metabolism of these animals. The writer begs investigators in their further experiments not to mix up the growth experiments on rats and the rickets experiments on puppies. So far as his own experiments have shown, he finds that cottonseed oil is to be classed as one of the better vegetable oils in preventing rickets, and, taken in conjunction with the other conditions of diet as described by Hess and Unger, it does not appear to him surprising that rachitic symptoms did not develop in their cases. In his more recent experiments the writer has endeavored to link up the action of the vitamines with known dietetic substances. In doing this he calls attention to the well-known fact that active rickets is a rare disease in children over two years of age. On the other hand, arguing on the basis of results obtained in puppies, it is equally certain that, after this age, the diet of a child is often of a more rickets-producing nature—that is, it is composed more of bread and other cereals and less of milk. The only deduction possible from these facts is that after a time a child becomes more independent, *from the rickets point of view*, of its diet. After puppies have arrived at a certain age the writer has been unable to produce rickets on rickets-producing diets. His experiments have also shown that puppies developing rickets on these diets, if it was not too severe, and the general condition did not become too bad, recovery often took place, as indicated by radiographic examination, although the animal remained on the same diet and under the same conditions. The writer lays stress on the fact that, although rickets is primarily a deficiency disease of a dietetic nature, other metabolic conditions must necessarily be involved. In many experiments the only variable factor was bread, given to animals ad lib. Other things being equal, the greater the quantity of bread the greater would be the tendency to rickets. There was evidence on the other hand that protein had an antagonistic action to the development of rickets. There were also indications that casein had the same effect. Increasing

the protein factor alone, in the absence of the antirachitic accessory factor does not make a diet safe. The writer's view is that protein aids the antirachitic vitamine, so that less of the latter will suffice to keep the growth normal. Experiments as to the effect of exercise on the production of rickets seem to show that confinement on an adequate diet will not produce rickets, neither will freedom on a deficiency diet prevent rickets. Nevertheless, complete freedom will oppose to some extent the rickets producing effect of a deficient diet.

On the Relation of the Lipochroma Pigments to the Fat-Soluble Accessory Food Factor.—O. Rosenheim and J. C. Drummond have carried out experiments to determine whether the accessory food substance fat-soluble A is related to or identical with a member of the class of pigments which are found in association with fats. Their results seem to show that, while the identity of the fat soluble accessory food factor with a known lipochrome pigment appears to be improbable, there are reasons for assuming that it is in some manner associated with that class of substances.

British Medical Journal.

April 17, 1920, i, 3094.

1. A Clinical Lecture on the Treatment of Septic Peritonitis. F. J. Stewart.
2. A Lecture on the Soldier's Heart and War Neurosis: A Study in Symptomatology. Sir James Mackenzie.
3. Public Health Administration in Epidemics of Measles. John Brownlee.
4. The Physiological Cost of Muscular Work. A. D. Waller.
5. An Attenuated Tubercle Vaccine. Nathan Raw.

1. The Treatment of Septic Peritonitis.—F. J. Stewart says the indications in the treatment of septic peritonitis are to remove the cause; to provide drainage; to make good the loss of fluid, and to prevent or treat intestinal paralysis. He points out wherein the use of tubes and gauze drains have been ineffectual, and suggests a method of employing continuous irrigation. This method is as follows: After the bulk of pus has been mopped up with gauze sponges, several Carrel tubes are passed into the abdomen in different directions, one or more being carried down to the bottom of the pelvis. A large-bore rubber drainage tube is also carried down to the bottom of the pelvis and fixed to the lower part of the abdominal incision by a fishing gut suture. The upper part of the incision is partly closed, then lightly packed with gauze, which surrounds the tubes, and a large dressing applied. The patient is then placed in the Fowler position, with a bedpan beneath him, large wool pads intervening. Warm saline solution is permitted to drip continuously at about the rate of a drop a second. At this rate the amount of fluid run in twenty-four hours is about nine pints, which appears to be a sufficient quantity. The irrigation is continued from three to six days, according to the condition of the patient, when all the tubes are removed except one Carrel tube, which is allowed to remain for a few days longer. With this treatment no case up to the present time has shown any marked degree of intestinal paralysis.

5. An Attenuated Tubercle Vaccine.—Nathan Raw, after treating over 3000 cases of tuberculosis in hospitals with tuberculins from various sources, has come to the conclusion that the best results are obtained by treating human infections with bovine tuberculin and bovine infections with human tuberculin, since these two types of bacilli seem to be antagonistic to each other. He states that a pure culture of human pulmonary tuberculosis given him by Professor Koch, in 1905; one of bovine tuberculosis given him by Professor Calmette, and one of avian tuberculosis given him by Professor Bang of Copenhagen in 1905, have been subcultured every month since 1905 without any intermission, and to-day they grow true to type,, quite normally, though not so luxuriantly. Tuberculin prepared with these attenuated strains has given very satisfactory results and leads the writer to suggest that tuberculin should be prepared from attenuated and non-virulent cultures of bacilli; that it should be freshly prepared and used within a week; that it should be given in graduated and increasing doses at intervals of seven days; that acute reactions are unnecessary; that not less than twelve injections should be given at intervals of one week, though many more may often be required. The most favorable cases for treatment are local lesions, though early cases of pulmonary tuberculosis may be prevented from spreading to other parts of the lungs.

Le Bulletin Médical.

March 17, 1920, xxxiv, 16.

How to Remove the Craving for Alcohol.—Jaguaribe and Regnault begin by quoting the old proverb, "Who has drank will drink." We must distinguish between the wilful and the will-less drinker. Of these the former are less common. They are men of great energy and firmly believe they can protect themselves from all abuse of the drink. The habit is thus readily acquired and becomes associated with an imperious daily craving for the thrill of alcohol. When they seek to resist the craving they only defer it by some hours. They then deliberately weigh the apparent gains with the sacrifices and make a choice. The problem is a very old one, and the wise man has often played a trick on his subconscious self and its burning desire rather than to test his will too openly. Thus Cesar Borgia, after having become a heavy addict to wine, reduced the capacity of his glass by the cumulative addition of drops of melted wax until he had weaned himself from the desire. A more rapid process consists in rendering the drink nauseating by the addition of ipecac. It is the old trick of placing bitter substances on the nipple to wean a baby or on the finger tips to cure a child of nail biting. The search for substitutes has sometimes led to good results, but it usually is a case of robbing Peter to pay Paul. The psychology of the willful drinker is best explained by the creation of a second personality through the addiction, which is subject to its own laws. While the strong subject may become an aboulic as a result of prolonged addiction there are others who are aboulic by nature, and who put up no struggle at all. These are weaklings from the start, and demonstrate it in all aspects of life. The drug robs them of the little will power which they may have possessed. These subjects, which are rare in Latin peoples, are best adapted to psychotherapeutic management.

Le Nouveau Journal des Médecins.

March, 1920, i, 3.

Announcement to Readers.—Hyvert, the editor of the new series of an old periodical, makes an announcement to his readers of the scope of the same. The subject matter will be divided into twelve classes. First is original, or as the editor terms it, unpublished articles, either single and practical studies, or joint reviews. Next in order in importance are summaries of progress for the past month. Third are bibliographies without analysis of contents on various subjects. Book reviews come fourth. The fifth department is devoted to social medicine, and includes public health, while the sixth deals with therapeutics. Matter of interest to the profession, such as deontology, etc., comprises the seventh rubric. The eighth is extra-professional, to enable the medical reader to keep in touch with general science, arts, and literature. The ninth is devoted to recreation, physical culture, and sports. The tenth is devoted to medical news and information for the benefit of visiting doctors. The eleventh corresponds to a department of feuilleton or belles lettres, while the final section is given over to prizes for general competition. In the present issue we note a poem by a medical man, La Bonne, which was recently awarded a prize. Marcel Baudoin publishes a serial on the origin of the myths of the Centaur Chiron and Æsculapius.

Myelitic Form of Lethargic Encephalitis.—Weill reports a case in which myelitis was the dominant symptom. The encephalitic component was, however, well marked. This, taken in account with the new myoclonic cases, makes the term lethargic encephalitis too narrow and he would substitute the expression "Netter's disease" from the analogy of the "Heine-Medin disease" to express the totality of acute anterior poliomyelitis.—*Le Bulletin Médical.*

Book Reviews.

AN INTRODUCTION TO GENERAL PHYSIOLOGY. With Practical Exercises. By W. M. BAYLISS, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1919.

THIS little volume deals with general or abstract physiology, which is a much broader subject than the applied physiology, which is of interest to, and is generally studied by, the professional medical, dental, veterinary, or agricultural student as part of his college curriculum. The general processes are of the utmost importance; but, unfortunately, they are frequently overlooked. The present book is an introduction to these general processes, and contains a discussion of many of the borderline studies dealing with chemistry, physics, and biology, which are so essential to a proper understanding of the subject of physiology. The author has divided his book into parts, the first dealing with the general subject, and serving as a text; and the second part dealing with the laboratory work. The volume is to be recommended to all students not only on account of its intrinsic merit and value, but also because there is such a dearth of books dealing with these general physiological processes.

PASTEUR — THE HISTORY OF A MIND. By EMILE DUCLAUX, late member of the Institute of France, Professor at the Sorbonne and Director of the Pasteur Institute. Translated and edited by ERWIN F. SMITH and FLORENCE HEDGES, Pathologists of the U. S. Department of Agriculture. Philadelphia and London: W. B. Saunders Company, 1920.

IT is not often, especially in medical annals, that a book nearly a quarter of a century old is deemed worthy of translation, and it is remarkable that a work of such absorbing interest as well as historical value should have failed all through these years to attract the notice of a translator. This is not a biography in the usual sense, but rather, as the subtitle expresses it, a history of a mind. It is an account of all Pasteur's scientific achievements—and even the well informed will be astonished when reminded of how numerous they were—prefaced in each case by a history of the previous work in the same direction by other investigators. The titles of the eight chapters of the book will suffice to recall the wide scope and the practical value of Pasteur's activity. These are: Works on Crystallography, Lactic and Alcoholic Fermentations, Spontaneous Generation, Wines and Vinegar, Studies on the Diseases of Silkworms, Studies on Beer, Studies on the Etiology of Microbic Diseases, The Study of Viruses and Vaccines —surely a long catalogue of contributions to science and of benefits to mankind. The tale is well told and the translators have succeeded beyond the ordinary in carrying over the charm of the author's style into the English version.

A TEXT-BOOK UPON THE PATHOGENIC BACTERIA AND PROTOZOA. For Students of Medicine and Physicians. By JOSEPH MCFARLAND, M.D., Sc.D., Professor of Pathology and Bacteriology in the University of Pennsylvania; Pathologist to the Philadelphia General Hospital. Ninth Edition. Philadelphia and London: W. B. Saunders Company, 1919.

THAT a text-book of bacteriology should reach its ninth edition in the course of twenty-three years service to the profession, is in itself evidence of the intrinsic worth of the work. McFarland's book has long had an enthusiastic following that is apt to be much increased by the appearance of this edition. The author states in his preface that the present revision was accomplished under difficulties, the greater part of it having been done during the time when he was on active service in the army. It is probably because of those difficulties that the reviewer is able to detect certain omissions which it could be wished had not been made. There is practically no discussion of the hydrogen ion concentration of culture media, a subject that is acquiring great importance. The statement that the spores of *B. botulinus* are killed by exposure to 80° C. for one hour seems to be contradicted by recent work in food poisonings. The discussion of the various types of streptococci is inadequate. It would seem that rather more space might have been given to *B. paratyphosus*. Wound bacteriology receives but little attention, as perhaps is proper since we trust the need for it has passed. The author appears to believe that trench fever and spirochetosis icterohemorrhagica may be one and the same thing. But it is easy to carry such criticism to an unfair extreme, and these comments will not injure the high standing in which this work has always been held. It is unusually complete and the information it contains is very accessible.

COMMON DISEASES OF THE SKIN. With Notes on Diagnosis and Treatment. By G. GORDON CAMPBELL, B.Sc., M.D., C.M. Lecturer on Dermatology and Pediatrics, McGill University; Physician to the Montreal General Hospital. New York: The Macmillan Company, 1920.

IN this little book there will be found a short description of most of the commoner diseases of the skin, with indications for their treatment. The book abounds in illustrations, the text being less than one-half of the volume. As a rule a page or two suffices for the description of the disease under discussion, and it is only such important topics as Eczema and Syphilis which tempt the author to be more liberal. Needless to say, in a book of this size there is no discussion of various theories and points of etiology and pathology; the student is taught to recognize the disease, and is then instructed as to its treatment. This work should be very popular with students and practitioners; it is, certainly, of more real value than many of its larger and more pretentious competitors.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By ELBERT W. ROCKWOOD, M.D., Ph.D., Professor of Chemistry and Toxicology in the University of Iowa. Fourth Edition. Philadelphia: F. A. Davis Company, 1919.

THIS small volume provides an outline for a course in physiological chemistry rather more full than would be needed in any one course but containing enough material so that an instructor may choose somewhat the matters which he presents. The present edition has been rather thoroughly revised and somewhat enlarged above the previous edition, which appeared nine years ago. The text is condensed so as to offer a sufficient skeleton upon which the student should build his notebook and appears to be satisfactorily complete. It should prove a useful aid in giving a course in this subject.

THE MEDICAL CLINICS OF NORTH AMERICA. November, 1919. Mayo Clinic Number. Volume 3, Number 3. Published bi-monthly by W. B. Saunders Company: Philadelphia and London.

IN this number the conventional clinic form of the presentation of the subjects has been abandoned for the majority of the articles and the presentation is made as would be the case for regular journal articles. Whether on this account or because of the rich material presented the number seems to create a more favorable impression than any of its predecessors. There are twenty-three contributors who have filled a volume of very nearly three hundred pages with discussions ranging from retinitis circinata to leprosy. Perhaps the most striking is a series of some seven articles in conditions of the spleen and the blood, in which is given a number of sharply drawn pictures and a large amount of valuable information. One of the especially attractive features is the bibliography which accompanies the articles. It is our impression that this is the best number of the clinics which has appeared.

THE MEDICAL CLINICS OF NORTH AMERICA. January, 1920. Boston Number. Volume 3, Number 4. Published bi-monthly by W. B. Saunders Company. Philadelphia and London.

IN this number there are contributions from seventeen clinics held in four Boston hospitals and one article from the Harvard Medical School. The majority present cases of interest and importance to the physician. Rosenau gives the results of experiments with feeding canned foods. The volume is interesting in the wide scope of the presentations and the attractive manner in which the cases are discussed.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventy-first Annual Session, Held in New Orleans, April 26-30, 1920.

SECTION ON OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

First Day—Wednesday, April 28.

DR REUBEN PETERSON, OF ANN ARBOR, MICH., IN THE CHAIR.

Chairman's Address: The Future of Obstetrics and Gynecology as a Specialty.—Dr. REUBEN PETERSON said that the title of the paper suggested the view which he had long held with regard to the specialty concerned, namely, that obstetrics and gynecology should be linked together in a single specialty, and should not be considered as two distinct specialties. It should be known as obstetrics and gynecology and not the reverse, since it seemed illogical to place that which had to do with disease in advance of that which occurred before disease appeared. Gynecologists as a class had confined themselves to the surgical aspects, openly declaring that they cared nothing about obstetrics and did not care to learn. It was inevitable that they should become discontented with the small field of surgery and that they should push on to a broader field. Thus one saw the gynecologist operating upon men as well as women, calling himself an abdominal surgeon. The general surgeon disapproved, and the tendency to include gynecological surgery with abdominal surgery had increased. Had the gynecologist stuck to his specialty this would have allowed him to devote more time to the practice of obstetrics, thus paving the way to a true specialty, the prevention of disease. The gynecologist had only himself to blame. He had thrown himself into gynecological surgery until nothing else interested him. One reason for this state of affairs was that medical colleges had divorced obstetrics from gynecology and had given undue prominence to surgery. The surgical end of the specialty had been given attention to the neglect of the groundwork which was absolutely essential in any field. If there were to be a future for obstetrics and gynecology it must come through hospitals and schools organized on the right basis. If the two divisions were to be united and flourishing immense benefit to mankind would result, but if the two remained separate in the teaching institutions, in two generations there would be no obstetricians or there would be no distinction between the two specialties. The surgically inclined bright young man would not choose gynecology as a specialty when he could enroll in general surgery and have the whole body for his field; he would not become a "man midwife." Obstetric material must always be an immense expense to institutions; it was composed of so-called charity cases, patients who sought institutions because they knew they would be properly cared for. The out-patient obstetric department flourished. It was cheaper to build up an out-patient obstetric department than to meet the expense of the in-patient obstetric department. If adequate patients were furnished for the two under one head the subject would be well taught; if, on the other hand, the policy selected separated them, the opposite would be the case, and obstetrics would not flourish. Gynecology would become more and more a surgical specialty, there would be no valid excuse for not making it a branch of general surgery, the chairs of gynecology would disappear, and the chairs of clinical gynecology would be absorbed by general surgery. United with obstetrics, gynecology would survive; separated from it, it would cease to exist. The two divisions should be treated as one subject; it would be comparatively easy, under such circumstances, to see that the field of surgery was not over-emphasized. Technical skill in obstetric and gynecological surgery should be obtained by cooperation with the general surgical staff. In fact, this free interchange of services should not be confined to surgery, but should apply to all departments of a hospital.

Chronic Leucorrhea: Its Pathology and Treatment (Lantern Demonstration).—Dr. ARTHUR H. CURTIS of Chicago reported the findings of years of study devoted to the clearing up of the problems associated with chronic leucorrhea. In a considerable proportion of cases this condition had been found associated with chronic cervicitis, and chronic endometritis had been frequent. Endocervical granulations and strictures had also been encountered in association with chronic leucorrhea. Granulations were found anywhere in the canal, strictures at the surgical os or at higher levels. Infections of the urethra, and of Bartholin's glands and Skene's ducts were also found. Acute leucorrhea tended to be self-limited if left alone; it could be treated almost any way and would finally disappear. In chronic leucorrhea the surgical treatment of gross lesions and the use of radium were indicated. If necessary, the infected ducts should be incised and fulgurated. Radium given in proper dosage and with sufficient intervals would not result in the production of artificial menopause. In some cases it was necessary to choose between improvement of the leucorrhea and the production of the menopause. Treatment for the cure of leucorrhea would not necessarily cure sterility; sometimes, however, pregnancy followed such treatment in cases in which there had been complaint of sterility.

Dr. FRANCIS LE S. REDER of St. Louis, Mo., in opening the discussion, expressed appreciation of the work which Dr. Curtis had devoted to this subject, which was one of great importance. The genital tract of woman in a normal condition was in a state of leucorrhea. There had been a tendency to disregard the meaning of the word leucorrhea, the term being applied to almost any discharge from the genital area. When might one consider leucorrhea chronic? When the woman consulted the physician. It was to be regretted that women disregarded vaginal discharges for so long, because microorganisms rendered such discharges very difficult to correct. The mucosa of the genital tract was not separated from the deeper structures by an areolar layer as in the digestive tract, and ulcerated or occluded glands deep in the muscularis furnished splendid recesses and abiding places for microorganisms. The Neisserian gonococcus kept up the discharge in the majority of cases. If one could get a history leading one to suspect this infection, very well; but it was exceedingly difficult to distinguish this diplococcus from other forms of diplococcus present. When one considered the subdivisions of leucorrhea it became absolutely necessary to differentiate vulvar from vaginal. Should it trespass upon the cervical region it would be exceedingly difficult to dislodge it. It usually required a plastic operation to uproot it.

Dr. WATKINS of Chicago considered the paper in line with valuable advances which had been made and which were being made in the pathology and treatment of the endometrium. It followed up the very important work which had demonstrated that the amount of endometrium obtained at curettage depended upon the menstrual cycle and had very little relation to infection. Bacteriologically, the work done by Dr. Curtis and others had shown that in the majority of cases the cavity of the uterus was sterile. Bacteriological invasion was limited to the cervix. This meant that curettage had been resorted to too often. There was almost no indication for curettage of the endometrium except for diagnostic purposes. The only reason that curettage had helped a number of cases of uterine leucorrhea was because it had dilated the cervix. The question of the cure of the infection was a very important one and one very frequently neglected. He emphasized the point that erosions of the cervix would almost invariably heal after the use of radium. It was very important to regulate the dose so as not to influence permanently the function of the ovary. The action of radium diminished the cellular tissue and increased the amount of connective tissue cells, and in this way it often acted as very efficient drainage of the deep glands of the cervix.

Dr. RANSOHOFF of Cincinnati asked Dr. Curtis whether he employed curettage preliminary to the use of radium, and if so, whether the curettage had any influence on the ultimate outcome. He had used radium for five or six years and he considered it contraindi-

cated in the presence of infection in the tubes. Whether the disease itself were of sufficient gravity to warrant rendering a woman sterile and to deprive her of the menstrual function at an early age was a question. He also asked the essayist what filtration he employed in using radium.

Dr. T. SALATICH of New Orleans called attention to the importance of malposition of the uterus in these cases. In the presence of backward displacement of the uterus treatment of the leucorrhea would not cause it to cease. He cited a case in which the patient's face was full of acne, and in which headaches and some joint trouble were complained of at times. The cervix was entirely devoid of mucous membrane. He curetted and applied iodine or other forms of medication after curettage, with good results.

Dr. CURTIS, in closing the discussion, said it was not necessary or indicated that one perform preliminary curettage. He had resorted to curettage only for diagnostic purposes, except in a few instances. Even in these cases it was not an advisable therapeutic measure. He did not believe radium advisable where the infection was in the deeper structures. He did not believe in giving enough radium to sterilize the patient, or to interfere with ovarian function. In three cases he had given enough to render the patient sterile. Regarding infiltration, he used a half millimeter gauze screen surrounded by dental rubber. Innumerable remedies had been tried for leucorrhea, but after a time none had prove efficacious.

Conservation of the Menstrual Function.—Dr. WILLIAM J. MAYO of Rochester, Minn., said the surgeon usually approached his work with the physical condition of his patient in view. He achieved tangible success, but sometimes without the gratitude of his patient. Physical success was sometimes obtained at the expense of nervous or psychic disturbances, whereas the same physical results might be obtained in some other way. The instability of the central nervous system was frequently the cause of unnecessary operations, the uterus, the ovaries, and the tubes being the chief sufferers. In malignant disease of the female genital organs radical operation was necessary; in cases of benign neoplasms and inflammatory disease, however, the future condition of the patient, psychic as well as physical, must be remembered. With the growth of knowledge the practice of removing the ovaries had largely given place to conservative operations, with the result that instead of the removal of the ovaries there had been developed a lot of tampering, often resulting in removal later. Patients sometimes returned with what they thought were adhesions. Adhesions located by the patient and not by the surgeon were of little significance. The lesson to be drawn from the study of the ovarian secretion in relation to the general endocrine system, and from the various experiments with ovarian transplantation, was that removal of the ovary was seldom indicated for inflammatory conditions, and that enough ovarian tissue should be left to maintain menstrual function. Removal of the ovary was seldom necessary for dermoid cyst. Independent of its rôle in reproduction the ovarian secretion had a marked effect upon the nervous system. Nervous and psychic influences were exaggerated by operations which stop the menstrual flow. Conservation of the ovary for the effects of its endocrine function was second only to the preservation of its reproductive function. The sacrifice of the reproductive and menstrual functions was not confined to the ovary, but applied to operations on the uterus, especially for myoma. Many a uterus had been sacrificed when myomectomy would have sufficed. After the age of forty-five, hysterectomy was probably the best procedure. It had been argued that myomectomy was more dangerous, but in a series of more than seven hundred cases this had not been found to be the case. In 743 cases secondary hysterectomy had been necessary in only ten. In this series 33 women had had one child, 11 had had two or more children, and 15 had normal pregnancies at the time of the investigation. Twenty-three women who were sterile at the time of the operation had borne children afterward. Radium in selected cases had no competitive standing with myomectomy. It might be more destructive than operation. One must sharply distinguish between conservation and non-operation. It had frequently been observed that women had borne children despite myomatous growths, and many such cases were being treated with radium. This was not wise. Menstruation might disappear never to return after even an ordinary amount of radium. Total hysterectomy was more satisfactory than subtotal. In closing, the essayist reiterated that conservation of the menstrual function was of the utmost importance even if pregnancy was not possible. The surgeon who removed all these tissues was assuming a great responsibility, for the nervous disturbance which resulted might be such that the patient could never readjust herself.

Dr. C. JEFF MILLER of New Orleans said it had not been his experience that myomectomy was more dangerous than hysterectomy. It had been considered more dangerous because of the possibility of hemorrhage, but advances in technique had overcome this. He was doing twenty-five to thirty per cent. more myomectomies than formerly. If one saved merely the mucous membrane one might preserve the menstrual function, but there was a likelihood of menorrhagia and sometimes metrorrhagia. He agreed with the essayist that total hysterectomy was more satisfactory than subtotal, and for the last three years in all cases in which the uterus had had to be sacrificed he had resorted to complete hysterectomy. There was no more hemorrhage, and the after-results were better than with sub-total hysterectomy. He employed the supravaginal method. He had contended all along that myomectomy was a more conservative operation than the application of radium. In a certain percentage the growth would return, but in the average case permanent shrinkage was obtained. For a single tumor in a young woman myomectomy was the operation of choice. After forty-five radium or more radical surgery might be employed. Resection of the ovary belonged to the surgical junk-heap. It was better to do a transplantation operation than to leave a small amount of ovary with the blood supply destroyed. He had had good results in twelve or fifteen cases. The patients continued to menstruate for from two to four years, then gradually ceased to menstruate without the disturbances associated with the abrupt cessation.

Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., said much of the damage in cystic conditions of the ovary was due to circulatory disturbance; when that was corrected the ovary regenerated itself and the so-called cyst dropped back into the pelvis.

Dr. ROBERT T. MORRIS of New York City said he had changed his mind so many times on so many subjects during the last thirty years that he had no confidence in anybody who had confidence in him. During these thirty years he had spoken on the main theme of Dr. Mayo's paper as one crying in the wilderness. There were three eras of practice, the heroic, the anatomic, and the pathologic, to which might be added a fourth, in which the patient was given home rule, turned over to himself or herself. In the third era, the pathologic era, the surgeon had conscientiously done an enormous amount of damage. He meant well but did not know. At the present time, with the new group diagnosis, the patient, like the prisoner at the bar, must await the decision of at least "twelve good men and true." The surgeon who boldly came to a conclusion as to when to operate and under what circumstances, would want to have personal knowledge of these "twelve good men and true." Conservation of the ovary had been overlooked, but when it began to receive attention there was a tendency to place the blame for symptoms upon the wrong organ. Conservation of the ovary might be obtained by means of ovarian grafting, a healthy part of the patient's own ovary being placed somewhere within her economy. The time would perhaps come when heteroplastic transplantation might be successfully performed. The graft was now destroyed by antibodies, but it might be possible to make antibodies which would be destructive to these other antibodies. Many men had argued in favor of the removal of the uterus in cases in which Neisserian infection was present, with its terminals. In view of the fact that spontaneous recovery sometimes occurred in these cases the surgeon should talk freely and frankly with the patient, telling her the possibilities of pregnancy if the ovary or a part thereof be left, and

other features of the case. The time had passed when the surgeon was a thing apart from his clientèle.

Dr. ALBERT J. OCHSNER of Chicago called attention to the frequency of reinfection in cases operated upon without removal of the uterus in patients from the lower walks of life, such as one encountered in clinics and city hospitals. In these patients the function should be abolished by the removal of the organs. He had recently looked up the literature concerning the relative mortality of myomectomy and hysterectomy, and had found that a large proportion of deaths after complete hysterectomy were due to pulmonary thrombus. The pulmonary thrombus was almost invariably due to lack of hemostasis. The correction of this by the proper use of sutures had greatly reduced the mortality.

Dr. MAYO, in closing, said the discussion had brought out the fact that the gynecologist, when he worked above the pubic bone, was a first-class general surgeon. A number of years ago Dr. Ochsner had called his attention to the matter of tying the sutures too tight in myomectomy cases, and since he had taken care not to tie them tight enough to cause bleaching of the tissues he had had no trouble.

Relation of Hyperplasia of the Endometrium to So-called Functional Uterine Hemorrhage (Lantern Demonstration).—Dr. EMIL NOVAK of Baltimore, Md., discussed the frequency of so-called functional uterine hemorrhage, a term which embraced such varieties as the hemorrhage of puberty, idiopathic hemorrhage, metropathic hemorrhage, and functional climacteric hemorrhage. In most cases of uterine bleeding the cause could be found in some pelvic organs. In some cases the cause was clear, the hemorrhage being due to the actual opening up of the blood vessels by erosion; in other cases the cause of the bleeding was not so obvious. The latter type was represented by inflammatory conditions. The class of cases considered in the paper represented those in which the bleeding occurred in the entire absence of pelvic disturbance. The various explanations as to their cause had been far from convincing. These types of bleeding occurred at the two extremes of menstrual life, being more frequent at the later stage. While there was usually no gross lesion, the endometrium often showed typical hyperplasia. This hyperplasia was characterized by overgrowth of the endometrium, sometimes showing several layers of epithelium, sometimes large and cystic glands, not endometrial cysts, however. The stroma was over-abundant, and sometimes mitotic figures were seen. These features were illustrated upon the screen by the findings in various cases. The fact that this hyperplasia and this functional bleeding occurred at the two extremes of menstrual life had given rise to the question of the possible influence of the endocrine system. Curettage in itself rarely cured these cases. When bleeding recurred after curettage, repetition of the curettage revealed endometrium just like that obtained from the first curettage. In other words, one merely scraped away an outward manifestation of an underlying cause. Radium and *x*-ray exerted a very beneficial effect upon this type of bleeding. It occurred during the period of ovarian function, and could be stopped by removal of the ovary. For these and other reasons it was believed that hyperplasia was not a primary condition, but that it was due to a disorder of the internal secretory function of the ovary. The lesson to be drawn from the study was that the gynecologist should not only look for the causes of uterine bleeding in anatomical conditions but should also search for disturbances of physiological function. Why say that hyperplasia caused abnormal uterine hemorrhage? Why not say that the hyperplasia was due to some underlying cause?

Dr. LUCIUS E. BURCH of Nashville, Tenn., said hyperplasia might be associated with cancer, abortion, fibroid tumor, extra-uterine pregnancy, and so-called endometritis associated with pelvic inflammation. Functional bleeding occurred only during the period of sexual activity and was not associated with any palpable or visible pathological condition of the uterus or appendages. Hyperplasia was a secondary condition, and the essayist's arguments concerning the etiological influence of endocrine disturbances seemed unanswerable. In his experience the curet did no good in this the treatment of the type of uterine bleeding under consideration, or in any other condition, and should be used only for diagnostic purposes.

Dr. NOVAK, in closing the discussion, emphasized the point that the bleeding in these cases was characteristically of the type of metrorrhagia which indicated that the corpus luteum exercised some influence. He agreed as to the limitation of curettage. If the endocrine theory of the causation of the disturbance be accepted, the question of treatment would necessarily involve organotherapy. This would differ in different cases. Corpus luteum by mouth had been used on the basis that ovarian change existed as a consequence of change in the corpus luteum. Repeated curettage might exercise a favorable influence perhaps by stimulating ovarian function. Treatment might be summarized, in sequence, as curettage, organotherapy, radium, *x*-ray, and possibly hysterectomy.

A Plea for Total Hysterectomy in the Operative Treatment for Fibroid Tumors of the Uterus in Parous Women.—Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., pointed out that all fibroids of the uterus did not require radical operation. Fibroids in non-infected, non-parous women did not mean total hysterectomy. His consideration of the subject was confined to parous women. The cervix of the parous woman was frequently the seat of lacerations and hyperplasia, and subtotal hysterectomy therefore failed to cure the leucorrhea, metrorrhagia, and backache. Better follow-up work had shown that cancer of the retained cervical stump after supracervical hysterectomy was more frequent than was generously supposed, the cervix with its ulceration and erosion paving the way for epithelioma. The fact that this was not fanciful was proved by the frequent finding of cancer in such cases. By personal communication and a review of the American literature he had collected 253 cases of cancer of the retained stump. All except five of the patients were married and had been pregnant or had had trauma of the cervix, such as dilatation and curettage, one or more times. These cases included all in which cancer made its appearance within a year after subtotal hysterectomy. It had been shown by routine sections in over nine hundred specimens that cancer existed in over two per cent. of all cases of subtotal hysterectomy, in cases in which there was nothing suspicious in the cervix at the time of examination, the cancer appearing in from five to twenty years. The parous cervix was always problematical and cancer could not be excluded by the absence of the finding of cancer cells in the scrapings. From his study of the subject he had concluded that when it was necessary to operate for fibroid tumors of the uterus in parous women, or those who had had trauma or infection of the cervix, total hysterectomy was the operation of choice. The technique which he employed was described by means of lantern slides.

Dr. EDWARD E. MONTGOMERY of Philadelphia said the history of malignancy had shown that in the majority of cases the cervix was the seat of the disease, in women who had given birth to children, this portion being subjected to the greatest injury. There was interference with the circulation of the cervix after removal of the body of the organ. It was not difficult to understand why malignant degeneration should involve such a cervix. It was not always so easy to perform the operation of total hysterectomy as one might suppose from the slides presented by Dr. Polak. Numerous technical difficulties might arise. It was sometimes necessary to remove a number of fibroid growths before one could proceed with the operation.

Dr. SCOTT of Memphis, Tenn., thought it would be interesting to know how many thousands of subtotal hysterectomies were performed in the series from which the 253 cases mentioned by the essayist were taken,—probably twenty-five thousand. In the nine hundred cases mentioned doubtless quite a large per cent. would have died. In the two per cent. of cancer the patient still had a chance for life. He believed that there were cases of cancer which existed at the time of the subtotal hysterectomy, and if the operator were careful enough he would be apt to find an extensively diseased cervix. He did not advocate supra-vaginal hysterectomy in every case in which the cervix was diseased, but if the patient were properly examined in every case where this operation was contemplated

there would be no occasion for overlooking the disease so often.

Dr. POLAK, in closing the discussion, referring to Dr. Montgomery's remarks concerning the difficulties of the operation, said the unskilled man would have difficulty, but if he would follow out the technique as shown it was amazing how he would be able to do his more difficult cases. The same applied to the Wertheim operation. By isolating the ureters in simple fibroid cases he would soon find that he could isolate them in the more difficult cases. It was seldom that one could make serial sections of the entire uterus in these cases. In the nine hundred cases to which he had referred serial sections had been made.

Hernia of the Ovary.—Dr. WILLIAM W. GRANT of Denver, Colo., thought hernia of the ovary had received less consideration than it deserved. Although long known, little had been written about this condition because of its infrequency. Of the few cases reported, the majority had been of the inguinal variety, the femoral type being very rare. He reported two cases of crural hernia with operation. The diagnosis was generally determined at the time of the operation. There was no absolutely conclusive evidence of the contents of the sac except by demonstration. The technique employed in the correction of this condition was described in connection with one of the cases reported. The character of the operation was governed by the conditions existing in each case.

Dr. GEORGE H. LEE of Galveston, Texas, reviewed briefly the cases of hernia reported. From the statistics recorded it would seem that inguinal hernia occurred sixteen times as frequently as femoral hernia. Femoral hernia was more frequent in women than in men. Relaxation, intraabdominal pressure and child bearing were concerned in the causation of the condition.

Dr. GOLDSPOHN recalled a case of hernia of the ovary in a woman eighty years of age, which was relieved by operation. During the operation the ovary was found in a strangulated mass. The patient recovered and so far as he knew there was no recurrence.

Dr. GRANT, in closing the discussion, said it was the usual experience that the diagnosis of the contents of the sac in these cases could be made only by examination. In the specimen which he presented he thought the cyst present was ovarian rather than parovarian because of the character of the contents. Ordinarily a parovarian cyst was filled with a white, clear liquid, whereas an ovarian cyst contained a straw-colored liquid. Whether the original hernia was the ovary or a cyst he did not know.

Results of the Exposure of Animal Ovaries to the Rays of Radium (Lantern Demonstration).—Dr. JOHN M. MAURY of Memphis, Tenn., demonstrated the changes which take place in the ovaries as the result of exposure to the rays of radium, showing the difference between the treated and the untreated ovary. The theory was that radium exerted an effect upon the young follicles. No account seemed to have been taken of the effect of the radium upon the endometrium. He had not been able to substantiate the theory by microscopical examination. It was necessary to examine a large number of normal ovaries in order to determine the changes which took place under the radium rays. The difference between the ovaries of the rabbit and the human had to be taken into account. After the application of radium the animals were killed, this being done at varying intervals, the ovaries removed, and paraffin sections made as soon as possible. Serial sections were made, about 150 or 200 sections of each ovary. The ovaries varied in size, this variation being attributed to the number of corpora lutea present. The connective tissue cortex varied. The greatest variation was in the condition of the follicles; in some there were no follicles alive or dead, in others they were present in varying stages of degeneration. The blood vessels showed no sign of endarteritis. Some of the animals became pregnant and did not miscarry. From this study it was concluded that six hundred milligram-hour doses of radium did not produce degenerative changes in the follicles of the ovary.

Dr. HENRY SCHMITZ of Chicago, in studying the literature of the subject under discussion, had been surprised at the difference of opinion regarding the effect of radium rays upon the ovary. Dr. Maury's observations were timely and valuable. From his own observations he was convinced that, for physical reasons, radium, as ordinarily employed, could exert no effect upon the function of the ovary. Dr. Maury had shown its impossibility from a biological point of view.

Second Day—Thursday, April 29.

Abnormal Lactation (Lantern Demonstration).—Dr. MATHIAS J. SEIFERT of Chicago based this consideration of the subject on a surgical case of eccyesis. He gave a comprehensive review of the literature, including the consideration of lactation from its different social aspects—in the society woman, in the woman of the poorer classes, and in the woman of the tribes and races of uncivilized peoples; the importance of normal lactation to the well-being of a mother and her offspring; a discussion of the common belief that lactation prevented conception, with statistics; overlapping pregnancy and lactation; hyperlactation in its relation to pelvic inflammations, and in relation to diseases of the eye and brain; reports of cases of lactation in the infant, in the virgin, in the superannuated female, and in the male; reports of abnormal lactation in animals. A thorough understanding of the function of these glands was indispensable.

Dr. WILLIAM KOHLMANN of New Orleans, La., called attention to the possible legal significance of abnormal lactation. From a practical point of view it was most important, especially defective secretion. Hypersecretion began with an amount above two pints a day. Many women were inclined to secrete a great deal of milk when they were not well and strong. Under such circumstances the milk was not of good quality, and had a bad effect on the digestive organs of the child. There seemed to be a decreasing number of mothers able, because of lack of secretion, to nurse their children, and there was little that could be done to stimulate secretion. Keeping up the nutrition and regulating the general health were important in this connection.

Intrauterine Insufflation of Oxygen (Artificial Pneumoperitoneum) for the Determination of Patency of the Fallopian Tubes in Cases of Sterility.—Dr. ISADOR C. RUBIN of New York City recognizing the impossibility of determining the patency of the Fallopian tubes by physical examination, had made injections of substances opaque to the roentgen ray, such as collargol and thorium, into the uterine cavity for the purpose of determining whether or not the Fallopian tubes were open in any given case of sterility. This had been tried in a limited number of cases. He had recently supplemented this by the intrauterine inflation with oxygen, and had found this procedure of far greater value. In cases with patent tubes the oxygen passed into the peritoneal cavity and produced an artificial pneumoperitoneum, which was easily demonstrated by fluoroscopic examination. He had employed the method in about thirty-five cases, in none of which had there been any untoward symptoms or sequelæ. The patients had left for home immediately after the examination, and had returned for subsequent observation. The technique and apparatus employed by the essayist were described by means of lantern slides. He showed the picture of a woman of more than forty who had been sterile for over twenty years, the sterility being attributed to fibroids. He attempted inflation and found that the oxygen did not go through the tubes. He at once concluded that the tubes were the cause of the sterility and that the fibroids were incidental. At operation a double hydrosalpinx was found. The same volume of oxygen which could be introduced clinically could be introduced into this extirpated specimen. The essayist presented on the screen a table showing the results in thirty-three cases, which were studied from the points of view of the diagnostic value of the method, the safety of the method, including the question of infection; the question of embolism; the practical problem of how much to introduce and under what pressure. In the cases in which no pressure was used there were no peritoneal symptoms. In selected cases the method obviated the necessity of surgical exploration, and was particularly serviceable in obscure cases.

Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., con-

sidered this a most ingenious method for establishing the patency of the tubes. In the series reported by the essayist there had been no calamities, and yet the speaker was not convinced that it was a safe procedure to introduce oxygen into the peritoneal cavity by way of the Fallopian tubes. The irritability of the uterus was to be considered. In some women the manipulation of the cervix or the introduction of anything into the cervix would cause violent intrauterine contraction. The selection of the cases was a difficult problem which, in his opinion, militated against the general use of the method, despite its many apparent advantages. The investigation of the factors which produced sterility in a given case was of importance. In a series of six hundred cases investigated it was found that four hundred had tubal disease. This was definitely proved in over fifty per cent. of the cases by abdominal section, to which the patients consented. In ninety cases investigation showed the man to be absolutely impotent. The history of the case was a significant factor in determining the cause of sterility. In many of the conditions which contributed to sterility it was much safer to resort to abdominal section than to inflate the tubes and peritoneum with gas.

Dr. RUBIN, in closing the discussion, said the objections raised by Dr. Polak were not unknown to him. These very objections had had to be overruled, and the only way they could be overruled was by actual experimentation. So far as the irritability of the uterus was concerned, he had found that the vast majority of patients tolerated the oxygen very well. The introduction of oxygen was more of a procedure, so far as the tolerance of a diagnostic method was concerned, than was the introduction of a cystoscope, and the bladder was no more sensitive to the cystoscope than was the uterus to a sound. There were cases, of course, in which the method under consideration could not be used, but even in these cases it was absolutely safe. Of the safety of the method he was absolutely sure. It was surprising to see how much pressure the uterus would stand. When the tubes were not potent, absolutely closed, no oxygen would go through. He was convinced that the method had a distinct field of application.

The Treatment of Obstinate Occipitoposterior Positions.—Dr. JOSEPH B. DELEE of Chicago sent this paper which, in the absence of Dr. DeLee, was read by Dr. Francis Le S. Reder of St. Louis. In spite of all that had been said concerning this mechanism, it was frequently overlooked. It was responsible for thousands of infant deaths and many material deaths each year, and caused great maternal and infant suffering. In the majority of cases, if given time enough, rotation would take place spontaneously, the case terminating as an occiptoanterior. The majority would so terminate without injury to the mother or the child. In some cases, however, the labor would be so prolonged that both mother and child, particularly the child, would suffer injury. The word obstinate was applied to occiptoposterior positions that remained such. The most important matter in cases of abnormal rotation was their recognition. The various contributing factors were considered. There were two classes of cases, those in which the head was engaged, and those in which it was above the inlet. When the head was high and floating, interference was not necessary. Careful search should be made for conditions which should be treated. Watching and waiting were necessary. The patient should lie on the side to which the occiput pointed. Morphine and scopolamine were indicated in the early stage, but one should not let the labor drag on too long. After complete dilatation of the cervix one should wait an hour or two for the head to engage; if it did not engage, two procedures were indicated—first, version, followed by extraction; second, manual correction of the position, under deep anesthesia. Manipulation might fail for various reasons, when cesarean section was indicated. A warning was sounded against the use of forceps in high head cases. The child was always injured, sometimes killed, and the mother always injured. The details of the procedures employed by the essayist were given.

Dr. NEWMAN of San Diego, Calif., considered the condition under discussion one of the bugbears of obstetrics; it always had been, and he feared it would continue so in spite of the admirable paper and valuable suggestions of Dr. DeLee. Many factors had to be considered—the delay; the possibility of injury to the child; the mischief done to the soft parts of the mother; dealing with the case not too hurriedly, not without careful diagnosis, not without knowing fully the conditions present. The essayist had vision, and while he had added something to the sum total of dealing with these cases, yet the speaker thought there were other hopeful methods, among which might be mentioned the observation of the case without interference, without disturbing nature's method of handling these cases. A large percentage of these cases, if not handled too hurriedly, would progress satisfactorily, and birth would take place without accident. On the other hand, where conditions pointed to mischief and injury, trouble should be forestalled by doing work which would be effective and he thought cesarean section might be called into play here for the well being of both child and mother. One should not be too hasty in resorting to operative procedures, but one should also consider the after-health, the morbidity, that resulted from these procedures, and the injuries from which neither mother nor child ever recovered.

Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., said the cases under consideration could be classed broadly as those in which the head engaged, and those in which it did not. Whenever the head did not engage there was apt to be present some obscure condition which prevented its doing so. In other words, there was a faulty inclination of the pelvis, the most frequent manifestation of this being found in funnel pelvis. The higher degrees of funnel pelvis all had faulty inclination, and these were the cases that did not engage. Where the head engaged, in the majority of cases delivery could be made per vaginam. In his clinic he and his associates had long since given up vaginal examination, using rectal and abdominal examination instead. They used no bags or other methods of dilatation. Rest by morphine and scopolamine was advocated. When the head did not engage he felt very certain that supravaginal delivery was a safer procedure, in the interest of the child, than any intravaginal method. A large number of children delivered by the latter procedure died later from cerebral compression. He added his protest to the Scanzoni method.

Dr. CAREY of Chicago said the relative size of the head must be taken into consideration. There was a great deal of difference. There was nothing very terrible in going up and changing the position of the head that had become fixed posteriorly into an occipitoanterior position. When once converted into this position it must be left so. Where the baby was dead, by holding the head with vulsellum forceps for a while it would come down without further difficulty.

The Policy of Noninterference in the Treatment of Postabortive and Puerperal Infections.—Dr. EDWARD L. KING of New Orleans based this report on several hundred cases which had been treated in the Charity Hospital of New Orleans, where for five years a special ward had been set aside for the handling of cases of infections on the white obstetric service. Operative procedures had been limited to the drainage of definitely established and easily accessible pus collections. No patients requiring major operations were admitted to the ward, with the exception of an occasional one who required the "rest treatment" before operation. The temptation, therefore, to operate on unprepared cases, in order to increase the "turnover" of operative work, had been eliminated. The mortality following the plan of treatment had been very low, and the results, with reference to the ultimate condition of the pelvic organs, had been most gratifying.

Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., agreed with the essayist with regard to the wisdom of expectancy, and yet there were cases in which a little judicious intervention was needed. Fowler's position to facilitate drainage, turning the patient on the side from time to time, and repeated small transfusions with citrated blood in cases of bacteriemia, were some of the measures mentioned.

Dr. KING, in closing the discussion, thought Fowler's position did good, but in two fatal cases autopsy

showed nothing with regard to this matter. He had not tried repeated small transfusions. He had tried one large transfusion, but without benefit.

The Management of Acute Appendicitis in the Later Weeks of Pregnancy. Report of a Case Treated by Cesarean Section and Appendectomy.—Dr. JAMES M. MASON of Birmingham, Ala., based this paper on a case of appendicitis developing within the last three weeks of pregnancy. The woman, a primagravida, was due to be confined in the latter part of January, 1920. She had had previous attacks of slight indigestion, suggesting appendicitis. She had had an attack of toxemia, manifested by an attack of nausea accompanied by casts in the urine. She had recovered after ten days in bed. Early in January she was awakened in the night by pain, nausea and vomiting, the pains being over the lower abdomen. Uterine contractions could be seen and felt. There was no tenderness over the abdomen. The urine showed a few hyaline casts, no albumin. Vomiting continued through the day, and the temperature and pulse were high. The symptoms persisted during the next day. Vaginal examination showed the head low down in the pelvis. Continued vomiting and high leucocyte count, together with pain in the right iliac fossa led to the diagnosis of appendicitis. Cesarean section was performed, under gas-oxygen anesthesia, sixty-six hours after the onset. The fetus was extracted, the abdominal incision retracted the appendix, acutely inflamed, was located low down in the pelvis, and appendectomy was performed, followed by uneventful recovery. The high mortality attributed to appendicitis during pregnancy was due to failure to recognize the condition and to treat it along well recognized lines. Appendicitis occurring during the later stages of pregnancy called for immediate operation, prompt interference being demanded as soon as the diagnosis was made. In making the diagnosis some time must inevitably be lost in determining the cause of the pain. Repeated observations must be made, and the tendency of pain to be referred to the iliac fossa must be given due weight. Severe persistent pain called for operation, which might be exploratory in some cases. At this late stage the child was in no danger from the termination of the pregnancy. The question immediately arose as to whether one should terminate the pregnancy first or remove the appendix. The essayist advocated terminating labor first and performing appendectomy afterward, the danger of the spread of infection to all parts of the abdominal cavity being thus lessened. Pregnancy under these circumstances should be terminated by no slow and uncertain method. Cesarean section seemed best to meet these requirements, but each case should receive careful individual consideration before deciding upon a plan of treatment.

Dr. A. H. CURTIS of Chicago said that occasionally a diseased appendix must be removed irrespective of the stage of pregnancy. Not only should the appendix be removed in acute cases, but in every case, as one never could tell when complications might arise. He used novocain local anesthesia in such cases. The existence of a diseased appendix called for especial care in the closure of the abdominal wound. He used strong ligatures, making a figure-of-eight suture, so that there would be no hernia when the fetus was delivered through the normal channel.

Dr. FRANCIS LE S. REDER of St. Louis, Mo., thought it would be a good thing if women were instructed to have themselves thoroughly overhauled before subjecting themselves to conception, and in case of an attack of appendicitis, to have the appendix removed during the interval. Up to the fourth month of pregnancy the diseased appendix could be removed with comparative safety; from the fourth to the seventh month this safety became a danger; but from the seventh month on pregnancy complicated by appendicitis called for the exercise of careful judgment in the management of the case. It had been his observation that appendicitis in the seventh month or later did not show the same virulency as in the earlier cases, and in some cases in which the recommended operation had been refused the woman had gone on without trouble. Should the condition be such, however, as to make it extremely unsafe for the patient to go on without intervention, what course should be followed? He was inclined not be to hasty, but to study the condition, and as long as it remained within the limit of safety not to resort to surgical interference. Should the condition go on to suppuration, a puncture, not through the vagina but through the rectum, and evacuation of the pus would sometimes suffice, without disturbing the pregnant uterus. The risk of operation for a pregnant woman at seven months or later was extremely great. The wound would, through the stress and strain of the abdominal distention, probably break down and become infected. As to cesarean section, he considered it a great risk, a severe step to take.

Dr. DAVID ROSS of Indianapolis thought the question of the advisability of operating at any given time in appendicitis complicating pregnancy was a matter of individual judgment. If there were any definite means of telling that the appendix would go on to suppuration and rupture, all would choose operation, but little could be foretold as to what would be the outcome. The thing that had impressed him most in the paper was the suggestion of cesarean section in the face of such infection. He would not subject any woman to this operation in the presence of a ruptured appendix.

Dr. MASON, in closing the discussion, emphasized the opinion that a pregnant woman with appendicitis, in no matter what stage of the pregnancy, was in a dangerous condition, not because of the pregnancy but because of the appendicitis. No one could tell which case would go on to rupture and which would get well, hence he advocated the surgical principle that appendicitis should be operated early. Cesarean section, with the present-day technique, was an exceedingly simple operation, and much safer than removing the appendix and leaving the uterus intact, with the danger of labor coming on and the possibility of peritonitis. Extraperitoneal cesarean section under gas-oxygen anesthesia seemed to him the safer course.

Third Day—Friday, April 30.

An Operation for Pruritus of the Vulva and Anus.—Dr. CARROLL W. ALLEN of New Orleans contributed this paper, which, in the author's absence, was read by Dr. E. Denegre Martin of New Orleans. The technique was described of an operation the object of which was to divide all nerve filaments to the affected parts, thereby preventing all painful or itching sensations. The skin or mucous membrane of the affected area was separated from the underlying tissue by a series of incisions. The course, direction and general plan of these incisions varied with the parts involoved, but as a rule they were made to radiate from the center outward. The strips of skin thus made were dissected up from the underlying tissues, but were left attached at their two ends. The space beneath was packed with iodoform gauze to prevent immediate union. The pack might need to be changed occasionally, but generally remained in place one week. After granulations become established the packing was removed. The total disability was generally about two weeks. Relief was permanent.

Dr. E. DENEGRE MARTIN of New Orleans thought soap and water would be useful in these cases, especially in the very common milder cases. In those operated upon he doubted whether the results were permanent, and thought it would be advantageous to find some method of treatment in which confidence could be placed.

Prolapse of the Urethra in the Female. (Lantern Demonstration.)—Dr. RICHARD R. SMITH of Grand Rapids, Mich., presented this paper for the purpose of calling attention to this condition, to describe it, and to offer simple means for its correction. So-called bladder symptoms were among the most annoying that arose from childbirth injury, and were due partly if not entirely to loss of the structures anterior to the vagina which supported the bladder and urethra. Far more attention had been given to the perineal tear than to the results of these anterior defects. It was difficult to understand why this oversight was of such common occurrence. It was only recently that cystocele had received the attention it deserved. When a woman complained of urinary retention or other symptoms traceable to the bladder a systematic examination of the bladder and upper urinary tract should be made in terms of infection, and mechanical defects should be

looked for. If one found a cystocele the examination should not stop here; due consideration should be given to the integrity of the posterior and anterior vaginal walls. The meatus urinarius should not be overlooked, as was so apt to be the case. With the patient on the back this would protrude but little; but if the woman were asked to strain, if there had been injury to this region the meatus and the anterior vaginal wall would roll forward. The condition of the meatus was most important. The mucosa at the lower end of the urethra rolled out of the meatus, exposing the body of the anterior canal. It would be found to have two small lips, torn and stretched, forming very imperfect protection to the mucosa within. The mucosa was often the sort of caruncule. If one asked such a patient, up and about, if she experienced discomfort in this region, she would answer in the affirmative. Clothing and bathing irritated the parts. Practically all her symptoms might be those mentioned. Frequency of urination had many causes, the trouble usually being located in the urinary tract above the meatus, but it might be below. The passage of urine over a swollen and irritated meatus produced burning and irritation. In considering cystocele it was important to see if the urethra was prolapsed. Operation for the correction of prolapse of the urethra would vary according to the circumstances. Caruncule or protruding mucosa must be removed, this being done very carefully. Very fine stitches might occasionally be necessary. Closure of the meatus usually was all that was necessary. This was accomplished by a very simple procedure, which varied more or less according to the case. The details of the operation were shown by means of lantern slides.

Dr. S. M. D. CLARK of New Orleans considered the condition under discussion an important one, causing untold annoyance to those afflicted with it. Many procedures had been devised for its correction. He was working along this line in 1913, when one of his associates reviewed a paper by Murette of Paris, who held that the walls of the urethra are parallel, and that the external urethra had very little to do with the control of urine. In childbirth, when the structures which supported the anterior vaginal wall were injured, instead of this parallel condition of the walls of the urethra, this canal became funnel-shaped. Murette had devised a procedure for the restoration of the parallel relationship of these walls. The speaker had employed this operation in his clinic with satisfactory results. In the removal of caruncule and hypertrophied mucous membrane he had found the Paquelin cautery very useful.

Dr. A. H. CURTIS of Chicago called attention to the importance of examining these patients in the standing position. With the patient lying down it was easy to overlook relaxation of the urethra or even prolapse of the uterus. The most frequent type of urethral caruncle was found with a moderate prolapse of the urethra with redundancy of granulations on this prolapsed tissue. Corrective measures involved not merely the removal of the caruncle but a reparative operation for the prolapse of the urethra and cystocele. If this were done there would be no recurrence.

Dr. SMITH, in closing the discussion, said he had purposely omitted the discussion of cases of incontinence, because the operation which he described was insufficient in these cases. He had purposely, also, omitted operations for cystocele. Dr. Curtis' suggestion with reference to examining the patient in the standing position was a good one. He agreed with this speaker with regard to recurrence of caruncle after merely snipping it off. The mucous membrane must be protected by making a denudation, then bringing the surface well up out of the way.

Cysts of the Pancreas (Lantern Demonstration).—Dr. JOHN J GILBRIDE of Philadelphia, Pa., presented this demonstration of the different varieties of cysts associated with the pancreas. Many cysts supposed to be cysts of the pancreas were not true pancreatic cysts. The fact that a cyst appeared to be connected with the pancreas did not establish its pancreatic origin. The cysts of the pancreas were due to obstructed duct and retention of fluid—so-called retention cysts. There were also proliferation cysts, due to proliferation of the structures of the gland, which included cystic adenoma and carcinoma. Hydatid cysts of the pancreas were occasionally encountered, and the gland sometimes became involved in a general cystic condition. Hemorrhagic cysts were due to trauma, but the presence of blood in a cyst was no indication of this origin, as it might be due to erosion. The great majority of cysts encountered by the surgeon and reported in the literature were so-called pseudo-cysts. It was difficult to determine whether a cyst was a true cyst or a pseudo-cyst. Nicholas Senn had said that it would be impossible for a cyst to originate in the pancreas, as the gland would absorb the secretion. Proliferation cysts, however, arise as true pancreatic cysts. Pseudo-cysts were due to the accumulation of pancreatic secretion of an abnormal character. Many factors had been suggested as concerned, among them the presence of gallstones, chronic pancreatitis, and fibrous tissue formation. Cystic tumors might be situated in any portion of the gland; they might be unilater or bilater, unilocular or multilocular, and a number of small cysts might be found in the larger cyst. True pancreatic cysts were usually lined by a flattened layer of cylindrical epithelium, which frequently disappeared. Pseudo-cysts were never lined by epithelium, their walls being always formed of connective tissue. Pseudo-cysts and cysts were often found in the same patient. The origin of cysts in the neighborhood of the pancreas had not received sufficient study, and in most instances the fluid contents of the cyst had not received careful examination. Little information as to the origin of the cyst was furnished by its contents, but the detection of ferments in it was of diagnostic significance. The symptoms were frequently referable to disturbances of digestion, flatulence and distress after eating, pain, burning in character, sometimes colicky, nausea and vomiting, sometimes diarrhea, being among the symptoms noted. Blood might be found in the gastric contents, in the feces, or in both. There might be dilatation of the superficial veins of the abdomen. Some patients lost a great deal in weight, giving rise to the suggestion of malignancy. When jaundice occurred the cyst was located in the head of the gland. The cyst was usually spherical and smooth. Its position might be in the median line, between the ensiform cartilage and the umbilicus, the most common location being between the stomach and the transverse colon. It might project below the transverse colon, pushing the colon with it. The part of the gland most frequently involved was the tail. Treatment involved exposure of the cyst, examination in relation to surrounding structures, drainage and fixation to the abdominal wall; exposure, fixation and subsequent opening and clearing out; or extirpation. Aspiration had been suggested, but should not be used except for drainage. Some surgeons opened anteriorly and made a counter opening posteriorly, but drainage anteriorly was quite sufficient. The injection of chemicals into the cyst should not be done.

Dr. MOSES BEHREND of Philadelphia, Pa., classified cysts of the pancreas as acute and chronic, the acute being those operated upon within the first week, the chronic those which had been in existence many months and even years. It was not necessary to remove these cysts, but sew the cyst wall to the parietal peritoneum, pack with gauze, and leave the gauze in for at least eight days.

Dr. HARTWIG of Los Angeles, Cal., said if there were no glands in the syst wall the cyst could be emptied by the simple procedure of introducing a catheter fitted into an ordinary trocar, smearing the catheter with vaseline so that it would pass in easily, yet fit, and withdrawing the tube of trocar while pushing in the catheter.

An Improved Technique for Cholecystectomy Based on an Anatomical Study. (Lantern Demonstration.)—Dr. MOSES BEHREND of Philadelphia, Pa., described this technique by means of lantern slides, first reviewing the history of cholecystectomy. Some surgeons had performed the operation without strict regard to the anatomy of the gall-bladder and its ducts. The closed method of operation, the ligation of the cystic duct by what he called the "hit or miss" method within the gastrohepatic omentum, might result in injuries to the common duct, the hepatic duct and the hepatic artery. The ligation of the cystic duct at an improper level might result in leaving too much or too little

of the cystic duct. By the method which he employed each step in the procedure was visualized. With the patient in a suitable position, he operated from below upward, opening the right free border of the gastrohepatic omentum, which made it possible to see all the structures. The many variations in anatomical arrangement of the structures involved were illustrated by lantern slides to further emphasize the possibilities for danger in the closed method of performing cholecystectomy. These studies were based on the examination of one hundred and sixty-seven cases.

Dr. ALFRED C. WOOD of Philadelphia, Pa., considered his operation very important as affording an opportunity to see every step of the procedure. The many variations in the relationship and arrangement of the cystic duct and cystic artery, as shown in the slides, furnished ample justification for this method in contradistinction to the closed operation. The duct and artery should not be ligated together. The operation, however, was not quite as simple a procedure in practice as in illustration, especially in a stout patient. The ducts were very deep and hard to find, and the patient should be properly posed. It made little difference whether one did or did not cover the stump, provided there was no bleeding. He had seldom found it necessary to drain. This plan of performing cholecystectomy was followed by rapid recovery and perfect health. In some cases of long standing it was not possible to do an ideal operation. When inflammatory conditions had so changed the anatomical relations that he could not follow the essayist's plan, he sometimes proceeded from below upward.

Dr. HAEBERLIN of Chicago considered the crucial point of the technique getting sufficient exposure to know what one was doing. However, in some cases it was advisable to operate from above downward. Closure by primary union was the ideal method.

Dr. SEIFERT of Chicago emphasized the importance of severing the gall-bladder as near to its origin as possible, otherwise the stump would take the place of the gall-bladder and stones would form.

Dr. JOHN J. GILBRIDE of Philadelphia said in ordinary cases of cholecystectomy one would encounter no difficulty, but in other cases one could not be too cautious. He cited the case of a woman operated upon for removal of the gall-bladder, who would not remain in the hospital, but went home before the wound had closed. She was placed under the care of another physician who dressed the wound. A short time afterward she developed fever, became profoundly jaundiced and had all the symptoms of infection. She returned to the hospital, very much perturbed about her condition. He waited until he obtained a specimen of her feces, which he examined himself, and found bile in the feces. Roentgen examination was negative as to gallstones.

Dr. QUAIN of Bismark, N. D., had used for the last few years a transverse incision for gall-bladder exposure instead of the longitudinal or oblique. It was more logical from an anatomical point of view. The arrangement of the skin indicated such an incision, which left practically no scar, whereas the longitudinal or oblique incision always left a scar. The deeper structures, likewise, were arranged longitudinally, and in closing the tissues simply fell together. The abdominal wall was supplied by the intercostal nerves, which were destroyed in the majority of instances, meaning a weakening of the abdominal wall inside of the incision, rendering the patient more liable to hernia. The peritoneum was also supplied by the intercostals, and destruction of the nerve supply rendered more probable the formation of peritoneal adhesions. The blood supply was from the deep epigastric which anastomosed with the mammary; the transverse incision gave the best opportunity for reconstruction of the blood supply. The rectus muscle was cut across, but that was the least important abdominal structure because it healed without trouble. Exposure was along the line of the common duct, which could be examined more easily. The stomach, too, could be examined more easily. In thirty per cent. of cases in which he made the transverse incision for gall-bladder disease the appendix could be removed. The patient was more comfortable after the transverse incision than with the longitudinal or oblique.

Dr. RICHTER of Chicago was inclined to believe that the anomalies of which the essayist had given such interesting illustrations were of no great importance. They should be seen and dealt with as one went along. He agreed that the stump might form gallstones, necessitating re-operation. It was not necessary to suture the surfaces left by removal of the gall-bladder. The gall-bladder practically always occupied a depression, and when it was pulled out of the depression little flaps of tissue would cover it. Adhesions found in gall-bladder surgery were due much more to packing and drainage than to leaving raw surfaces. In practically all cases the wound could be closed without drainage.

Dr. DEHREND, in closing the discussion, agreed with Dr. Wood that the cystic duct and artery should be ligated separately, not together. It made no difference how many adhesions there were, there would be no trouble if one opened gastrohepatic omentum. The time required for the operation was from five to twelve minutes from the making of the incision to its closure. The gravity of the operation was no greater than that of appendectomy. One must know, however, how to use the left hand, and how to use retractors and sponges in the abdomen. The operation could be done from below upward very much more easily than from above downward. He took issue with Dr. Richter regarding the importance of the anomalies shown in the slides. He considered them of tremendous importance. Knowledge of them would prevent injury to the common duct and the hepatic duct.

Appendicitis Caused by Ameba Dysenteriæ. Post operative Perforation of an Amebic Ulcer of the Cecum. (Lantern Demonstration.)—Dr. EDGAR P. HOGAN of Birmingham, Ala., based this paper on the report of a case and a review of the literature. The patient was a negro man, thirty-three years of age, resident of Birmingham, Ala. He did not remember ever having had diarrhea. Three days before he was seen by the essayist he became suddenly ill, with pain in the abdominal region, later localized in the lower right quadrant. He was fairly well nourished, had a temperature of 101°, pulse of 90, heart and lungs were normal. Pressure over McBurney's point elicited intense pain. The leucocyte count was high. The diagnosis of appendicitis was made, and the appendix was removed through a right rectus incision. The appendix was long and in an inflammatory condition. The case seemed to be one of typical acute appendicitis, and the convalescence progressed in an apparently normal manner for five days, then blood appeared in the stools, repeated intestinal hemorrhages occurred, the patient grew worse, and died on the seventh day. Autopsy revealed general peritonitis due to a ruptured cecal ulcer, with other ulcerative lesions in the cecum and proximal colon. The pathological findings indicated the presence of *Endameba hystolytica*. From the study of this case it was concluded that intestinal amebiasis might be present without symptoms of diarrhea or dysentery; that *Endameba hystolytica* might invade the appendix, producing typical symptoms of appendicitis; that every appendix removed should be examined and the cause of disease established; and in case of death autopsy should be secured.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NERRASKA STATE BOARD OF MEDICAL EXAMINERS.

November, 1919.

ANATOMY.

1. Draw the proximal one-third of the femur, including the head and neck, indicating the attachment of muscles.
2. Draw the dorsal surface of the bones of the tarsus, and name the bones.
3. Describe the shoulder joint, and name the ligaments of the shoulder joint.
4. Describe the biceps muscle.
5. Describe the deep palmar fascia.

6. Give plan or describe the relations of the common carotid artery.
7. Name the branches of the facial artery.
8. Name the branches of abdominal aorta.
9. The Gasserian ganglion is made up in the main from what nerve? Name the three large branches of the ganglion.
10. Give the length and relations of the first portion of the duodenum.

PHYSIOLOGY.

1. What is the function of the nose in respiration? What are the causes and effects of mouth breathing?
2. Describe (a) living tissue, (b) dead tissue, (c) and metabolism.
3. Describe and give function of the cerebellum.
4. Describe (a) chyme, (b) chyle.
5. Name the three most important groups of food stuffs that produce muscular energy.
6. What is the normal amount of blood in the body? How restored after hemorrhage?
7. Give the physiology of (a) hunger, (b) thirst.
8. What is meant by reflex action? Give its physiological circuit.
9. Describe the pulse. What factors influence it? What is the normal pulse rate in (a) infancy, (b) youth, and (c) age?
10. Name five digestive secretions. How does each affect the food?

CHEMISTRY.

1. (a) Differentiate between physical and chemical phenomena. (b) Give examples of each.
2. What is an element? (b) A compound? Give an example of each.
3. Name 10 elements found in the human body.
4. What is a mixture? Give an example of two physical and two chemical mixtures.
5. What is a monad? Dyad? Triad? Tetrad? Pentad? Give an example of each.
6. Give symbol, valence, atomic, and molecular weights of hydrogen, oxygen, sulphur, mercury, gold, nitric acid, and sulphuric acid.
7. What is the meaning of the terms (a) formula, (b) equation, (c) reaction, (d) function? Give an example of each.
8. What are the post-mortem appearances of acute phosphorus poisoning?
9. What are the common names of As_2O_3? $HgCl_2$? Do they have any toxic properties?
10. What is glycogen? Where found? Test for same?

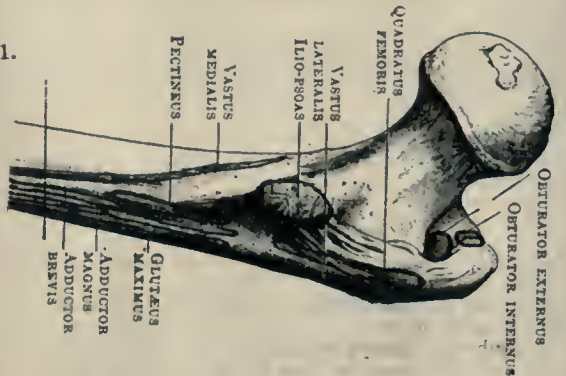
PATHOLOGY.

1. (a) What tissues of the intestinal canal are most commonly affected in typhoid fever? (b) What four stages characterize the pathological process in these tissues?
2. Differentiate microscopically hypertrophic endometritis from adenocarcinoma of the uterus.
3. Describe the modus operandi of focal infection.
4. Discuss the pathological process of infection in acute appendicitis to the point of perforation.
5. Describe the microscopical picture of a tubercle in tuberculosis.

ANSWERS.

ANATOMY.

1.



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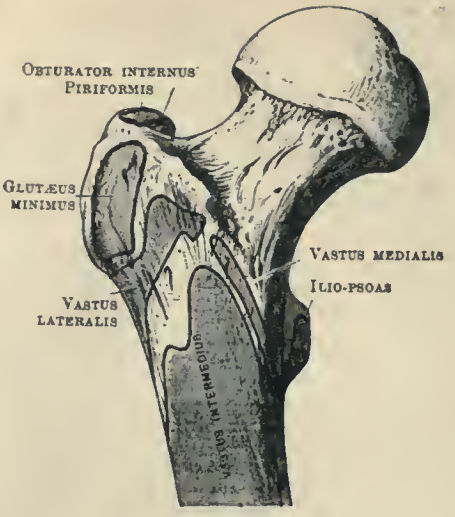

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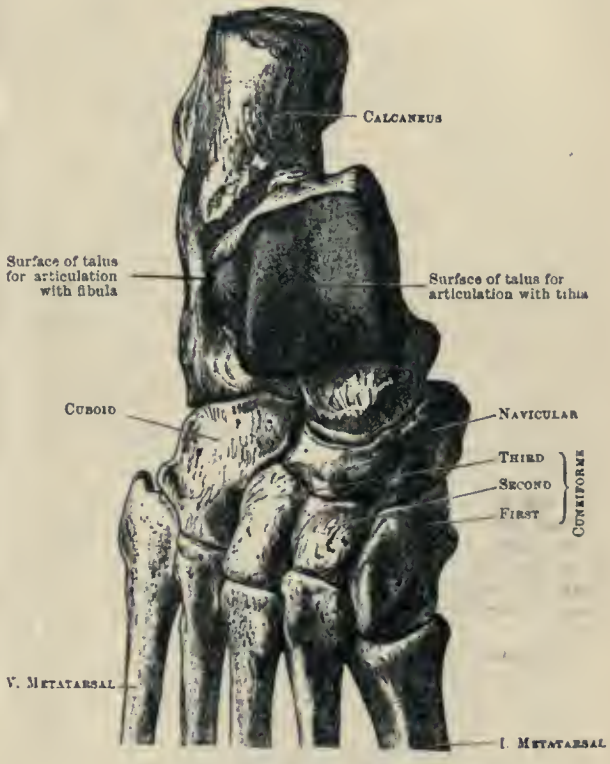

(From Cunningham's *Anatomy*.)

3. The *shoulder-joint* is an enarthrodial joint formed above by the glenoid cavity of the scapula and below by the head of the humerus. Its ligaments are glenoid, coraco-humeral, and capsular. The glenoid surrounds the edge, deepens the glenoid cavity, and is continuous above with the long head of the biceps tendon. The capsular ligament, extensive and loose, arises above it from circumference of glenoid cavity behind the ligament, is attached below to the anatomical neck of humerus, and is pierced by tendons of two or three muscles. The coraco-humeral, or accessory, is a fibrous band which extends obliquely downward and outward from the coracoid process to the anterior part of great tuberosity, strengthening the capsular ligament. A *synovial membrane* lines the joint, and forms the bursa under the subscapularis. It is reflected round the tendon of the biceps, and lines the bicipital groove. The *nerve supply* is from the circumflex and suprascapular nerves. The *arteries* are branches of the anterior and posterior circumflex, and the suprascapular.

The *muscles in relation with the joint* are: above, the supraspinatus; below, the long head of the triceps;

in front, the subscapularis; behind, the infraspinatus and teres minor; internally, the long head of the biceps. The deltoid covers the joint in front, behind, and externally.

4. The *Biceps branchii* lies over the anterior surface of the arm. It arises by two heads: (1) From the coracoid process of the scapula, and (2) from the upper margin of the glenoid cavity of the scapula. It is inserted into the back part of the tuberosity of the radius. The muscle is overlapped in its upper part by the deltoid and pectoralis major; its inner border is in relation with the coracobrachialis, and its outer border with the deltoid and brachialis anticus. It is a flexor and supinator of the forearm, and it is supplied by the musculocutaneous nerve.

5. The *deep palmar fascia* is situated in the palm of the hand, and consists of a central portion and two lateral portions. The central part is triangular in shape, being narrow above, where it is attached to the anterior annular ligament and receives the tendon of the palmaris longus; below, it expands at the roots of the fingers and is connected with the sheaths of the flexor tendons. Opposite the heads of the metacarpal bones it splits into four parts, and each of these parts is prolonged on to the sheath of one of the flexor tendons. The fascia is closely adherent to the skin of the palm, and it covers the superficial palmar arch, the tendons of the flexor muscles of the fingers, and branches of the ulnar and median nerves. The lateral portions of the fascia are much thinner, and cover the muscles of the thumb and little finger.

6. *Relations of the common carotid artery.* The artery, together with the internal jugular vein and vagus nerve, is included in a common sheath derived from the deep cervical fascia; in the sheath the artery is the most internal, the vein most external, and the nerve behind and between. The chief relations of the sheath to the surrounding parts are the following: As high as the cricoid cartilage it is deeply placed, and is *covered* by: (1) The common investments (*i.e.*, skin, superficial fascia, platysma and deep fascia). (2) Sternal head of sternomastoid. (3) Sternohyoid. (4) Sternothyroid. (5) Crossed by omohyoid. (6) Above this point it enters the carotid triangle, is covered by the common investments of the parts overlapped by the sternomastoid, and crossed by the sternomastoid artery. (7) It is also crossed by superior thyroid, middle thyroid and anterior jugular veins. (8) The descendens hypoglossi lies *on* (rarely *in*) the sheath. (9) In front of the superficial part there are some lymphatic glands. *Behind* the sheath are: (1) The gangliated cord of the sympathetic. (2) The recurrent laryngeal nerve crossing obliquely inwards behind the sheath. (3) Longus colli. (4) Rectus capitis anticus major, and behind these (5) the transverse processes of the cervical vertebræ. (6) The inferior thyroid artery also crosses obliquely inwards behind both the sheath and the gangliated cord of the sympathetic. (7) Behind the deep part of the sheath are some lymphatic glands. To its *inner side* we have: (1) The larynx and trachea. (2) Pharynx and esophagus. (3) Thyroid body. (4) Recurrent laryngeal nerve, and inferior thyroid artery. To the *outer side* a chain of lymphatic glands, and the scalenus anticus.—(From McLachlan and Skirving's *Applied Anatomy.*)

7. *The branches of the facial artery* are: Ascending palatine, tonsillar, submaxillary, submental, inferior labial, inferior coronary, superior coronary, lateral nasal, angular, and muscular.

8. *The branches of the abdominal aorta* are: Phrenic, celiac axis, superior mesenteric, inferior mesenteric, suprarenal, renal, spermatic, or ovarian, lumbar, and middle sacral.

9. The *Gasserian ganglion is made up mainly* of the fibers of the trigeminal, or fifth cranial nerve. The *three large branches of the ganglion,* are: Ophthalmic, superior maxillary, and inferior maxillary.

10. *The first portion of the duodenum* is about two inches in length. It is *in relation—above* and *in front* with the quadrate lobe of the liver, and the gall bladder; *behind,* with the common bile duct, portal vein. and gastroduodenal artery; *below,* with the head of the pancreas.

PHYSIOLOGY.

1. *The function of the nose in respiration,* is : (1) To warm the air; (2) to saturate it with moisture, and (3) to prevent the entrance into the lungs of foreign particles (these are filtered out by the vibrissæ).

Mouth-breathing may be caused by: Obstruction of the nasal passages from tumors, foreign bodies, fracture of the turbinate or nasal bones, hemorrhage, catarrh with thick secretions, hyperemic conditions of the mucous membranes, deflection of the septum, hypertrophy of the turbinate bones, adenoids in the nasopharynx, and hypertrophied tonsils.

Effects of mouth-breathing: The entrance or exit of the air is impeded; the inspired air is not warmed, not moistened, and not filtered; dyspnea; hoarseness; twang to the voice; dryness of mouth and tongue; snoring; fetid breath.

2. *Tissue* consists of a collection of cells of similar character, united for the performance of a special function. These cells are generally united by intercellular substance, and supported by connective tissue. *Living tissues* are capable of performing some function. *Dead tissues* are not capable of performing function.

Metabolism is the name given to the collective changes which are continually occurring in the living body; the changes concerned in the upbuilding of the body and its tissues and cells are called *anabolic* changes; those which are due to the wasting of the tissues are called *catabolic* changes.

3. The *cerebellum* is the largest portion of the hindbrain. It lies in the posterior fossa of the skull, separated from the occipital lobes of the cerebrum by the tentorium cerebelli. It is behind the pons and medulla oblongata, connected with the former through the middle peduncles, and partly embracing the latter; and connected with the restiform body by means of the inferior peduncles; the superior peduncles contain fibers which pass from the cerebellum to the tegmentum of the midbrain, ventrad of the inferior corpora quadrigemina, the latter bundle of fibers pass to the red nucleus of the opposite side, some continue to enter the thalamus. The cerebellum is divided into a medial segment, the *vermis,* or *worm;* two *lateral hemispheres;* a *ventral* and *dorsal notch;* and a superior and inferior surface; and is subdivided into lobes and fissures.—(Little's *Anatomy.*)

The *cerebellum* is about 3½ to 4 inches transversely, 2 to 2½ inches anteroposteriorly, and about 2 inches thick in the center; it weighs about 5½ ounces, and its proportion to the cerebrum is about 1:8.

The *functions of the cerebellum* are: Co-ordination of muscular movements, maintenance of equilibrium, and muscle tonus.

If the cerebellum is removed there is a lack of co-ordination, and loss of equilibrium; but sensation in general is not affected.

4. *Chyme* is a thick, acid liquid, which is the result of gastric digestion; it consists of proteids, salts, liquefied fat, and undigested matter. It is passed forward into the duodenum.

Chyle is that portion of the lymph which is found in the small intestine during the period of digestion; it is mainly composed of water, proteids, and fats, the latter giving it a milky appearance.

5. *The three most important groups of foodstuffs that produce muscular energy* are: Proteins, carbohydrates, and fats.

6. The total quantity of blood was formerly said to be about one-thirteenth of the weight of the body; recently this figure has been altered to one-twentieth of the body weight.

Regeneration of blood after a hemorrhage: "If the bleeding does not go on to death the blood is restored by absorption from the tissues or from the food taken in; the first to be absorbed being the serum sanguinis, with the dissolved salts, and then the albumen. A longer time is required to form new red blood-corpuscles. Regenerated blood is at first abnormally watery and poor in cells. As a result of the greater flow of lymph into the blood the number of white blood-corpuscles is greatly increased, and then their number falls off; the red blood-corpuscles again attain their usual number, and the composition of the blood grad-

ually returns to the normal. We do not as yet know certainly how the restoration of the red blood-corpuscles takes place. The most generally accepted view is that colorless corpuscles are being constantly formed in the lymph glands, in the spleen, in the bone marrow, and in the liver, and a certain number of these colorless corpuscles change into the red disks."—(Tillmann's *Surgery.*)

7. *The sensation of hunger* is referred to the region of the stomach, and is the outcome of nervous impulses from the stomach. *The sensation of thirst* is located in the back of the pharynx. Both of these sensations are localized expressions of a general need of the tissues of the body for food and drink. The exact seat of the sensations is unknown; and thirst is more painful and more urgent than hunger.

8. *Reflex actions* are involuntary or unconscious movements, due to suitable stimuli. They depend upon the integrity of the *reflex arc*, which is a complex made up of: (1) A surface capable of receiving an impression; (2) an afferent nerve; (3) a nerve cell capable of receiving and also of sending out impulses; (4) an efferent nerve, and (5) a surface capable of responding in some way to the impulse conveyed by the efferent nerve.

Example: The patellar reflex consists of a contraction of the extensor muscles of the leg and a movement of the foot forward when the ligamentum patellæ is struck; the quadriceps extensor must first be slightly stretched by putting one knee over the other. Its integrity depends upon a healthy condition of the entire reflex arc, consisting of tendon, afferent or sensory nerve, posterior roots, and anterior horn of the spinal cord, the efferent or motor nerve, and the muscle itself.

9. The pulse is the impulse conveyed to the column of blood in the arteries by the contraction of the ventricles and the propulsion of more blood into the already full arterial system. The characters of the pulse which are of most importance are its force, frequency, length, rhythm, and tension. It is maintained by the ventricular systole, the elasticity of the arterial walls, and the volume of the blood in the vessels. The points to be observed are: (1) Its *frequency;* this gives the rate of the heart beats. (2) Its *compressibility;* this denotes the force with which the heart is beating. (3) Its *tension;* this denotes the peripheral resistance, and also the state of the arterial walls. (4) Its *regularity* or *rhythm;* this denotes the regularity (or otherwise) of the heart's action in force or rhythm. The average rate during infancy is about 120 per minute; during youth, about 80; and during old age, about 60. The normal ratio of pulse to respiration is about 4:1.

10. *Five digestive secretions:* Saliva, gastric juice, pancreatic juice, succus entericus, and bile.

Effect of saliva on food: Saliva assists in the solution of the soluble portions of the food; it assists the sense of taste; it lubricates the bolus of food and so aids mastication and deglutition; it changes starches into sugar.

Effect of gastric juice on food: It changes proteins into proteoses and peptones and sometimes into polypeptides; it curdles the casein of milk.

Effect of pancreatic juice on food: It converts proteins into proteoses and peptones and then into polypeptides and amino-acids; it converts starches into maltose; it emulsifies and saponifies fats; it curdles the casein of milk.

Effect of succus entericus on food: It converts starch into detrin and then into dextrose and levulose; it also splits polypeptides into amino-acids and ammonium compounds; it converts sugars into dextrose, levulose, and galactose.

Effect of bile on food: It assists in the emulsification and saponification of fats; it aids in the absorption of fats; it has a slight action in converting starch into sugar.

CHEMISTRY.

1. If a bar of soft iron be heated sufficiently it becomes luminous; if caused to vibrate it emits sound; if introduced within a coil of wire through which a galvanic current is passing, it becomes magnetic and attracts other iron brought near it. Under all these circumstances the iron is still iron, and so soon as the heat, vibration, or galvanic current ceases, it will be found with its original characters unchanged; it has suffered no change in *composition.* If now the iron be heated in an atmosphere of oxygen gas, it burns, and is converted into a substance which, although it contains iron, has neither the appearance nor the properties of that metal. The iron and a part of the oxygen have disappeared, and have been converted into a new substance, differing from either; there has been change in *composition,* there has been *chemical action.* Changes wrought in matter by physical forces, such as light, heat, and electricity, are temporary, and last only so long as the force is active; except in the case of changes in the state of aggregation, as when a substance is pulverized or fashioned into given shape. Changes in chemical composition are permanent, lasting until some other change is brought about by another manifestation of chemical action. While chemical action is thus different in its results from the actions of physical forces, there exists the most intimate relation between them. As above stated, they are interconvertible. The line of demarcation between chemical actions and certain physical actions, such as solution, although distinct, is narrow. Many chemical actions take place only under certain physical conditions, such as of temperature; or are provoked by physical forces, such as light.—(From Witthaus' *Chemistry.*)

2. An *element* is a kind of substance out of which we cannot get anything else, as hydrogen.

A *compound* is a substance made up of two or more elements, chemically united, in definite proportions, as sulphuric acid, H_2SO_4.

3. *Ten elements found in the human body:* Carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, calcium, sodium, potassium, iron.

4. A *mixture* is a union of two or more substances (elements or compounds) in any proportion, and without chemical union. *Two physical mixtures:* (1) Iron filings and sulphur; (2) sand and sugar. *Two chemical mixtures:* (1) Iron filings and sulphur, heated; (2) tartaric acid, sodium carbonate and water.

5. A *Monad* is an element having a valence of one, as hydrogen.

A *Dyad* is an element having a valence of two, as oxygen.

A *Triad* is an element having a valence of three, as boron.

A *Tetrad* is an element having a valence of four, as carbon.

A *Pentad* is an element having a valence of five, as phosphorus.

6.

	SYMBOL	VALENCE	ATOMIC WEIGHT	MOLECULAR WEIGHT
Hydrogen	H	1	1	2
Oxygen	O	2	16	32
Sulphur	S	2 or 6	32	64
Mercury	Hg	1 or 2	200	200
Gold	Au	1 or 3	197	394
Nitric acid	...	....	...	63
Sulphuric acid	...	....	...	98

7. *Formula* is an abbreviation which shows the number and kind of atoms of which the molecule of a compound is composed. HNO_3 is formula for nitric acid.

Equation is a combination of formulæ and algebraic signs so arranged as to indicate a chemical reaction and its results. Thus:

$$2KOH + H_2SO_4 = K_2SO_4 + 2H_2O$$

Reaction denotes the mutual action of two or more substances on each other, as in the equation just given.

Function is the chemical character and relationship of a substance, and indicates certain general properties, reactions, and decompositions which belong to all substances having the same function. Thus it is a "function" of a primary alcohol that it contains the hydroxyl group (OH), and that on oxidation it becomes first an aldehyde and then an acid.

8. *Post-mortem appearances of acute phosphorus poisoning:* "Occasionally small fragments of phosphorus may be detected, by their luminous appearance, in the stomach or intestines. The esophagus, stomach, and intestines are frequently marked with ecchymotic spots. Advanced fatty degeneration is observed in the liver, kidneys, heart, and muscular tissue. The blood is very fluid, and the red corpuscles more transparent

than normal."—(*Essentials of Chemistry and Toxicology.*)

9. The common name of As_2O_3 is white arsenic; it certainly has toxic properties. The common name of $HgCl_2$ is corrosive sublimate; it certainly has toxic properties.

10. *Glycogen* is a polysaccharide with the empirical formula $n(C_6H_{10}O_5)$. It occurs in the liver, placenta, white blood corpuscles, pus cells, cartilage, and muscle. Glycogen is colored red by iodine.

PATHOLOGY.

1. *Pathology of typhoid fever.*—"Principally inflammation of the lymphoid tissue of the lower portion of the ileum, with more or less catarrh throughout the bowels. Peyer's Patches—first week.—Are swollen through infiltration of leucocytes, the surfaces raised and fawn-colored—the infiltration involves the submucous coat. The lesions are most numerous at the lower end of the ileum. Second week.—The surface becomes abraded; sloughs form which are often bile-stained. Third week.—Sloughs come away, leaving ulcerating surfaces. Typical typhoid ulcers are thus formed. A few solitary glands undergo the same process. At the end of the week the ulcers begin to granulate, but healing is usually slow. Mesenteric glands may undergo the same changes, but more often become swollen, red, and tender only, or break down into cheesy masses."

Note: In the *typhoid ulcer* (1) the main axis of the ulcer lies parallel with that of the intestine; (2) it lies opposite to the mesenteric attachment; (3) it has smooth floor and undermined edges; (4) it commonly leads to perforation.

2.

GLANDULAR HYPERTROPHIC ENDOMETRITIS.	GLANDULAR HYPERPLASTIC ENDOMETRITIS.	ADENOCARCINOMA.
1. Glands increased in size but not in number.	1. Glands increased in size and number.	1. Glands very greatly increased in size and number.
2. No proliferation of gland epithelium.	2. Proliferation of gland epithelium.	2. Very great proliferation of gland epithelium.
3. Gland structures nearly or quite typical in outline.	3. Gland structures more tortuous in outline.	3. Gland structures very atypical in outline.
4. Hypertrophied epithelium confined within the limits of the tunica propria.	4. Proliferation confined within the limits of the tunica propria.	4. The proliferating gland epithelium has broken through the tunica propria and is in direct contact with intergiandular connective tissue, and is multiplying in an atypical manner.
5. Gland tissue does not invade muscularis deeply.	5. Gland tissue does not invade muscularis very deeply.	5. Gland tissue may very deeply invade muscularis.
6. Can trace tortuous glands.	6. Can trace tortuous glands.	6. Glandular labyrinth; can not trace tortuous and atypical gland.
7. Stroma normal in quantity.	7. Stroma decreased in quantity, but clearly defined from glands.	7. Great rarefaction of stroma, so that glands touch one another. Glands have broken through basement membrane and invaded intraglandular spaces and muscularis.

(Dudley's *Gynecology.*)

3. Foci of infection may be primary and secondary. The primary foci are usually located in the skin or mucous surfaces or in tissues communicating with them. The secondary foci are the results of infection brought about by the agency of the blood or lymph.

4. *Appendicitis.* "In the mildest or catarrhal form there is merely retention of the contents of the appendix and slight disease (swelling and erosion) of the mucosa. The muscularis and serous coat may be congested and edematous, but are not extensively involved. The contents of the appendix are more or less mucopurulent in character. In the necrotic or gangrenous form the mucous membrane suffers rapid destruction and the muscular and serous coats are quickly invaded. Fibrinous peritonitis soon develops in the serous coat and over the adjacent intestines, either as a result of penetration of bacteria through the walls of the appendix, or in consequence of perforation of the walls. The local peritonitis serves the purpose of restraining the infective disease and prevents diffuse peritonitis. In cases of rapid gangrene, with early rupture or escape of abundant bacteria, general peritonitis may result before a restraining wall can be formed."—(Stengel's *Pathology.*)

5. A *tubercle* is a small nodule, found in the lungs, etc., in cases of tuberculosis, but also found in other diseased conditions. It consists of three layers, the outer one consisting of lymphoid cells, the middle one of epitheloid cells, and the inner one of giant cells. These layers are squeezed or compressed into a firm mass, which may caseate or undergo other pathological processes. There is no blood supplied to a tubercle. Its *origin* is due to the stimulating or irritating effects of the tubercle bacillus upon the fixed connective tissue elements, causing a round-cell proliferation. The *tissues most frequently invaded by it* are: Lungs, lymphatic glands, bones, joints, intestinal tract, peritoneum, skin, testicle, epididymis, brain, liver, kidneys, spleen, Fallopian tubes, ovaries, uterus.

(*To be continued.*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

DIE SCHWEBELARYNGOSKOPIE UND IHRE PRAKTISCHE VERWERTUNG. By GUSTAV KILLIAN. 77 pages. Published by Urban & Schwarzenberg, Vienna.

HANDBOOK OF DISEASES OF THE RECTUM. By LOUIS J. HIRSCHMAN, M.D. 378 pages. Published by C. V. Mosby Co., St. Louis, Mo.

PERSONAL BEAUTY AND RACIAL BETTERMENT. By KNIGHT DUNLAP. 95 pages. Published by C. V. Mosby Co., St. Louis, Mo.

SEX ATTRACTION, A Lecture given at the Michigan State Normal School. By Dr. V. C. VAUGHAN. 44 pages. Published by C. V. Mosby Co., St. Louis, Mo.

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SURGICAL SHOCK AND THE SHOCKLESS OPERATION THROUGH ANOCI-ASSOCIATION. By G. W. CRILE, M.D., and WM. E. LOWER, M.D. 272 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

REPORT FROM THE PATHOLOGICAL DEPARTMENT and the Department of Clinical Psychiatry of the Central Indiana Hospital for the Insane, Vol. VII. 684 pages. Published by Wm. B. Burford, Indianapolis.

A TEXT BOOK OF PHYSIOLOGY. By Dr. RUSSELL BURTON-OPITZ. 1185 pages. Published by W. B. Saunders Co., Philadelphia.

SEXUAL IMPOTENCE. By Dr. VICTOR G. VECKI. 424 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

GENERAL AND DENTAL PATHOLOGY. By Dr. JULIO ENDELMAN and Dr. A. F. WAGNER. 593 pages. Published by the C. V. Mosby Co., St. Louis, Mo.

LE SYMPATHIQUE ET LES SYSTÈMES ASSOCIÉS. By A. C. GUILLAUME. 158 pages. Published by Masson et Cie, Paris.

DIE REIZTHEORIE UND DIE MODERNEN BEHANDLUNGSMETHODEN DES DIABETES. By Priv. Doz. Dr. R. KOLISCH. 152 pages. Published by Urban & Schwarzenberg, Vienna.

WHAT BECOME OF THE SALICYLATES IN THE BODY. Including a Brief Survey of the Manufacture and Therapeutic Uses of Salicylic Acid, Its Compounds and Derivations. Published by the Heyden Chemical Works, Garfield, N. J.

THE TOPOGRAPHICAL ANATOMY OF THE LIMBS OF THE HORSE. By Dr. O. CHARNOCK BRADLEY. 172 pages, with illustrations. Published by W. Green & Son, Limited, Edinburgh, Scotland.

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Original Articles.

THE DIAGNOSIS OF CHRONIC GALL-BLADDER PATHOLOGIES.*

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THE acute suppurative, gangrenous, or perforated conditions will not be described. These cases are comparatively easy to diagnose (although the actual pathology present is generally difficult to deliniate before operation), and since all require immediate surgical therapy, and this therapy is essentially the same in all, no description is entered into. This article pertains to the chronic cases in which there are no alarming acute symptoms, and which are the most numerous and the least often diagnosed.

In my gastrointestinal practice, pathology of the gall-bladder had been diagnosed in eight and one-half per cent. of one thousand consecutive cases. These comprise many types of histories and examination findings, and breaking from the old custom of classifying according to pathologies, I shall present a clinical grouping according to symptoms (subjective and objective).

In the grouping of symptoms making up more or less distinctive combinations which represent characteristic entities tending to the diagnoses of certain definite diseases we have the best means of diagnoses. The older clinicians were peculiarly apt in these, made so because in past days methods of laboratory procedure were meager and they had to depend upon clinical observations. This laboratory limitation made it that these men became most able clinicians, types of men that are strangely few in medicine now. The dependence upon laboratory, *x*-ray, multiple consultations, etc., is somewhat utilized as the method of to-day to make up the gap of thorough clinical training. The grounding of abilities in fundamental training is a long and expensive process, and few are the men who are willing to go through with the years that it takes. This is unfortunate because while apparatus to make diagnosis or assist in it is most helpful, the psychology of the human mind is not above being unwarrantably influenced by such methods, and the tendency is to become concluders from apparatus or laboratory results, and thereby automatic and removed from disease in the various presentations the same conditions are met with clinically. In no department of medicine is this so rife as in gastroenterology, in which the majority of men are more dependent upon the laboratory for diagnoses than clinical training, the latter sometimes being woefully lacking. This is especially unfortunate because in the vast array of diseases of the abdominal organs pretty much of the same individual symptoms are met with in them all. One reads in the literature "the colloquial symptoms of indigestion, gastric disturbance, indigestion," and such terms, which in their final analysis means that the author is indifferent, careless or deficient in knowledge of the symptomatology of abdominal conditions. Thus I have four criticisms—First, the placing of too much or entire dependence upon the laboratory for diagnosis; second, the employment solely of apparatus to make or exclude diagnoses; third, the deficiency of fundamental training in medicine when to diagnose abdominal conditions requires supertraining, and fourth, deficiency in analyzing symptoms and grouping them into symptom groups or complexes so they may be useful for diagnosis.

The first type of gall-bladder case is the one of years of history in which there have been remissions of slight symptoms. The complaint when the symptoms are on is comparatively simple. There is a run of distress in the epigastric region, accompanied with increased belching which may be between meals as well as after them. There is an uncomfortable feeling in the upper abdomen, the test meals showing a moderate increase in acidity in a unit of gastric filtrate. The patient is usually a female and most often one who has had children, although there is no close association between a childbirth and the symptoms. The biology in the bowels shows the presence of a saccharobutyric toxemia, the rectal mucosa a hypertrophic proctitis. The first heart sound is a little weak, although the systolic blood pressure may be elevated. There is some degree of tenderness on pressure on the gall-bladder, but this is not distinct, although the gall-bladder is the most sensitive to pressure of all of the organs in the abdomen. There may be tenderness along the lower intercostals on the right, and some increased tenderness on pressure on the right of the vertebræ from the eighth dorsal to the second lumbar. The *x*-ray shows nothing and the fluid aspirated from the duodenum is not distinctive. Some hyperesthetic nervous symptoms are present, and a little dieting, alkalies, bromides, etc., and the case remains away, generally to come back in a few months with a resumption of the symptoms complained of before. A strawberry gall-bladder is probably present.

*Read before the New York Polyclinic Medical Society December 1st, 1919, and the Medical Society of the County of New York March 29, 1920.

The next is the stout woman, usually of Semetic or Teutonic blood, who has been in this country for some years, in whom belching is most distressing, as well as postmeal hyperesthesia and perhaps an acidity that is above normal. She has slight chills for no apparent reason and points to the gall-bladder region as the seat of her distress. One is struck by the fact that whatever is the character or distribution of her subjective nervous complaints, her mind is definitely in her abdomen on which she puts her hand to locate the distress, and this is slightly to the right of the midline in the epigastrium and high up in the ribs. She tells you that the trouble came on after the birth of a child, or when you draw her attention to the connection she says "that's right." The saccharobutyric toxemia with hypertrophic proctitis is present as before, the tender intercostals and right spinal areas also. Chronic cholecystitis, perhaps adhesions, inspissated bile, commonly being the cause.

The next case resembles the first two excepting attacks of biliary colic have been present with the history, or presence of jaundice in about a third of them. One will tell you that heat, rest, time, and low diet, or abstinence from foods for a few hours are all that is necessary to control the attacks, whereas the next one will require morphine to accomplish it. What is interesting now is that gastric hyperacidity does not exist, but more times a normal acid content, or perhaps below normal, or an achylia. The gall-bladder here is very tender and direct pressure upon it elicits distinct pain. Not uncommonly the liver is somewhat enlarged, particularly the left lobe. The majority of these are in women, especially those who have borne children, but they also occur in men.

Such cases in men, however, while they may be stout, are usually in those of the thin type. My experience with men is that the symptoms are rather more definitely centered in the gall-bladder region than in women, the history and degree of epigastric distress more definite, the remissions less marked—the latter excepts the attacks of biliary coli, which come and go in both the same. All of them are instances of cholelithiasis, and cholecystitis is always present when gallstones are.

One now has to add the case in which the symptomatology points to gall-bladder disturbances, but in which there is an added symptomatology of pyloric obstruction, due to band formation or thickened tissue. This type of man and woman is thin, the history is very chronic and insistent, the age about fifty and the pathology present is usually that of hydrops or markedly contracted and thickened gall-bladder with stones.

Also, more rare than those described, is the one presenting the mentioned symptoms and types, but who had had an attack of infectious disease, usually typhoid fever, in which the symptoms follow four or more years afterward. Usually they are Americans, rarely Jewish or Europeans, and they may be rather young, perhaps in the thirties, while most of the gallstone cases occur in those over forty. These occur as frequently in men as in women, although in the non-infectious cases women make up three-quarters of those seen. Another type of individual is a man presenting symptoms above described, in whom they began after about two years of sedentary life, he generally having been active physically for years before this. From walking to buggy was comparatively safe enough, but from walking to automobile and hired chauffeur has caused the formation of many gallstones that are causing trouble. One sees this more conspicuously in physicians than in any other group of people, although those that got rich quickly made up the bulk. In this connection I would mention that in obstinate urticaria think of gallstones as a possible fact, not because gallstones cause urticaria, but because it is caused by high degrees of saccharobutyric toxemia, and this, in my opinion, is the commonest cause of cholelithiasis.

Of interest now is the distinctly masked case as far as presenting subjective or objective gall-bladder symptoms are concerned, in which, after careful laboratory work, a diagnosis of chronic pancreatitis is warranted. Such not frequently are chronically diseased gall-bladder cases in which the disturbances of pancreatic function is due to thickening of the head of the gland, this being secondary to disease of the gall-bladder.

The case presenting an attack of biliary colic in which the stone is engaged in the cystic or common duct, producing pain, is well known to you and easy to diagnose. The type and radiations of the pain, perhaps rigor, slight elevation of temperature, the vomiting, nausea, profuse sweating, depression of the circulation, etc., are all as characteristic as is the relief of pain from morphia.

I now will remind you that about a fourth of all people over 60 years of age have gallstones, and thus it is that a large number of people are carrying diseased gall-bladders around without knowing it. Regarding these I am inclined to agree with Mayo that there are no innocent gallstones. It is true that many of these people have no symptoms referring to the gall-bladder, and from that standpoint they may be judged as innocent, but if you keep the possibility of their presence in mind and study states of illness or disturbances in the general state of health, one often will see cases in which you come to the conclusion that pathology in the gall-bladder may be causative, however remote or masked the conditions may be. As my experience multiplies, more and more of such old people are seen and one can do little for them in substantial ways unless the gall-bladder receives attention.

Feeling best when no food is in the stomach; most distress one to three hours after meals; headaches, vomiting of bile-stained mucus on arising mornings; increase of symptoms at menstrual times; trembling sensation in stomach regions, and loss of weight are present in cases but not characteristic enough to be diagnostic, and need only be mentioned. As you know, they are present in other abdomnial conditions than disease of the gall-bladder.

My opinion on the three indirect means of examination, namely, the *x*-ray, duodenal tube, and hypercholestermia leaves much to be said. To be brief, however, the following may be given as my opinion:

The *x*-ray is both useful and a fallacy. Among the best *x*-ray men attestations of percentages range all the way from 33 to 95 per cent. When two men, each equally good, state such extremes, and there are many with percentages between, con-

clusions are required for understanding. I do not believe that differences in technique and interpretation can account for such disparities, because these are about the same in all who do good *x*-ray work. I have obtained definite shadows in 96 out of 300 cases in which I believed gallstones to exist (32 per cent.) and I cannot do better than this. Almost weekly I am required to judge a case in which an *x*-ray diagnosis of gallstones had been made, there being practically nothing else to base this on. From the experience with these I have come to the conclusion that no one is warranted to state that gallstones are present from an *x*-ray examination alone, and present such in literature, from the platform or in discussion, unless in each instance they had been proven by operation, and unfortunately this is not the rule with the men who have presented the high percentages. When a means of examination gives me 68 per cent. of negative findings in cases proven by operation, I cannot feel other than with the technique to-day that this means of diagnosis has only moderate value. More may be said in its favor in diagnosing chronic cholecystitis with large gall-bladder containing inspissated bile. *X*-ray examination should be engaged in to make diagnoses of cholelithiasis and cholecystitis, but in the case with a distinct symptomatology it should be explained to the patient in advance that if the *x*-ray examination is not conclusive, the diagnosis stands anyway.

Aspiration of bile from the duodenum with the duodenal tube, and noting its presence, character or its absence (bile duct obstruction) is even less useful in a general way than *x*-ray examination. Some of the most perfect examples of normal returns I have seen have come from cases in which operation proved the presence of markedly diseased gall-bladders, gallstones and even obstruction, and as far as the average gallstone case is concerned, it is quite valueless. Work is being done in this connection which may enhance the practical value of this means, but up to the present little more about it can or should be said.

The examination of the blood for cholesterin has been employed as a means of diagnosis. This is rather a far-removed means and so high is the percentage of gallstone cases that have not got an increase of cholesterin in the blood that as a means of diagnosis it is not dependable, although as a means to suggest proper dietetic and hygienic therapy it is often enough of value.

The diagnosis of gall-bladder pathologies is not difficult. Naturally the less the pathology the fewer and less distinctive the symptoms, the more the difficulty, and the greater the proportion of cases that are missed. In it all, however, the clinical history and the objective and subjective symptoms are of the most value and the indirect means distinctly less so, although they should not be neglected because occasionally they will give a finding that will be most helpful. What perhaps is the most useful of all is the development of that so-called "sixth sense" that comes from ample experience and close study of the clinical aspects of the cases in which each case, if carefully studied, does more eventually toward diagnostic acumen than any other means I know of.

21 West Seventy-fourth Street.

SURGERY OF THE GALL-BLADDER.*

By JOHN F. ERDMANN, M.D., F.A.C.S.,

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THE history of gall-bladder disease is filled with involvements of other viscera and with degenerative changes in the viscus itself that have been proven amenable to surgery. While we see only failure of cure, or protracted illness, in the medical treatment, and then comparing the cures and preventions of degeneration with collateral associated viscera with surgery, one fails to see the efficiency of continuing medication.

Therefore, surgery is the advised treatment for indigestion due to gall-bladder disease without colic, for acute inflammatory changes, for repeated colic attacks, and for evidence of obstruction in the hepatic system, be it due to calculus or adventitious growth or exudate; for strawberry gall-bladder, for empyema of the gall-bladder or inflammation (cholangitis) of the biliary system; for adhesions, for gangrene, or malignancy; for hour-glass contractions, for hydrops of the gall-bladder, and also for atrophy of the same. Finally, for the prevention of malignancy, the incidence of which I have recently reported as about 7 per cent. in all patients suffering from gall-bladder symptoms.

In addition to preventing malignancy due to calculi, etc., by irritation, we obviate morphinism, by operation in those patients in whom one sees repeated colics, with no post-colic inflammations, but in whom the dose of morphine rapidly increases with the rapidly recurring attacks of colic. One of the most pitiful patients I have had is a young married woman who, at the last time I saw her, was taking 16 to 18 grains of morphine per day, and had become so addicted to morphine as to refuse surgical interference, fearing the cutting down of her daily supply.

Loss of weight: I have frequently remarked to my classes that the loss of weight is greater in some gall-stone cases than in the malignancies of other viscera. This great loss I am unable to explain, as many of these patients have neither palpable nor visible involvement of the pancreas, and the majority have no involvement of the common duct.

Spontaneous perforations and later deaths from peritonitis, or a secondary fistula into some adjoining viscus, or the formation of a sub-phrenic abscess or a perforation into the pleural cavity, with a thoracic empyema opening, discharging biliary calculi and bile—all have been seen by me and all could have been avoided by properly timed surgical intervention.

It is our failures in life that benefit us most. They make us think more and advance or curtail our technique and treatment; while the successes are readily forgotten, or looked upon as only the expected. Failures in gall-bladder surgery, including, of course, the surgery of the duct, are chiefly due to overlooked stones—hepatic calculi that later come down; the occasional, and fortunately rare, but not rare enough, injuries to the duct or ducts; reformation of stones, empyema, especially where an ostomy has been done; and finally, the mortality or mortalities. When we recall that today the mor-

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tality of gall-bladder surgery is under 4 per cent. and even as low as ½ to 3 per cent. in the hands of our hospital clinicians, we can present an argument to our patients that shows a percentage in their favor, when compared to the outlook in a mortality sense from medical treatment; while presented from the angle of efficiency and morbidity, surgery will far outweigh the medical consideration.

Success in this field depends upon more than the one factor—the gall-bladder—as often there are associated lesions that must receive definite attention at the same time. Of these, there is the occasional duodenal or gastric ulcer; the usual chronic appendix, or the occasional acute to gangrenous one, accompanying the acute gall-bladder; the intercurrent or concurrent pancreatitis—from acute hemorhagic through all phases of the chronics, etc., etc.; fistulous communications between the gall-bladder and adjoining viscera, quite a few of which have been corrected in my work.

The operative consideration of a diseased gall-bladder or an involved biliary system brings up the ever pregnant question: Shall an ectomy or an ostomy be done? I am in favor of doing a cholecystostomy only in those patients who present such a degree of physical and constitutional involvement as to hazard their lives by a few minutes longer anaesthesia and the loss of a few drops more of blood, but I must state that I do not believe that I have been compelled to do one ostomy, in the past two and one-half years, out of almost 300 operations upon the gall-bladder for the above reasons.

Also I do a cholecystostomy in a few patients per year, possibly two or three, when the pancreas is involved, as I feel that doing a choledochostomy would present a greater hazard than doing a preliminary cholecystostomy, and later ablating the gall-bladder and opening the duct. When a malignancy exists in the pancreas, or is suspected, I am in the habit of performing a cholecysto-gastrostomy or a cholecysto-duodenostomy, etc., and not, as some operators advocate, a permanent cholecystostomy, as in the latter operation, the bile salts, etc., are lost to a great degree, while in the former all are saved by drainage into the anastamosed viscus. This type of operation also forms an anatomical spillway for the pancreatic juice when the obstruction is at or near the papilla of Vater.

Cholecystectomy is the ideal operation for cure and efficiency as compared to cholecystostomy. In the latter operation we are likely to have adhesions, recurring stones—*i.e.* reformed, overlooked stones—recurring empyema, etc., in over 4 per cent. of all so operated, and a prolonged drainage, as compared with that of the ectomy.

The foregoing summarizes the inefficiency due to morbidity. Efficiency is what finally counts as the cure in these days of strife and success.

Granted that cholecystectomy is a more difficult operation and attended with, therefore, more danger to the patient, nevertheless, in the hands of the hospital clinicians, strange to report, the mortality is in fact below that of cholecystostomy. This I showed some four years ago, in a paper reporting over 300 operations of my own. The bed-ridden time in cholecystectomy is usually 10 to 15 days; in cholecystostomy 15 to 20 days, with a draining wound for some time after.

Cholecystectomy removes a diseased structure; cholecystostomy leaves a diseased one for future trouble.

I no not believe today the argument advanced some years ago, that the absence of the gall-bladder is a factor in the production of pancreatitis. All the patients whom I have operated upon for pancreatitis, acute, hemorrhagic, etc., had their gall-bladders in them when I made my first incision, but the majority of them not after—unless I used the gall-bladder as a means of drainage.

Some of the failures in ectomy are due to insufficient removal, as seen occasionally where an operator has made a partial removal, fearing to approach the cystic duct. Another failure is the fortunately rare but not rare enough injury to either the common or hepatic ducts, which creates havoc with all connected with the patient. As to the so-stated postoperative frequent dilated cystic duct, which is said to give origin to secondary trouble, both Deaver and myself have seen very few instances, and are inclined to believe in its rarity.

The operation of ectomy may be done from below upwards, or in the reverse way, it matters not which; but I am quite sure that a few operations done from below upward will convert the operator from the above downward method. In the acutely inflamed, high-placed gall-bladders, I am very much attached to the sub-serus operation of ectomy, stripping out the mucosa and muscularis—down to the cystic duct.

In the presence of jaundice I do not hesitate to operate if the jaundice is of the acute variety—that is, when it exists but for a few days. When the jaundice exists over a week I demand a series of coagulation tests and transfusion when necessary. In fact, a coagulation test is the safe procedure in all jaundiced patients. Transfusion after operation with oozing is of little avail, while bringing the coagulation time down to safety before operation by preliminary transfusion, will prove successful in the majority of instances.

Persistent or deepening jaundice is not always a sign of malignancy, as frequently an impacted common-duct stone presents just such a condition, but the majority of these patients present a malignancy in some point of the biliary outlet.

Mortality.—The deaths from operations in gall-bladder and the biliary system can rarely be attributed to peritonitis, but frequently to nephritis or pneumonia. It is rare that the biliary patient has no albumen or casts in his or her urine. It is frequent enough that the biliary patient has a degenerated heart muscle, due to his biliary condition, as proved by the repair after successful operation. The pneumonias may be attributed to at least two sources: a cardiac involvement before operation, and respiratory restraint as a direct result of the operation.

Among the difficult questions that arise when the gall-bladder patient consults the surgeon is that of pregnancy with a definite attack or attacks of gall-bladder involvement. Only recently a patient five months pregnant with weekly explosions of grave attacks of gall-bladder pain and ½ grain morphine injections, expressed the statement: "If I risk losing my baby by operation, I would rather risk being cured for morphinism." I could but tell

her to go on, and in case of an acute—meaning inflammatory attack to send for me.

Let me summarize with but one argument. In view of the frequency of malignancies of the gall-bladder and the lower mortality by operations than the frequency of malignancy, then by all means—*when* a diagnosis of cholecystitis is made, advocate the lesser evil—"Operation!"

60 West Fifty-second Street.

THE DIAGNOSIS OF SPINAL CORD TUMORS.*

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In 1888 Sir Victor Horsley[1] showed that spinal cord tumors can be removed with good results. Ever since neurologists have endeavored to establish criteria by which an early diagnosis of spinal cord tumors may be made. As yet such a diagnosis is more of an art than a science. We are still far from being able to tell, with certainty, whether in a given case we are dealing with a neoplasm, a systemic disease, or a multiple lesion of an infectious character. At first this seems paradoxical. The anatomy and functions of the spinal cord are perhaps better known than those of any other part of the cerebrospinal axis. It would seem that any focal lesion produced by pressure should be recognized at once. When, however, we consider the consistency of the cord, its complexity of structure and multiplicity of function, the difficulties in establishing such a diagnosis are at once understood.

The spinal cord measures through its largest transverse diameter, the cervical enlargement, 15 mm. (Obersteiner). Through the periphery of either half pass at least eight well-defined tracts carrying important motor and sensory functions. Its central grey presents important trophic as well as sensory motor functions. If we now remember that the consistency of the cord in life is that of soft putty, it will be easy to conceive how any small pressure upon it is liable to disturb the function of the entire structure and to give a multiplicity of symptoms which are difficult of interpretation. This is particularly true when the diagnosis is to be made with reference to the transverse diameter of the cord. Fortunately the more important, the vertical localization, is comparatively easy, for here we are guided by so-called level lesions which are recognized mainly by sensory changes and are due to root distribution.

For all practical purposes we are called upon to establish a differential diagnosis between an extramedullary and an intramedullary tumor. Bruns[2] is right when he says that it is difficult or impossible to differentiate between extradural and intradural tumors. Nor is such a diagnosis needed for practical purposes. In this paper we will not enumerate the oft repeated and socalled classical symptoms, but, after giving the histories of some cases of spinal cord tumors that occurred in the service of Dr. Abrahamson of the Montefiore Hospital, will try to give the reasons that led us to believe that the diagnosis was neoplasm of the spinal cord.

Case I.—H. R., 38 years old, widower, salesman, born in the United States, entered Montefiore Hospital November 24, 1913; discharged, cured, on July 1, 1914. Father dead at 76. Cause senility. Mother dead at 60. Cause senility. One sister died of tuberculosis at 20 years. Four brothers died in childhood, cause unknown. One elder sister had a temporary puerperal insanity. Otherwise family history is negative as to any nervous ailment. Patient went to school until 14 years of age, went to college for two years, and since then worked for various commercial houses, always in a capacity which required mental rather than physical labor. Patient did considerable walking; was an athlete—a runner. He ate and slept well and regularly. Bowels regular. Urination normal. No nocturnal urination. Gonorrhea four times, last time at 31 years. Denies knowledge of chancre. While wife was living had intercourse at least once a night over a long period. Had diphtheria at 4 years; good recovery. Grippe at 15 years. Removal of lipoma on shoulder some years ago.

Present History.—Gradual onset three years ago with burning-like sensation in right foot. One month following this began to notice numbness in right calf. No pain. Numbness traveled upward to upper portion of thigh. Formication over affected limb. Now began to notice weakness in this limb. About six months later began to notice weakness and twitching of left lower limb. No paresthesias or pain. Right limb was weaker than the left until one and a half years ago when the left was suddenly almost completely paralyzed. Soon after this the right was similarly affected. After this, managed to walk with aid of crutches. Hands never affected. One year and seven months ago, noticed girdle sensations at level of umbilicus, which are still present. Was never incontinent. Increased frequency of micturition. Act of micturition very slow. Very constipated. Weakness of lower limbs increased steadily, and was admitted to a hospital just barely able to walk. Here was operated on for spinal cord tumor, but apparently nothing was found at operation. Since that time of operation has been chair- or bed-ridden. Before operation had distinct areas of anesthesia and thermal anesthesia. Since operation claims latter has disappeared, but no improvement in motor power. Stiffness has increased remarkably. Never had bedsores. Has had twitching of muscles of lower limbs and frequently sudden contractions. No convulsions or fainting attacks.

Chief Complaints.—Inability to walk. Girdle sensations. Spasticity. Occasional diplopia and blurring of vision.

Additional Notes.—November 20, 1913, for first time lost his urine while trying to hold back from urinating. About seven years ago he noticed, when dealing cards, an extensor cramp of little finger of left hand. Right hand similarly affected. Disappeared about a year later. About five years ago, he experienced shooting pains about the second dorsal vertebra, shooting around into the chest anteriorly, following the distribution of the second dorsal nerve. This pain was spasmodic in character.

Physical Examination.—Adult, male, well nourished, lies flat on back, cannot sit up by himself. Stands with support. Cannot walk. Scar at about middle of dorsal spine. Cranial nerves are all negative. Muscles of neck as well as those of the upper extremities are negative. Spine held rigid, distinct tenderness both to pressure and percussion at the second, third, fourth and fifth dorsal spines. The lower extremities are spastic, limited in motion, toes cannot be moved. Skin over both feet dry and scaling. Double Babinski, double ankle-clonus. On November 27, a complete sensory examination was made (See Chart). Distinct hyperalgesia, best elicited with a needle, and extending over the area of the second, third, and fourth dorsal roots. At the fifth and sixth there is a distinct belt of heat algesia. From a level drawn between rims of the crests of the ilia there is thermal anesthesia, but this is not constant. At times slight perception of temperature is present. From middle of leg downward the thermal anesthesia begins to be more constant. On level of the second to the fifth dorsal, both sides, a zone of hyperaesthesia about 7 inches in width. At seventh and eighth dorsal, similar zone of hyperesthesia, as likewise at upper lumbar. From upper edge of os innominatum downward on left side there is analgesia mixed with areas of hypo- and hyperalgesia. On right side, an

*Read before the Eastern Medical Society, New York, March, 1920.

area of hyperaesthesia just at gluteal fold. *Touch:* Absent along left hip posteriorly, and absent in spots along dorsal surfaces of left leg. Anteriorly: Hypalgesia at level of eighth rib on left side. Hypalgesia for about one-half inch at seventh rib, then a hyperalgesia for about the same distance. Another area of hyperalgesia about two inches above umbilicus. At two inches above Poupart's ligament there is another area of hyperalgesia, likewise in groin, likewise in upper third of right thigh. Analgesic band for three inches at upper part of left thigh. On legs of both sides hyperalgesia and hypoalgesia alternate without any analgesia. From upper part of thighs downward there is a disturbance of temperature.

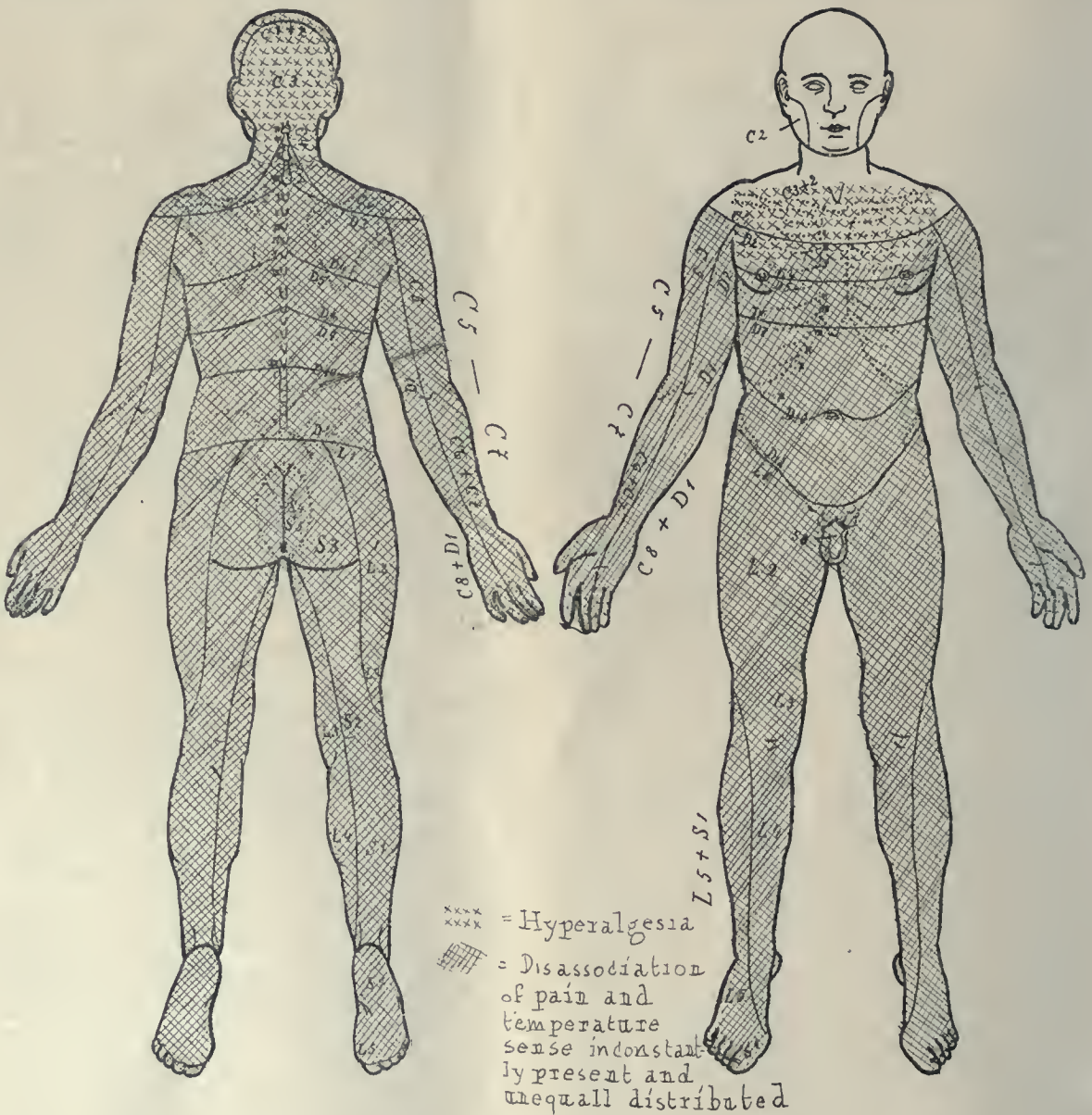

FIG. 1

Wassermann both in the blood and in the cerebrospinal fluid was negative. Urine negative.

Operation.—On January 2, 1914, diagnosis having been established, operation was performed by Dr. Elsberg. The usual exposure of cord made by median incision, stripping back musculature, removing spinous processes and laminæ. The cord opposite the fourth and fifth dorsal first exposed. Dura incised. Very little fluid escaped. No pulsation of cord. Vessels of cord congested. Probe felt obstruction about one inch above upper angle of exposure. The second and third dorsal spines and laminæ therefore removed and dura split upward. A localized extramedullary tumor (about 3 cm. long and 1½ cm. wide) lay on left side of cord, compressing the latter and pushing it to the right. The tumor was readily shelled out, without oozing and without damaging nerve structures. It lay opposite the second and third dorsals. After removal of tumor there was an escape of considerable cerebrospinal fluid and the cord appeared to begin to fill in the gap.

Postoperative Notes.—On January 6, 1914, movements of the the feet and toes are still conjoined. Legs are spastic. Deep muscle sensation and pain are present. Localization sense fair in left leg.

On February 24, 1914, the patient states that the girdle sensation, which was formerly like a wide band at level of umbilicus, has now moved down and is at level of Poupart's ligament; it is like a string, and less in intensity. Urination is much improved as to force of stream, and he feels inclined to urinate when necessary. *Reflexes:* Knee jerks both exaggerated. Double Babinski, double clonus. Double Oppenheim, Mandel and Gordon. Patella jerk not obtainable. Cremasterics not obtainable. Abdominals present except both lowers. Can raise both feet well off the bed. Moves toes. Can flex and adduct, extend and abduct legs. To adduct, a sudden sharp effort must be made. No ataxia of legs. Two-point localization is not normal in both legs. Pain in thighs. *Deep muscle sense:* Knows position of big toes, but occasionally says they are down when up.

Rarely calls up, down. Patient is potent; now has erections such as he did not have for two or three years before operation. Has been complaining lately of sharp pain in occipital region, worse at two or three o'clock in the morning, which keeps him from sleeping.

March 30, 1914; for past week has been able to stand alone for a few seconds, entirely unsupported, and to walk around the ward very slowly when supported by a cane, and to support himself with other hand on chair. There is still marked spasticity but not nearly as marked as before. Patient claims he is regaining strength in his legs. Twitchings of legs are very much less than before, only occasionally when in bed. Twitchings of muscles are worse in damp weather. Still marked ankle clonus in both legs. Achilles jerks equal in both legs. Patient is getting hot baths and is noticing a marked relaxation and improvement right after the bath.

April 22, 1914; patient claims that for past two weeks he has been experiencing more rigidity in his legs. However, the rigidity is not so bad as two months ago. Girdle sensation is lower than it was, about four inches below the umbilicus. Knee jerks both exaggerated. Double inexhaustible ankle clonus. Abdominals, all present. Cremasteric, present on right side. Double Babinski, Oppenheim, Mendel and Gordon. Can raise both legs together and separately off the bed. Can adduct, abduct, flex and extend both legs. Deep muscle sense mistaken at times, but when same is repeated he gets it correctly. Tactile and pain sense apparently normal all over. The level of hyperaesthesia and hyperalgesia previously recorded has entirely disappeared. *Temperature:* There is dissociation on surface of left thigh, distinguishing cold, but also calling hot tube cold. This reaction is obtained over outer side of right leg. There is also delayed sensation to temperature over the same areas. At the level of the umbilicus there is delayed sensation to heat, particularly over the right side.

May 18, 1914; patient's general condition is much improved. His spasticity is less. He is able to walk with the aid of two canes.

To sum up: The patient manifested subjective sensory symptoms consisting mainly of parasthesia. These were followed by motor irritative phenomena, which in turn developed into a paraplegia of the Brown-Sequardian type, accompanied by a girdle sensation apparently at the seat of the lesion. A level was established in a reputable hospital and the patient while there was in the service of a leading neurologist. We will presume that the level at that time was correct. Due to the peculiar situation of the tumor no real or rather correct sensory root symptoms could at the time be estab-

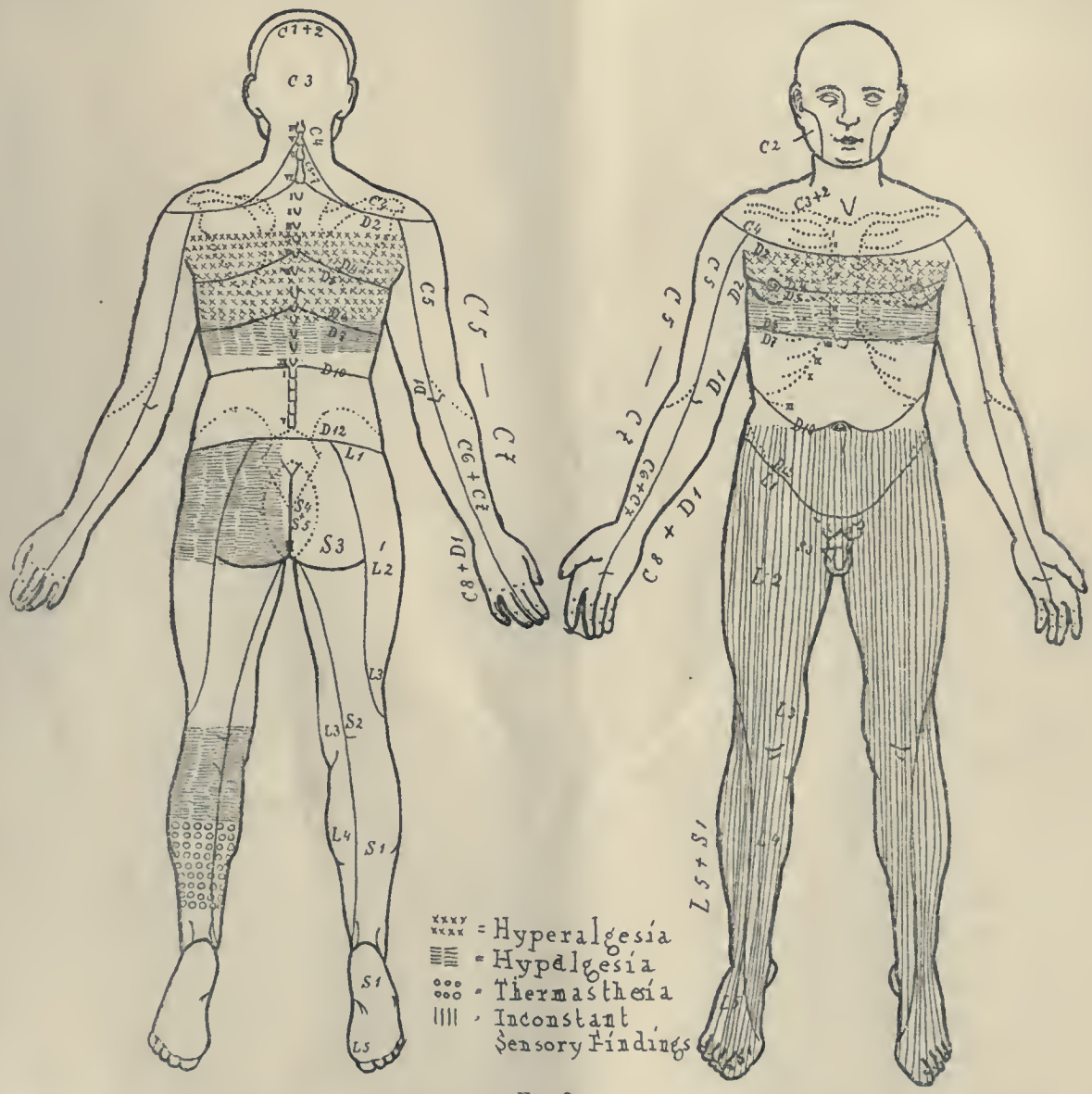

FIG. 2

lished. Only later, when the tumor grew larger and pressed upon or irritated the dorsal roots could a correct level be made out. The usual mistake of putting the level too low was made. It is probably safe to assume that the wrong level was established not according to root symptoms, but rather due to symptoms resulting from tract changes which had already taken place at the time of the first operation. In this case for all practical purposes the level moved upward, thus upsetting the classical dictum that when the level moves upwards the tumor is probably intramedullary.

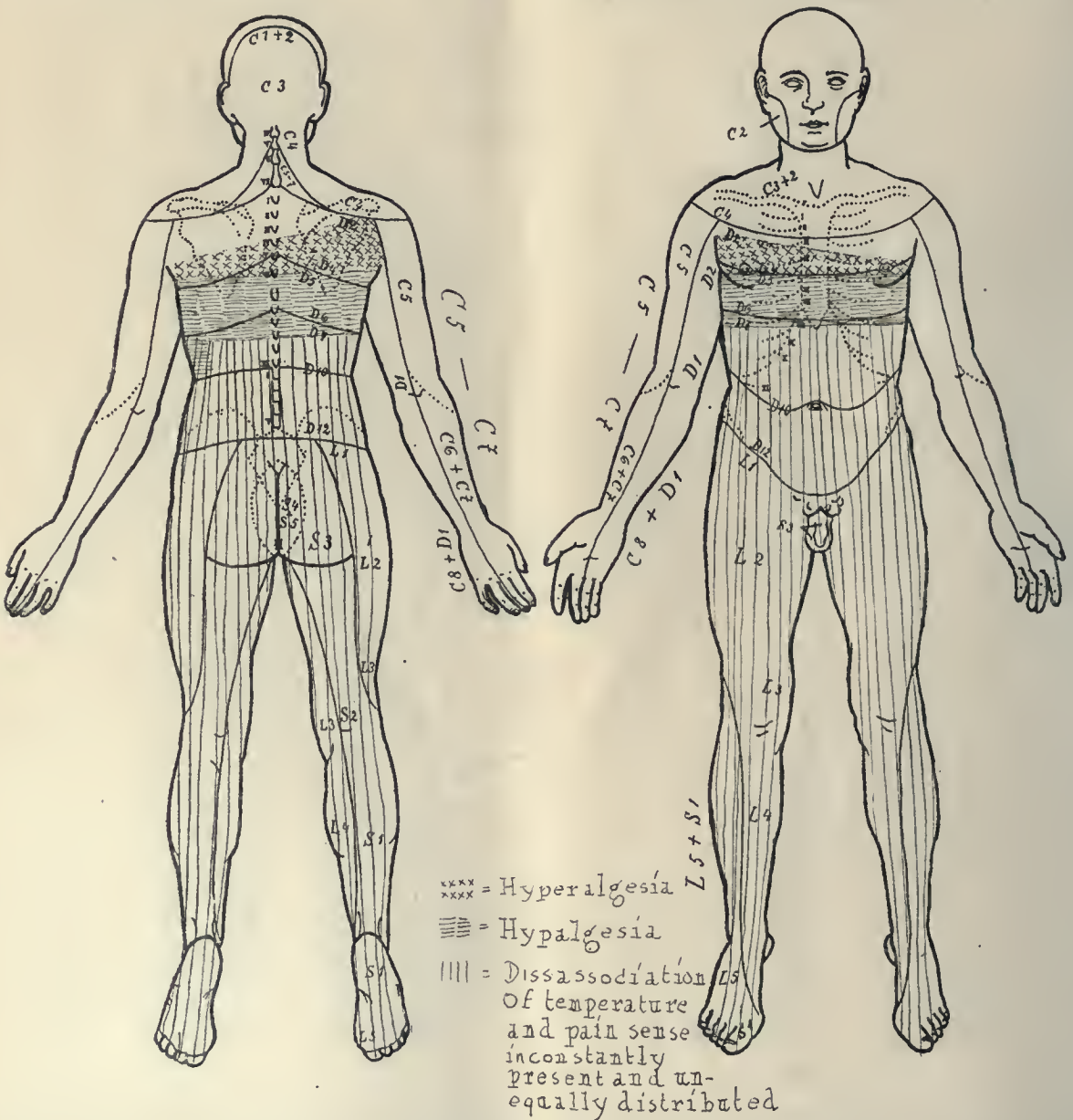

FIG. 3

CASE II.—C. W. Age 45 years. Austrian, widow. Admitted August 21, 1919—still in hospital. Family history and previous medical and surgical history, negative. Habits normal. Menstrual history normal; still menstruates; periods same as before, except that they last two days instead of seven. Married at fifteen. Had nine children, six alive and well. No miscarriages. Venereal history negative. Present illness began suddenly one year before admission with pain in the right chest posteriorly. She went to various clinics, where she was given liniments, but her condition was not improved. On admission, the patient stated that she has severe pains in the epigastric region in addition to the other pain in her chest. She often has the desire to cough, but cannot because of the pain. There were never any other symptoms present.

Summary of Complaints.—Inability to walk. Pain in posterior part of right chest. Epigastric pain. Left bladder disturbances.

Physical Examination: Patient is a middle-aged woman; fair nutrition; expression of pain in face; all the cranial nerves are negative. Teeth are absent; pharynx congested. Movements of head are normal; thyroid not palpable. Slight lagging of chest during inspiration. Heart somewhat enlarged to the right. Liver and spleen are not palpable. Lungs are negative. Few glands are palpable in right axilla. Patient is able to stand, gait is spastic and steps are short, with a good deal of ataxia. Double Babinski; double ankle clonus; both knee jerks are lively. Right crossed abductor reflex arc present. Patellar reflex is present, but no patellar clonus. Active movements in both lower extremities are limited but there is no complete paralysis. Beginning at about the dorsal vertebra on the right side, down to about the fourth, and beginning at about the fourth dorsal vertebra on the left side, there is a line of hyperalgesia. From about the sixth, seventh and eighth dorsal vertebræ there is a line of anesthesia on the right side. On the left side the line is not distinct. There are

sensory disturbances below that level. All the abdominal reflexes are absent. Bladder incontinence. Following lumbar puncture, *a typical Brown-Séquardian syndrome developed.*

Laboratory Findings: Wassermann of the cerebrospinal fluid showed three plus, five cells, and globulin two plus. The cerebrospinal fluid showed a distinct xanthochromia with massive coagulation.

Operation.—October 1, 1919. Laminectomy Dorsal V-VI-VII. Typical removal of arches. Considerable venous oozing, easily controlled by packing. Dura incised; tumor seen at upper end of dorsal incision; therefore, removed the fourth dorsal. Incision of dura, tumor about three inches long and one and one-half inches wide; partly cystic. Entirely on right side of cord between dentate ligament and fifth root. Fifth root divided as in diagram. Tumor shelled out. Practically no bleeding.

January 28, 1920; patient up and about. Walking, but with support. Complains of occasional shooting pains across the right side of the chest.

CASE III.—F. G. Female, single. Cigarette packer. Age 20. Admitted April 18, 1919. Family history negative. *Past personal history:* Occupation, clerical worker for four years. Worked under good hygienic surroundings. Habits: Sleeping and eating regular. Tea and coffee to moderate excess before onset of present illness; no alcohol; no drugs or medicine. Weight 112 pounds one year ago. *Previous illnesses:* Acute infections, none. Paralyzed at ten years of age. In bed for four weeks unconscious. No trouble after that. A definite history as to what this was cannot be obtained. Operations and injuries, none. Headaches, none. Eyes negative up to present illness. Ears, nose, throat and teeth negative. No history of any cough or night sweats. Cardiac and renal history negative. Constipated since onset of present illness. Menstruation began at fifteen. At first, period lasted seven days, now only five. Intervals very irregular, sometimes five weeks and sometimes as much as seven weeks. No insomnia or convulsions.

Present Illness: In June, 1918, patient complained of floating black spots before the eyes. She saw double for about four days. Glasses corrected this and she has never had this disturbance since. In July, 1918, on waking up one morning, patient noticed that her hand (left) felt heavy. She could move it around but only with difficulty. There was present at this time sharp pains in the back of the neck on the left side. The pain radiated down the left arm and up the back of the head. At the end of two weeks she noticed that she could hardly use her left hand at all and that both of her legs felt weak and heavy, the left much more so than the right. The pain, drawing and sharp in character, went down through all the extremities. She could walk all right but would drag her left foot, which was extremely weak. In September, 1918, she was admitted to the Mt. Sinai Hospital where she remained for three weeks. While in the hospital, she says that she had some sensory disturbances on the left side of the body. In February, 1919, patient received a burn on left shoulder while standing up against a radiator. She did not know she was being burnt until one day afterward when she noticed a blister over the left shoulder. She has never had a similar burn since then. Ever since the onset she has noticed muscular twitchings which go down her left arm. She has also noticed that the fingers of her left hand have a tendency to bleed on slight provocation. In the past few months she has also noticed that her right arm became weak and heavy. For the past six weeks she has been unable to walk at all, due to increased weakness and heaviness in the right lower extremity. The sharp, drawing pains have been continually present. She has never had any disturbances in micturition or defecation. History of continued hiccoughs some time last January. Lasted for several weeks then disappeared.

At the present time she complains of inability to walk, duration six weeks; paralysis of left arm, duration ten months; paralysis of left leg, duration nine months; paralysis and coldness of right leg, duration nine months; weakness in right arm, duration four months; sharp drawing pains radiating from neck to all lower extremities, duration ten months; diminished sensation in left arm.

Status: Young girl, emaciated, unable to stand or walk. Patient in a recumbent posture. Marked lateral nystagmus to the right; right side of face is flattened. No lymphatic enlargements. Third and fourth cervical vertebræ are prominent and tender to percussion. Heart and lungs negative. Abdomen rigid, which makes examination difficult. Tendency toward pes cavus on both sides. Apparent atrophy of musculature in both legs. Muscles of both upper extremities are wasted with the exception of the deltoids which are well preserved. Marked atrophy of intrinsic muscles of hand. Marked atrophy of skin of all the toes. Movements of toes and ankles fairly well performed. Rotation of feet is well preserved. Lifts upper right extremity, *in toto*, to about two feet from bed, while the left is lifted only about six inches. Distinct left Babinski. Right Babinski is difficult to obtain. Left ankle clonus. Right exhaustible clonus. Passive flexion of both knees is not painful, but passive extension is very painful at the right knee. Anesthesia of the outer surface of the right leg and also of the interior surface of the right thigh. On the left side there are unequal distributions of anesthetic areas, but far less in degree than on the right side. All the active movements in the left upper extremity are absent, and diminished in the right extremity. Passive flexion of head is painful. For all sensory disturbances (See Chart). The paralysis is of the flaccid type in the upper extremities. There is a dissociation of temperature sense, for which see chart. Electrical reactions give D. R. in the intrinsic muscles of the left arm. Right pupil is larger than the left. There is also marked wasting of the chest muscles as well as the pectorals. Paradoxical incontinence.

On January 15, 1920, operation. The third, fourth and fifth cervical vertebræ were opened. Cervical cord much swollen, evidently diffuse intermedullary growth.

All the laboratory tests were negative. Xanthochromia absent.

Analyzing these three cases, we see that pain is a common factor in all of them. It expressed itself differently, however, in each of these cases. In the first two the extramedullary tumors, it was an early symptom. In the third, the intramedullary tumor, it was of later development. In the first case the pain was more like the type of paresthesia at the beginning, and only later did it assume the sharp, lancinating character. In the other two it began as a severe sharp, cutting pain, and continued all through the course of the disease. This subjective symptom, pain, is a very valuable guide when properly interpreted. In eliciting this symptom the patient's psyche must be taken into consideration. It is only the intelligent and level-headed patient who will describe intelligently and accurately the seat of the pain, its character, and radiation. The emotional and restless individual with his bizarre, exaggerated statements often misleads the examiner. "Weh" covers everything with the Jew. The negro has his pet-word in "misery," and the Italian adds a toss of the head to "dolore." Only through persistent additional questioning can the character of the pain, at times, be established.

Another danger with these people is that they are often unconsciously led into answers. Perhaps the best way is to watch the patient's facial expression when the right question is put and the proper answer is given. The facial expression is particularly valuable in testing for tenderness. Pain as a diagnostic factor becomes still more valuable when it radiates along a root distribution. In our first case pain, in the beginning, was a negligible factor. In the second and third it assumed the character of root pain. We must state, therefore, that pain, while present in many cases, is not an essential symptom in the early diagnosis. If,

instead of the word pain, we would say that one of the first symptoms is a subjective sensory disturbance, we would be nearer the truth. Subsequently, however, pain became an essential factor in all the three cases. It is important to point out that in all of these cases the pain traveled along the distribution of a root. This is an essential feature, for no matter where the tumor begins it subsequently attacks the spinal root and more frequently the dorsal roots. In our first case it expressed itself as a constriction around the chest, in the second as a girdle sensation, and in the third it assumed a shooting, lancinating character along the nerves of the neck.

In our first and third cases, one of the early symptoms was an interference with the motor functions. In the first case the interference was of the irritative type; in the latter, of the paretic. The reason is easily explained. In the first instance the tumor was extramedullary, and judging from the absence of pain as an early symptom, it began to grow at the side of the cord and thus irritated either the lateral, crossed pyramidal tracts, or the anterior roots. Judging, however, from the history of the case, we may safely say that the anterior roots and not the lateral tracts were affected. In the last case we were dealing with an intramedullary tumor, where, besides pressure phenomena, the tumor invaded the substance of the cord and destroyed some of its structures. We see here, therefore, that early symptoms were profound paralysis, expressing itself as an early spastic syndrome in the lower extremities, and atrophies and flaccid paralysis in the upper extremities. We could, therefore, justifiably deduct that we were dealing with a lesion that at an early date began to destroy the substance of the cord.

In the third case, one of the early symptoms was visual disturbances. This is readily understood if we remember that high cervical lesions often give nystagmus. The patient, before he gets used to this condition, suffers form visual disturbances. Nystagmus is one of the so-called symptoms that point to a level localization. These localizations are numerous, such as the celiobulbospinal center, sphincteric centers, and so forth. We will not delay at this point to discuss them, as a description of them can be found in any leading textbook. Here, however, a word of caution should be sounded. In giving sensory segmental distributions, the textbooks represent them as sharply defined. At the bedside this is never the case. Indeed, the areas of the various segmental distributions merge into one another. So that, in outlining a segment, space should be allowed on both sides for the adjacent segments.

Physical examination shows objective sensory changes in all three cases. The character, extent, and time of occurrence of these changes varies in each case. In the third case the sensory disturbances occurred early, as evidenced in the history of the case. They were more extensive and dissociated in nature. In short, the early sensory changes in this case were of the tract variety, and only later in the disease were root changes present. Early and profound sensory disturbances accompanied by early trophic and vasometer changes would in themselves speak for a central, *i.e.* intramedullary lesion. In the second case the objective sensory disturbances, while they appeared early, were not so marked, in severity or in extent. They were more of the root type, while tract changes appeared later in the disease. With the appearance of tract sensory changes motor tract symptoms began to take place. Only late in the disease were slight trophic changes seen. It was evident that we were dealing here with a tumor that was pressing on the cord from the outside, and the pressure was exerted somewhere near the dorsal roots. If we take into consideration the Brown-Séquardian distribution of symptoms, we may safely say that the tumor originated on one side of the cord and that it was more toward the dorsum than to the ventrum.

In the first case, the objective sensory symptoms were few and were altogether a negligible factor. Objective sensory symptoms appeared only late in the disease and only toward the end could tract and root symptoms be established. If we now remember that in this case the early symptoms were motor root in type, and that they were unilateral, it will be easy to conceive that we were dealing here with a tumor that was pressing on the ventrolateral part of the cord.

Tract symptoms cannot be used as a guide for level diagnosis; their distribution almost always expresses itself clinically far below the seat of the lesion. They can tell us only how far the cord is compressed, or whether the lesion is primarily within the cord substance. The level diagnosis depends entirely upon the establishment of the highest segmental involvement. This expresses itself clinically either through anterior or posterior root symptoms. The former is rather a rare occurrence, the latter is the usual localization guide. Upon the proper elicitation and interpretation of root changes depends the correct establishment of the level.

In our first case, a wrong level was established in the hospital where the patient was treated prior to his entrance to Montefiore. Here, after repeated and careful sensory examinations, the correct level was finally found. The tumor corresponded exactly to the clinical localization.

As a rule, the mistake is always in putting the level too low. I know of no case where the surgeon has entered above the lesion. The following is offered as an explanation for this mistaken localization: The tumor pressing upon the cord stabilizes a column of cerebrospinal fluid which exerts a certain pressure above the lesion. The pressure of this column causes tenderness along its corresponding roots. The upper level of this tenderness corresponds to the upper level of the stabilized column of cerebrospinal fluid; the lover level corresponds to the highest point of the tumor. If the surgeon would enter at this point (the lower level), correctly discounting the laminæ, we believe that no mistake would be made. Instead, the hyperalgesic belt is at times disregarded and the succeeding belt of anesthesia is taken as a guide. This, while frequently corresponding to the seat of the lesion, may at times be below the lesion. Another mistake is also frequently made. In localizing the segment the surgeon forgets that he counts the spinous processes and not the bodies of the vertebræ. While the relation of the segments to the spine is

always given with reference to the bodies of the vertebræ it must be remembered that the spinous processes of a given vertebra are at least a segment lower than its body and, in the dorsal spine, it is even lower than that. The surgeon must consider this allowance when he establishes his relations between vertebræ and segments. Furthermore, the patient, as he lies on the table with his head hyperflexed, moves his cord up. This explains why the surgeon often finds the tumor by probing above the opening. These are the theoretical explanations for mistaken localization. It is the writer's opinion, however, that a mistaken localization is frequently due to a hasty and unskillful sensory examination and wrong interpretation of sensory charts.

I would like to call attention to an occurrence in our second case. We see that after the lumbar puncture the patient became suddenly more paralyzed and the Brown-Séquardian syndrome became more pronounced. This is due, of course, to the fact that *after a sudden withdrawal of the fluid the tumor pressed more upon the cord and produced the given syndrome.* Such occurrence, I believe, should be considered as pathognomonic of spinal cord tumors where vertebral disease can be excluded.

Fortunately, all the cases in this paper began with unilateral symptoms and only later the entire cord was involved. This is, of course, classical for spinal cord tumors. In another series of cases, however, we will show that the Brown-Séquardian syndrome is not a *sine qua non* for the establishment of the diagnosis of neoplasms of the spinal cord. Such diagnosis should be made whenever there is enough evidence to show that we have, in a given case, a steady, progressive, localized lesion of the cord, and where inflammatory, systemic diseases of the cord, as well as disturbances of the spine, can be excluded. We will not go here into discussion of how to exclude this condition. Such description can be found in almost any good textbook. Whenever we have successively root symptoms, followed by tract and trophic symptoms, an extramedullary tumor should be suspected. When, however, cord pressure symptoms are well established, it is difficult to differentiate between an extra and intramedullary tumor. The diagnosis is then made mainly from the history of the case. A history of early tract disturbances with early trophic changes speaks usually for an intramedullary growth. The classical differentiation of a fixed level in an extramedullary and an ascending level in an intramedullary does not always hold good. Our first case gave symptoms of an ascending level and yet the tumor was extramedullary. Perhaps the most reliable guide is an early involvement of the central gray as evidenced by trophic and vasomotor changes as well as early tract sensory disturbances, which will speak for an intramedullary tumor. The early atrophies, local hemorrhages and extensive analgesias in our third case show such an involvement.

The presence of syphilis in a given case does not exclude the presence of a noninflammatory tumor. Our second case once more emphasizes this rule. Syphilis and a spinal cord tumor may coexist. Whenever we have a well-defined level with pressure symptoms which are not relieved by specific treatment, suspicion of a tumor should always be borne in mind, even though the Wassermann should continue to be positive. Laminectomy to-day is a comparatively simple operation in skilful hands and the patient should not be deprived of the chance of an operation.

Our second case showed xanthochromia with massive coagulation. A few words as to this condition. In 1903 G. Froin (3) reported three cases of spinal cord diseases, two of which were of the pachymeningitis type and one of Landry's disease. In all these cases a yellow cerebrospinal fluid was obtained. Rapid and massive coagulation of the fluid took place almost immediately after its withdrawal. Froin simply recorded the fact without making any generalizations. A number of reports of similar cases soon followed. Derrien, Mestrejat and Roger (4) advanced the so-called lumbar *cul de sac* hypothesis which has become generally adopted. According to this hypothesis, xanthochromia with massive coagulation is obtained whenever the lumbar part of the cerebrospinal cavity is closed off from the general cerebrospinal circulation. The blood vessels of that cavity usually become diseased and permit a transudate into the isolated cerebrospinal fluid. This transudate, which consists of fibrinogen and fibrin, lends the yellow color to the fluid and it is also responsible for the coagulability. D. B. Leitch (5) and a number of others reported yellow fluid in tuberculous meningitis as well as in other known conditions. Spunt and Walker (6), who have studied the subject, came to the following conclusions: 1. A yellow cerebrospinal fluid which does not coagulate is due to dissolved hæmoglobin or its derivatives. It is found in brain tumors which come in contact with the meninges or ventricles. 2. The yellow fluid with spontaneous coagulability is due to a compressed phenomenon. C. L. Mix states further that the presence of an abnormally large amount of cells in the xanthochromic fluid would speak for a meningomyelitic process, granuloma or sarcomatous tumor. Wherever the obstruction is due to a smooth tumor, the xanthochromic fluid will contain a normal amount of cells.

Whether all these niceties are indisputable facts is still difficult to say. So much, however, must be stated. Yellow cerebrospinal fluid always means an organic disease. Xanthochromia with massive coagulation always means occlusion of the lumbar cerebrospinal cavity. Whenever this inflammatory process can be ruled out, xanthocromia with massive coagulability in the presence of level symptoms should always be indicative of a spinal cord neoplasm.

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THE MANAGEMENT OF CERTAIN MENTAL AND NERVOUS CASES; A MEDICO-LEGAL ASPECT.*

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It not infrequently happens that the medical profession is very unjustly criticized by the laity. The doctor, coming as he does into the closest of relationships with the individual and the family, is the target often of much unmerited and unjust attack, and even of needless abuse. He is accused of prolonging his cases, of subjecting them to needless tests, and of paying unnecessary visits. The surgeon has the reputation at times of performing unnecessary operations; the family physician of procuring incompetent and dishonest consultations —all for the sake of a fee.

No one knows better than you and I how utterly untrue and groundless these suspicions are; that such practices may occur in isolated instances, I am not prepared to deny, but I can say in all candor and with all emphasis that I have yet to meet that type of practitioner. Nevertheless, it behooves us all who have to desire to make a wholesome impression on the populace at large—using the popular phraseology of the day—to beware of entangling alliances. The neurologist and psychiatrist, inconspicuous as his work may be, is not by any means immune from criticism of this nature. He is probably more so, since his work is largely among those morbidly inclined.

I have gotten together a few cases that have come under my observation within the last two or three years wherein it was my privilege to act as advisor. I have observed in these cases, as you will notice, a certain judicial attitude, having in mind as I think we all do, or should do, at least, the prevention of any course of action that would prove a detriment to the individual and not be for the best interests of all concerned.

It is the bounden duty of the physician to prevent, so far as possible, the creation in the patient's mind that he has a chronic irremediable condition or disease. I think we all agree on the psychic value of this attitude. Just so, the neurologist should judiciously refrain from pinning the label of an organic disease on his patient, if he can possibly establish a functional cause.

In cases presenting a medicolegal aspect, we should sedulously leave no stone unturned to keep our cases from the ordeal of court procedure. It is this judicial attitude I have attempted to attain. In so doing, I am sure I have kept many individuals off the rocks, so to speak—as well as their friends and doctors too—although I must say that the average practitioner is wise in this respect.

One should keep it paramount in mind that the chief province of the physician in cases of negligence, or where a suit for damages is in mind, is to convince the patient, if it be within the limit of reasonable certainty, that the alleged injury is not great enough to appeal to the courts for adjustment. It is better, I am sure, to err on the side of the defendant than that of the plaintiff. The same rule applies in regard to those upon whom we are called upon to pass an opinion among the mentally afflicted. Although it is our duty to the individuals themselves, their families, and the community at large to protect them from danger—still it is not meant that the offices of our examiners should be used as a short cut to get rid of an unruly member of society.

Goodness knows, our asylums and private retreats are filled to overflowing now, without adding to the burden. It is not long ago since there appeared in the public prints an article in which the writer, who had been in conflict with the lunacy laws and the courts, was attempting to present the evidence of a so-called lunacy trust.

In mental cases one has to be on the lookout for feigned insanity, desire to escape punishment for crime, and for cases of psychic epilepsy. In litigation cases, the accompaniment of an ulterior motive—such as that of revenge, of fear, of financial gain, of desire for a soft berth, for a tangible reason for lack of success in life, for a desire to pose as a martyr, or even it may be an unrequited sexual desire—seeking satisfaction or compensation not always apparent but revealed under investigation.

It is not intended in these pages to minimize the need of careful investigation of all cases of alleged injury seeking adjustment, for many of them are honest and only in search of justice, nor is it meant to convey the hint that we should not subject to a careful scrutiny all cases of alleged mental defect, for the general welfare of the individual and of the community at large must not be lost sight of; but we should strenuously resist the use of our offices in aiding or abetting fraud and deceit.

The first case that I will describe was one referred to me by Dr. C. and seen with him in consultation.

Case I.—A man, 55 years of age, struck from the rear by an automobile which pitched him forward, striking his head against an iron lamp-post and rendering him unconscious. Removed to the hospital, and returned to consciousness in four hours. No appearance of bleeding except from scalp wounds. *X*-ray examination showed fracture of the skull, the line of fracture extending entirely around the skull. The patient made an uneventful recovery. Seen within two weeks after the injury, patient showed perfect orientation. No neurological stigmata. Only thing I suggested at that time was a lumbar puncture, particularly to note pressure of spinal fluid. An eye-ground examination was also suggested. Neither of these procedures was carried out.

A few months later the patient had a convulsion resembling an epileptic seizure, and sought medical advice. He was told that his trouble was probably due to his injury. He then conceived the thought of a lawsuit, not only against the driver of the automobile, but against the doctors who had his case in hand at the time of the injury. Again it was my privilege to act as adviser. The patient's spinal fluid was found to be under very high pressure, as noted by the mercurial manometer, eye-grounds normal. By diplomacy, and perhaps a bit of luck, he has dropped the idea of lawsuit. No recurrence of convulsions in two years—possibly due to the timely withdrawal of spinal fluid.

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Comment: All cases of head injury should be *x*-rayed; all cases should have eye-ground examination; pressure of the spinal fluid should be noted and a pathological examination of the same be made. Prognosis and advice to patient should be based on these findings.

Case II—Was seen in consultation with the late Dr. J. A. Bodine; may be more appropriately termed a medico-military case. The patient had consulted Dr. Bodine with a self-made diagnosis of appendicitis, and desired an operation. Dr. Bodine found him lacking in some of the features of appendicitis. His past history was not analogous to the chronic type, neither did it conform to the unmistakable distressing picture of an acute attack. Dr. Bodine believed it to be a case of hysteria. Neurological examination of this man of 24 showed a very intelligent, shrewd individual, but lacking the essential stigmata of hysteria. I believed him to be a malingerer, with a motive, which may be often brought to light in a searching investigation, but which was not discernible in his case. Dr. Bodine in his characteristic manner said: "Well, I'll operate on him anyway, since he demands it, and it will do him no harm." Nothing was found either by *x*-ray examination or at operation that was pathognomonic. A perfectly clean abdomen, a perfect recovery from operation, a complete cure of his condition—all his neurotic fears and anxieties having entirely subsided.

The motive for his apparent hysteria was revealed the following year when he appeared before the draft board showing his scar, and expecting fully that it would disqualify him for military service. Finding that it did not, a genuine hysteria developed. By good fortune he came under my observation while I was serving on the Medical Advisory Board of the United States Government. He had learned his book the year before, and now showed all the stigmata of a genuine hysteria. He was a veritable human pincushion. I immediately recommended him for full military service. He was sent back from the first camp, for the reason that while there his symptoms were not only exaggerated, but he had developed an impediment of speech. I again sent him back to the commanding officer with a note of explanation. I later heard of him through the commanding officer at Camp Wadsworth, and the missionary effect of being among real men had had a good result; he became a very good soldier.

Comment: In all cases of a self-made diagnosis where a patient demands operation, watch for the hysterics and be on the lookout for motive. The records show that there were many such cases during the war.

Case III.—Referred by Dr. F. E. Gardner. Dr. Gardner was then in the military service, and he was to return to camp at the time he was notified about this case, so we did not see the case together. The doctor being informed that it was a dangerous mental case, asked me to look after it. Let me say at the start that one gains an insight to many cases, a sort of psychological conception of what confronts him, by the happenings leading up to the first visit. This case illustrates in a sense what I have stated. I received an early morning call on the telephone—an excited demand to come at once; that Dr. Gardner, who was then in the service, had been called back to his post, and that the person was in great danger and that there was need for haste and secrecy. Upon my informing the lady that I could not get there for twelve hours, she replied: "All right, come then."

Arriving at a beautifully furnished apartment at 7 P. M., I was met by a wildly excited French woman, who began gesticulating to me and talking in French. Finding I did not readily understand, she called her brother, who had been guarding the patient, whom I had not yet seen. The story was that the patient—a young man of 25, who was the paramour of the French woman—had tried, so she stated, to murder her the night before. She had waked up finding herself gripped by the throat, and finally managing to get out of the grasp exhausted and breathless and summoned aid. She had black and blue marks on her throat as proof of her statement. She stated that he had been moody, depressed, and irrational all day, that is, the day following the assault, and denied all remembrance of attacking her. She stated that she had known him several months, that prior to this he had been of a cheerful, happy disposition; used to play and sing a great deal; that he was a professional concert pianist; and that his parents were wealthy. She declared that he had suddenly gone insane, and that although they had loved each other dearly despite the disparity of their ages, she being 49, that now she was afraid of him and demanded that he be sent at once to the asylum.

I then went into the adjoining room to interview the patient, much against the protests of the French woman and her brother, who declared it might be unsafe for me to be alone with him. I found a very good-looking young man, athletically built, slightly erratic in manner, but apparently highly educated and intelligent. He held himself in what I believed to be pretended reserve at first, but as soon as he found that I was approaching him in a friendly and interested manner he became less reticent. He stated that he had served two years in the aviation forces; had been honorably discharged from the service, and that he had fallen from his aeroplane several feet, striking on his head, rendering him temporarily unconscious, and that he had had headaches ever since. He declared he knew nothing of the attack of which he was accused, that he loved the woman, and that it was she who was crazy.

Having formed a tentative opinion of his case, I asked him to accompany me to a hospital, which he was willing to do. I told him to get together his belongings, and be ready in half an hour, and summoned a taxicab. When I told the French woman of my plans she made a great protest, that he must not go to the hospital but to the asylum, and that she would at once call the police to take him there. I informed her that the moment she reached for the telephone to summon the police I would also reach for the 'phone and telephone the police department to restrain her from unlawfully attempting to deprive the man of his liberty. The ruse was highly successful. I got away with my man in the cab. I told the driver to go anywhere. I told my patient we were on the way to the hospital. He desired to know what kind of hospital, and I told him the ordinary kind, and that on account of his alleged injury and symptoms I would have him *x*-rayed, blood tested, eye-grounds examined, and spinal puncture made, to all of which he demurred greatly, saying he did not need it, and refusing flatly to go to any hospital. He finally compromised and agreed to go to a hotel for the night and have the tests performed the following day.

You will already note that I was merely sparring for time, and that I had already made my diagnosis, not being that of insanity, but of feigned insanity. Here again it was but necessary to establish a motive, which I already had in mind. I left him at the hotel, under guard of a male nurse, and went back to the apartment of the excitable French woman. I told her she need have no more fear, and then confronted her with the accusation that, realizing that their illicit relations must eventually cease, she had concocted the story of the murderous assault, showing her motive to be that of being able to say to her friends that he had gone insane and that she had to be rid of him, which to a woman of her temperament would not be nearly so humiliating as that he had grown tired of her.

To my patient the next day (I was looking for a confession by this time) I tendered my congratulations on so successfully breaking away from an undesirable liaison—all of which he admitted, and finally confessed that his action was a sham and a pretense, including his effort to mildly choke her. In other words, he made her fear him, which was the only way his weakened and unstable manhood could find to be rid of her. I kept him under observation for some time after that, and finally induced him to go back to his home in a distant city, with a warning as to his narrow escape from being railroaded to Bellevue. According to last accounts he is leading a normal life.

Comment: Be on the alert for a feigned insan-

ity—the motive not being hard to discover, especially if there is a woman in the case.

Case IV.—Referred by Dr. John Van Doren Young. Case of a woman 36 years of age, who had been under intense strain due to war work in Washington. She began acting strangely, depressed, reticent, wandering the streets at night, etc. Her family in New York were notified and she was brought home. She gave a history of a similar attack a few years previously, at which time she had been rushed with great haste to a retreat for the insane. That experience had ever since been a veritable nightmare to her, and she had looked with dread upon any repetition of such treatment. It was first necessary to get her confidence. She was so suspicious that she would not permit me to touch her or even come near the bed. Her past and present history would classify her as belonging to the manic depressive temperament. I kept her in bed with a nurse in charge and under ductless glands medication for two weeks. I finally gained her confidence, and by the aid of the psychoanalytic method—which, although not a routine method of mine, I resort to in some cases—I unravelled a number of sexual aberrations which had a bearing on her case. For four weeks following I kept her almost practically out of doors, walking, bicycling, etc., and finally urged her to become a farmerette. She made a very good recovery.

Comment: Do not commit to an institution except for safety's sake. In a woman, particularly, consider the genadal endocrine picture and analyze the emotions. This girl's brother developed symptoms not unlike that of his sister, but upon investigation they were found to be due to an entirely different cause. They were not due to heredity, but to the environment by which he was surrounded in his business. A change of employer completely restored him to health with but little medical treatment.

Case V.—Referred by Dr. L. Case of a young man, 30 years of age, a musician of more or less prominence, a teacher of music and piano accompanist. His ancestry was unknown, he having been a foundling. Even his foster parents were dead. He lived in the same apartment house, but not in the same apartment, of the young lady to whom he was engaged and who at the time stood sponsor for his care and treatment.

I found the patient bearing the syndrome of dementia precox, with the character of delusions and hallucinations of the paranoid type of that disease. My advice was that this man be removed to a place where a person of his particular mental condition could be kept under observation; and for two other reasons it was necessary: First, that he had no home; and, second, that he must be taken away from the society of the young lady to whom he was engaged.

In looking for motive I read in his case that this was what he desired. The dread of responsibility of matrimony, which is not at all uncommon, had unbalanced an unstable temperament. His friends feared that it would be impossible to take him to an institution except by force; and the other doctor in the case had already made out and signed the commitment papers. I declined to sign, because I do not care to commit if any other way presents itself, for the reason that in many instances it is as bad a handicap in future life as a prison sentence. It is a legal act; it remains forever a blot and a blemish upon a family. Voluntary commitment does not. By a little persuasion I induced this man to so commit himself. He soon became a model patient, and enjoyed the new environment so well that he wanted to try out two or three other institutions, which he did. He was under observation in institutions of his own choosing for over six months, and finally returned to his work. It is now nearly four years and he has had no return of attacks.

Comment: This man was saved the ignominy and disgrace of being committed to an institution where he might have remained indefinitely.

Case VI.—This was a case of litigation in another State, in which I was asked by the attorneys for the plaintiff to examine the plaintiff and testify in court. The plaintiff, a man 26 years of age, was suing a railroad for damages for injuries alleged to have been sustained while a passenger on a train that ran off on a siding, due to a misplaced switch, the train going over an embankment. Patient was said to have a spinal concussion, whatever that may imply. Examination disclosed a condition diagnosed by me as a meningeal myelitis, to which I testified in court. The main symptoms of this condition are pain in the back, unnatural rigidity and stiffness, exaggerated reflexes, partial loss of function of ordinary movement, etc. A day or two before trial the attorney called me on the long distance 'phone and asked if there was anything else that might be done to add strength to the case. Although I felt that there was not, I said offhand that he might have an *x*-ray of the spine. Much to my surprise the picture showed a fracture of the body of a dorsal vertebra, I have forgotten which one, and of the transverse process of the same vertebra.

It is needless to say that he received a very large verdict from the jury. The aftermath of this case came a few weeks later, when I was called to the same city to examine and testify in case of a man hurt in this same accident, also afflicted with the diagnosis of spinal concussion. An *x*-ray picture had been made in this case before I saw the patient and by the same radiographer. By a remarkable coincidence the picture revealed precisely the same injury as in the other case—fracture of vertebral body and transverse process, and even the key-ring that was in the pocket. By this time I began to see daylight and refused to testify.

Comment and moral in this case: Employ only "an honest to goodness" radiographer, or arrange to be present when the pictures are taken. I may say that the first case, in which I had taken a great interest, and had asked the patient to come to my hotel, so that I might advise him to come to New York and consult an orthopedist, since he had a broken back, not only did not put in an appearance, as I had requested, but sent word he was now feeling all right.

Case VII.—Another case of spinal concussion, in which a man in a nearby town had fallen down an elevator shaft, landing on his back. (I get a number of cases of spinal concussion referred to me, I presume, for the reason that my own spinal trouble has been called by my friends among the neurologists and orthopedists as spinal concussion, or at least due to that cause.)

This man was removed to a local hospital, where he was under observation for a few days. No external injury and no bones broken. Sent in to the neurological department of the Polyclinic Hospital, and referred to my service by the superintendent. The patient was disoriented upon arrival at hospital; could neither hear, speak, nor see, and acted so irrationally that the superintendent insisted upon a special guard of nurses and barred windows. I believed this all unnecessary, as it was my opinion that we were dealing entirely with a traumatic neurosis, to which I shall testify in court, as that case is still pending. I may say that speech, sight, and hearing all returned within a few days, due more to suggestion than anything else.

I have no confidence in the traumatic neuroses as a plea for damages in court. I feel inclined to accept the view of Oppenheim, that it is more of a litigation neurosis than anything else. I hope in any discussion that may come up to-night my confidence may be somewhat strengthened.

Case VIII.—Referred by Dr. S.; an unusually interesting case. The patient was a boy of 12 years and gave a history of being struck in the back of the head by a stone thrown by a park employee. It was not intended to strike the boy, but merely to frighten him. The boy fell to the ground and was unconscious for a few moments only. He bled freely from a scalp wound,

which was dressed by an ambulance surgeon, and sent home. He remained up and about during the remainder of the day and for two days afterward.

On the day following, which was three days after the injury, the boy was restless, feverish, and fatigued, and was put to bed. On the following morning he was completely paralyzed in the lower extremities and in one forearm. It was shortly after this that Dr. S. was called to the case. In summoning me he said that he felt that he had a brain injury to deal with, perhaps a fracture of the skull, or at least pressure from hemorrhage. Finding the boy perfectly bright, no stupor, no fever, and with a flaccid atonic paralysis and cold extremities, and reflexes entirely gone, I made the diagnosis of anterior poliomyelitis of the usual onset, and having nothing to do with the injury, but merely coincident thereto. This diagnosis was accepted by the family physician, but rather reluctantly by the family. That the boy might have appropriate treatment, and for other reasons, I suggested that he be sent to Willard Parker Hospital, where the diagnosis was confirmed by examination of the spinal fluid and again corroborated at the Neurological Institute, where he was transferred later.

A short time afterward a lawyer got in touch with me, saying he thought we could easily make a case against the city, as the boy was originally injured by a city employee. I explained to him where he was in error, and nothing further developed. I saw the boy six months later, much improved, but with the residual type of paralysis characteristic of anterior poliomyelitis.

Case IX.—Patient referred by Dr. A. Patient was an Armenian, 42 years of age, with a specific history of long standing. He had been under mixed treatment for a number of years at intermittent periods. History was that the patient had fallen to the floor unconscious and remained so for an hour. Was sent into my service at the Polyclinic Hospital. When first seen by me he was in a more or less stuporous condition, with a well-developed ptosis of the right eye and double vision. The diagnosis was hemorrhage of the crus. The patient, who was then under heavy doses of mercury and potassium iodide, recovered from the stupor, but began to be irrational, loud, and abusive, and threatened suicide, so was well guarded. The patient grew steadily worse, and his private physician felt that he should be removed to a hospital for the insane. Hoping against hope, I called Dr. F. E. Garnder into the case. He was given five intravenous injections of salvarsan by Dr. Gardner at five day intervals. The effect was magical, even from the first dose. The patient made a good recovery, was out of the hospital in two months, and back at his business in three months. The double vision has cleared up, but a slight amount of ptosis still remains.

Comment: It has never been my routine practice to resort to salvarsan in neurological syphilis, but this case and one or two others have revived my confidence in it.

Case X.—I was called by the management of a high-class apartment hotel on the West Side to give an opinion on the mental status of one of their guests. She had taken up her residence at the hotel a few weeks previous to my visit, accompanied by several dogs, a few trunks, plenty of diamonds, and other so-called appurtenances of wealth. Her eccentricities worried the management to some extent. She kept to her room constantly and had her meals served there. She soon engaged a trained nurse and summoned two or three different doctors to treat her. Was continually telephoning friends, day and night, that she was ill and worried, could not sleep, etc. In spite of all this she was giving a great many dinner parties in her room. The night I went there one of these dinner parties was in progress. I neglected to say that one of the principal worries of the management was the fact that they could get nothing in the way of money from this fair patron.

On going to her room the night in question I was escorted into the room by the nurse and elaborately introduced to a goodly company, consisting of, as nearly as I can recall, two lawyers, two doctors, and a few stage celebrities. I was asked to partake of the repast, which I respectfully declined to do. I recognized an old acquaintance in the woman I had been asked to see, although she did not remember me, which may have been subterfuge on her part. Two or three years before this woman had sued her husband for divorce, and in her claim for alimony stated that she was the victim of general paresis, for which her husband had been responsible. I had testified in court at that time not only that she did not have general paresis, but even if it could be proved that she did have it her husband could not have been responsible, for they had lived together but a short time.

To return to the subject of the dinner party—nearly at the close of the repast this woman suddenly threw up her hands, said she was in great pain, and believed she had been poisoned by some of the food or drink. The nurse and one of the so-called lawyers said they felt similar symptoms. The dinner party broke up in pandemonium, the management and the chef having been sent for, and an investigation was promised.

I made a hasty exit, and reported to the hotel management the following day that I considered their guest a professional blackmailer and a dangerous woman. She later proved to be a hotel deadbeat. This particular hotel kept her for a week longer, trying to get their bill paid, but in vain, and finally seized her trunks and ordered her to leave. I understand she went from there to the Gotham, where she was again ordered to leave. She next turned up living in a furnished apartment on Riverside Drive, conducting a school for interpretative dancing. She came to my office about this time, very penitent, saying that she had been unfortunate in certain speculations, but that things looked rosier, and that she would soon pay up all her indebtedness.

She then told me that she had been placed in the hotel from which she had been first ousted by the vice-president of a large corporation in New York, naming the corporation as well as giving the vice-president's name, with whom she claimed to be on very intimate terms. She stated that on the day prior to going to the hotel she had visited him at his office in the building owned by the corporation, and that while descending in the elevator and while making her exit from the same had fallen, striking her head against the iron gate—all of which was due to the carelessness of the elevator operator. She further stated that the vice-president had agreed to look after her, paying her expenses, etc., and that he had not done so. She believed her head had been injured and said that she was going to sue him, asking me to conduct the medical side of the case.

I regarded her as a colossal fraud, and informed the vice-president of my suspicion, and offered then and there to be his witness, if anybody's. The matter died down, some settlement being made. She then drifted out of my sight until during the last year, when she sprang up as a war worker and sought money successfully for many pretended charities. She was arrested, tried, and convicted for fraud, and is now serving time in Auburn.

No comment in this case except that of the proverbial gullibility of New York's native sons No more verdant field for gold-brick speculators exists, far outrivaling the fertile valleys and sloping hillsides of neighboring States.

One more case and I am through.

Case XI.—The private secretary of a wealthy widow, over eighty years of age, came to see me, asking me to visit her employer and give an opinion as to her mental condition. Finding that she had a physician attending her with great regularity I told the secretary I could not do so without his consent and cooperation. This he steadfastly refused to give, saying it was absolutely unnecessary for any one to see her except himself. This woman lived alone with her servants and secretary. She had no children and no known relative anywhere. It had been her habit for many years to go driving daily in pleasant weather, accompanied by her secretary, coachman, and footman. She had often dis-

cussed with the secretary various charities she was going to remember in her will. The secretary noticed that of late she had grown very erratic and hard to please, that she had almost daily conferences with her lawyer and doctor, who always visited her together—the secretary being excluded.

After many years of residence with this woman, and having been given the confidence of a trusted employee, she did not understand, and became very suspicious of this mysterious secrecy. I have no doubt that if this aged woman of wealth were to die suddenly and under unusual circumstances, and especially if it could be proven that she had made a recent will, leaving her money either to the lawyer or the doctor, or both, that the long-devoted and faithful secretary would ask for an investigation by the district attorney's office.

In closing, permit me to say that I claim no originality in the methods employed to make deductions in these cases. I assume furthermore that the assortment of cases described are fairly typical of those found in the practice of anyone aiming to specialize in nervous and mental diseases.

It is merely the application of simon pure psychology—a sort of old-fashioned, common sense, third degree method. It is not psychoanalysis or dream analysis; it is not a struggle with the subconscious; it is possible so to distort the ordinary workings of the mind that one's description may have a so-called psychologic twist, a pseudo-science, but which hypothesis would not be recognized by the academically trained psychologist.

The vagaries of the human mind form an intensely interesting and fascinating study, making it the most attractive field of medicine. To establish a physical cause for mental ills is the recognized province of all neurology and psychiatry. We must be on the alert for manifestations of endocrine disturbances to recognize and eliminate, for instance, the lack of adaptability as well as the presence of fatiguability in cases of hypothyroidism, and in civil legal cases to note, perhaps, the paranoia, querelans type, but we should in no case neglect the moral side, and search for motive, for we are, in a sense, the moral as well as the physical guardians of the people.

To be successful in this one needs to be a combination of seer and prophet, of priest and father confessor, with the wisdom of a Solomon, the discernment of a Diogenes to detect honesty of purpose, the judicial mind of a John Marshall or a Choate, and the detective ability of a Sherlock Holmes.

15 East Forty-eighth Street.

STAMMERING.

UNDERLYING CAUSES AND METHOD OF CORRECTION.

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STAMMERING, according to its universally accepted meaning in English, is a halting, defective speech utterance, wherein there is difficulty in starting a word or in passing from one letter to another. It is a momentary lack of control of the muscles of articulation in the effort to speak. At times the stammerer will come to an absolute halt, being unable to produce voice. The defect is often accompanied by irregular spasmodic movements of the face, tongue, neck or body, caused by the effort made to produce a sound or articulate speech.

One form of stammering is commonly known as stuttering. It is the unnecessary repetition of a letter or word before passing on to the next; as, d-d-d-dog, or they-they-they went-went-out.

It is difficult to discover any cogent reason for stammering, for the original causes may be remote, having left only the effect. Something has disturbed the subconscious reflexes necessary for natural speech. There may be a congenital disposition toward a retarded development of speech, but usually, however, cases of stammering ascribed to heredity or phylogenetic influences are due to association with members of the family who manifest some speech defect, or an environment which fosters such weakness. Stammering is at bottom a mental fault which eventuates in a physical disability. It is caused by fear, imitation or improper speech training and is an acquired affection.

Ignorance of this subject is appalling among those who have the care of children. This is due to the paucity of efficient literature. Much has been written on the etiology of stammering, but nothing that gives a dogmatic method of correction. Teachers and parents have been compelled to depend upon the misleading advice of friends who would suggest innumerable panaceas, the majority of which but serve to aggravate the condition.

It has been estimated that three per cent. of our population suffer with acute speech defects. About nine-tenths of one per cent. are stammerers and stutterers. These are a great loss to society, for this handicap retards and perverts some of the best brain power in our communities. It is almost impossible to approximate the cost of stammering. This impediment impairs the mental growth of the sufferer. His self-repression destroys health and happiness which interferes with the expression of ideas as well as the utilization of his potential energy in the business world. With the lack of speech control there is not only less chance for the development of intellectual capacity but a lowering of the moral stamina. Speech differentiates man from the animal and is the greatest weapon of the brain in his fight for success. Business men recognize that the voice is an economic asset, and many firms refuse to employ those suffering from a speech defect. The man who, because of a speech impediment, must repeat an order or a question, causes by his repetition a waste of time which is a financial loss to the employer who, of necessity, demands a brisk, clear cut enunciation.

The indelible impressions made upon the mind of the stammerer by his efforts to speak, increases the physiological cause of his suffering. When laboring under the compulsive idea that he is unable to articulate normally, there is an undue amount of nerve energy released by his brain, in the attempt to control the organs of speech. The muscles laboring under this excessive innervation become rigid, jammed together, and a general juxtaposition results. Should the over-innervation be intense, some of the nerve energy will seek an outlet in other channels, producing tics and spasms. Such tics are seen in the twitching of the facial muscles, contortions of the neck, contractions of the fingers, tapping of the feet, or slapping of the

body. In St. Louis one of the cases brought before me was a boy whose spasms forced him to touch the floor with both hands in the effort to produce voice. These contortions disappeared immediately upon his gaining control of speech and disabusing himself of the paralyzing fear.

Physical obstructions of the air passages seldom bear a direct relation to stammering. They may perhaps, be causal agents through interference with clear enunciation or perfect articulation, but cannot be considered a cause *per se*. Nor does nervousness cause stammering as is commonly supposed. It is the stammering which physiologically reacts to undermine the nervous system, often producing temporary aphasia. The unnatural inhibited speech and the fatigue from undue exertion sometimes produce nervous strain and physical reflexes which affect the habits of the sufferer. However, in such cases the general treatment of the defect and elimination of the immediate causes will restore the patient to normal conditions. The greatest evil, in this great social problem, is the family physician who either tells the parents of a child so afflicted that he will outgrow the defect or else prescribes medicines to cure "nervousness." One is like neglecting a leak in a dam, the other, like stemming the tide with pitch forks.

In New York many prominent neurologists and throat specialists refer all cases of stammering to our special classes. The Neurological Institute is especially active in locating any cases and assigning them immediately to our clinics, realizing that this work is psychological and not medical. As Dr. Walther, a New York nerve specialist, has said, in praising the work of teachers of speech improvement, "This is a field in which our profession has not progressed since the Stone Age." Dr. Wendell C. Phillips, the eminent throat specialist, and ex-President of the Medical Society of the County of New York, states that there is no specific treatment for stammering, that it is necessary to adopt a different method of voice production under competent instruction.

In the correction of speech defects it must always be remembered that each case must be solved as a personal equation. We cannot be generic in our treatment, for as brains differ so the defects arising in these brains will manifest different forms and reflexes which we must learn to detect from individual observation. The teacher's success depends largely on the ability to penetrate the ego of the patient, and to view the difficulty from his angle. Too much sympathy as a prop for his speech is an error. Props merely demonstrate the inability to stand alone. Tears water his seeds of sorrow. The teacher is kindest who makes him prove that he can speak—when she forces him to overcome the handicaps of the class room.

As injudicious advice often aggravates a mild case of stammering, it is well to warn those who come in direct contact with these sufferers of the dangers of many popular practices for their cure.

A common fallacy in attempting to correct a case is to ask the stammerer to take a breath before speaking each word or group of words. The fact that he is made to realize that he must take a breath recalls to his mind his inability to speak as others do. He even recalls the mental picture of his past suffering, and fear predominates to such a degree that all co-ordination of nerves controlling speech is temporarily destroyed. He is obsessed by the compulsive idea, "I cannot say it." It is heresy to attempt to correct stammering by a conscious control of breath. This disturbance is not caused by lack of breath, but because of the interference with the normal subconscious control. There is always enough residual air in the lungs to produce voice. Since the disturbance is mental and not physical, there is no direct relation between the voice and a particular control of the diaphragm. This is proved by the fact that invariably stammerers can sing without difficulty—and singing requires greater lung power than speaking. In the first stages of stuttering the resort to conscious control of breath may help the patient, but in such cases other disciplinary measures would have the same effect without possessing the added element of danger in their application. Some form of diaphragmatic control has been the basis of cure in almost every charlatanistic school or "medical institute" for stammerers.

Suggestion plays an important rôle in the correction of stammering, but will not cure it alone. It is a simple matter to momentarily dispel the sufferer's compulsive fear of speech; but while doing so the various secondary causes which are upsetting his vocal mechanism must be gradually eliminated.

Irrespective of the primal cause, it will be found that 90 per cent. of our cases have not their vocal organs fixed in the correct position for producing the sound which they are attempting to make. A patient may, for instance, try to say "mother," with his mouth wide open—an impossible position for the letter "m," which requires the lips pressed together. When he is made to give this sound correctly, breaking up the remainder of the word into its component parts, or phonograms, he sees that he can produce co-ordination of his vocal organs so as to give each sound in its proper sequence. In the beginning, the process is slow and conscious, but very soon fear of speech itself is dispelled, confidence restored, and a new subconscious control of the organs instituted—all of which makes for perfect speech.

Great care must be exercised to see that the stammerer always opens his mouth quickly for the vowel following an initial consonant. The psychological reason for this will soon become apparent. Exercises containing letters with which the patient has special difficulty or the most fear, should be practised silently, with mirrors, before actual vocalization; thereby focusing his attention upon direct control of the muscles employed.

In my treatments, I use a series of vocal gymnastics which I have carefully developed. The faithful practise of these exercises will not only intensify the auditory images of the stammerer, thus correcting temporary forgetfulness of the sound of the vowels, but will develop stronger vocal chords, producing a new voice and giving a freer control. This will destroy over-innervation or the straining to produce voice.

The correction of an acute case may require the proper training of the emotions to gain self control and relaxation. Relaxation, however, is only efficacious when it can be applied to speech. The

rehabilitation of the mental attitude will alleviate the suffering occasioned by stammering. If the fear of the defect and the consequent secondary causes are removed, the relaxation will be complete and less effort required for speech.

The stammerer needs more rest than the normal person. His efforts to talk are a greater drain upon his vitality and the best therapeutic measure in all cases of fatigue is rest.

157 East Sixty-seventh Street.

DEFICIENT THYROID SECRETION AS AN ETIOLOGIC FACTOR IN GASTRIC AND DUODENAL ULCERS AND IN HYPERACID CONDITIONS.

By JOSEPH KATZ, M.D.,

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It has been long known that disturbed internal secretions are directly responsible for many human ailments, among them also included those of the digestive tract.

Let me here in this paper add another etiologic factor, and at the same time therapeutic measure, in gastric and duodenal ulcers and in any hyperacid condition of unknown origin, viz., deficient or faulty secretion of the thyroid gland. I have come to this conclusion from personal observations and clinical study of this class of cases rather than from laboratory research and will report here a few cases, the results of which inspired my observations in this direction.

Case I.—Mrs. C., 50 years of age, married, has given birth to 8 children. Cessation of menstruation came on gradually at the age of 45 or 46. Family history negative except that a sister is complaining of the same condition as herself. Previous personal history is negative. Present complaint dates back a good many years; constipation, slight heartburn, sudden weak spells. She has seen a number of physicians during the time, each one treating for one gastric condition or another, but none gave her any relief. I have made many analyses of her gastric contents at various times on full and empty stomach, and the results were the same in all, *i.e.*, a high free acidity and a high total acidity. There were no other corroborative factors to denote that the condition was primarily a digestive disturbance. On physical examination, however, I observed on inspection the following, which helped me in making a diagnosis, viz., facies of hypothyroidism or myxedema, slow pulse, at times low mentality; the patient is very obese, although the appetite not of the best; there is swelling of the lower extremities with no pitting. I put the patient on thyroid extract and to my great surprise not only did it improve her general condition which we expected, but entirely reduced her hyperacidity to normal.

This set me thinking whether or not all hyperacid conditions are not due to a faulty thyroid gland. Since then I have seen two other cases of myxedema with hyperacidity which improved under the same treatment. My observations were further corroborated by two other cases, mother and daughter, which I shall here mention:

Case II.—Mrs. K., 40 years of age, has had four children, menses normal; family history negative; personal history negative except for severe heartburn for the last 20 years or so, followed by vomiting which would relieve it for a short time. Inspection revealed nothing abnormal except obesity; other physical examinations negative; gastric analysis showed the expected high acidity. Having ruled out organic disturbance of the gastroenteric tract, including the gall-bladder, I put the patient on general antacid treatment, giving her several alkaline lavages in addition to the general treatment, but her condition did not improve to our mutual satisfaction. I then decided to try the use of thyroid extract in her treatment which proved very beneficial. She continued taking it for some time, in doses of half a grain three times a day, until her condition warranted its withdrawal. The patient has no more pyrosis, although she has not taken any of the treatment for some time.

Case III.—Miss K., 12 years of age, born in the United States, school girl, daughter of the previous patient, began to menstruate at 11. Family history negative except for the mother's complaint as described above. Personal history negative except for pyrosis followed by vomiting after nearly every meal, for the last two years. Inspection showed a well developed girl, obese, and apparently 16 or 17 years of age. She had a great appetite and a great desire for sweets. Physical examination revealed nothing abnormal. Gastric analysis showed hyperacidity. I treated this case also with thyroid extract and the patient has done well.

Having thus observed clinically in the above mentioned cases, a hyperacidity, caused (as proven therapeutically) by a faulty thyroid secretion, and cured or relieved by the administration of thyroid extract, I decided to try the use of thyroid extract in the treatment of ulcers of the stomach, with good results. I desire to report especially one case which has proven my contention and in which the treatment gave marvelous results.

Case IV.—Mr. E., furrier, 42, married, previous history negative; present complaint began about two years ago with pain in the epigastrium after meals, coming on periodically and lasting for about 2 or 3 weeks, till some nine months ago, when the pain became very severe. He had consulted a surgeon of repute, who diagnosed his case as gastric carcinoma and sent him to hospital. *X*-ray plates were then taken and the case was diagnosed as one of perforating ulcer. The patient was advised an operation but refused, leaving the hospital on the same day. He then consulted me and not knowing the diagnosis of either the surgeon or the hospital *x*-ray report, I diagnosed it as ulcer, basing my opinion on the symptomatology and an analysis of the gastric contents. I advised an *x*-ray examination which was made, the report being ulcer. The patient at that time was not fit to undergo an operation and I began treating him with the usual medication for ulcer plus rest, hygiene, etc.; the results, however, were slow in progress, especially so as to pyrosis, as the patient would say, "I am turning into vinegar as Lot's wife into salt." I then decided to try the use of thyroid extract in conjunction with the other treatment and the results were decidedly beneficial. The patient continued to improve daily, his diet is now more liberal, the heartburn has entirely gone, and there is no pain.

This case is one of a number of similar cases that I have treated since with good results.

2002 Douglass Street.

COOPERATION OF PHYSICIAN AND DENTIST A NECESSITY FOR SUCCESS IN THE TREATMENT OF SYSTEMIC DISEASES.

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The subject of focal infection has brought the medical and dental professions into more intimate relations than ever before. Out of this intimacy have grown two distinct factions: those who uphold focal infection as a valuable addition to science, and those who look upon it as one of the periodical fads which

will meet its death, as so many theories have already.

By cooperation I do not mean the referring to a dentist of patients after medical or surgical treatment has proved futile. What I do mean is cooperation to such a degree as results in routine dental diagnosis. At present this is accomplished in hospitals where dental surgeons are employed and in clinics with dental departments forming an integral part.

I wish to report a few cases which point out the difference between success and failure in the treatment of infectious diseases of possible focal origin.

Case No. 49.—A patient entered with a complaint of throat trouble, pressure, nervousness, insomnia, and headaches. A routine general physical examination was given, and before a diagnosis was extended the dental examination was carried on as a routine. On an *x*-ray of the teeth, impacted cuspids were found to be present. These were removed and the patient made complete recovery.

Case No. 502.—A patient with a complaint of swollen left index finger, showing ecchymosis without previous traumatism, entered on October 18, 1919. The case was diagnosed as endarteritis of the finger. On the extraction of an upper left bicuspid root, and on treating the pyorrhea, the swelling, pain, and other associated symptoms disappeared, and have not recurred.

Case No. 577.—A patient, with a complaint of rope sensation around the waist and pains in all parts of the body, had symptoms suggestive of lues in the third stage, and had had several courses of treatment, in different parts of the country, for syphilis. On presentation, and through routine dental examination, his case was diagnosed as focal neuritis. Ten badly abscessed teeth were extracted and in the course of two weeks the pains, which had persisted for nine years, had completely subsided.

Case No. 650.—A patient with a complaint of persistent urethral discharge, was given a general physical examination and found to have a heart lesion also. Through routine dental examination a mouth of abscessed teeth and pyorrhea was discovered. The teeth were extracted and the pyorrhea treated. This was followed by marked general improvement, which preceded the treatment of the chief complaint.

Case No. 680.—An elderly lady with a goiter and nervousness presented herself for examination. Her case was diagnosed as toxic adenoma of the thyroid and myocarditis. Five diseased teeth were extracted and the pyorrhea treated. She went home for a month. On returning, the goiter had diminished in size, signs of the associated myocarditis and nervousness were markedly lessened, and the systolic blood pressure dropped from 170 to 132.

Cases 49, 502, and 577 are epitomized to illustrate the most valuable point arising from cooperation of the medical and dental professions, namely, routine dental examinations. It is quite evident that without the intimacy, apparent in these cases, the results could not have been attained.

Expect success through cooperation and not after permanent pathological changes are manifest through delayed appreciation of early dental diagnosis. Expect no better results in delayed cases than you would in a metastasized carcinoma.

Case No. 650 shows the value of routine general physical examination. The primary complaint was disregarded temporarily until the general examination was complete. This is cooperation. It is early recognition of these conditions that accounts for the successful treatment of such cases. Had the Neisser infection been treated, without first giving a general examination, the heart lesion would probably have developed into a permanent pathological lesion and become incurable. On the other hand, treatment was started immediately. Following the extraction of the diseased teeth and the treatment of the pyorrhea, marked general improvement resulted. This occurred before the treatment was started for gonorrhea. Do not the results indicate that the patient was benefited by the treatment of the teeth?

Case No. 680 illustrates the value of the method practised by our surgical department, that of eliminating the foci of infection before surgical operations. Whether the conditions are a contributing cause to the chief complaint or not, they should be removed to give the patient higher recuperative power. This woman with a complaint of goiter and nervousness had all infection removed from her mouth and was instructed to go home and return in a month. On her return, the goiter had diminished in size, the associated myocarditis and nervousness had markedly improved, and the systolic blood-pressure had dropped from 170 to 132. Is she not in a more favorable condition for operation than at her first visit? Does this not also show a relationship between focal infection and goiter?

By reporting these cases I wish to bring forth three salient points: First, that of routine dental examinations; second, early reference and diagnosis of cases probably due to foci; third, the value of cleaning up diseased mouth conditions before undertaking surgical treatment.

The supporters of focal infection will obtain success in dealing with it logically. The skeptics will meet with failure, and forever condemn it, by treating it unfairly. Miracles cannot be obtained and should not be expected. Only through the most intimate cooperation and routine dental examination is the doctrine of focal infection, so far as mouth conditions are concerned, to become a valuable addition to modern medicine. Unless it is dealt with in such a manner, it will be branded as a "periodical fad," and meet its fate along with other theories which may be justly termed "fads."

Medicolegal Notes.

Action for Malpractice Limited to One Year in California.—An action against a physician and surgeon for injuries resulting from want of knowledge and unskillfulness is within California Code of Civil Procedure, § 340, subd. 3, requiring the action to be brought within a year.—Kelsey v. Tracy (Cal.), 183 Pac. 668.

Anthrax as an Accident.—The New York Appellate Division holds that where a servant's neck was slightly cut while being shaved at a barber shop, and on the following day, while working in a tannery handling hides, symptoms of anthrax first appeared, his death from the disease was due to accidental injury "arising in the course of his employment."—Eldridge v. Endicott, Johnson & Co., 189 N. Y. App. Div. 53, 177 N. Y. Supp. 863.

Evidence of Good Faith in Dispensing Prohibited Drugs.—The Circuit Court of Appeals, Fifth Circuit, holds, on appeal from the Federal District Court for the Northern District of Georgia, in a prosecution for violation of section 2 of the Harrison Narcotic Act, by selling narcotic drugs, not in pursuance of written orders on the prescribed forms, that evidence that the defendant, although a physician registered under the act, did not dispense the drugs in good faith in the course of his professional practice, which would bring him within exception (a) of the statute, but sold them to gratify the appetite of the purchasers, was competent and relevant, and the issue so made was properly submitted to the jury.—Oakshette v. United States, 260 Fed. 830.

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THE MATRIARCHAL FAMILY.

THE grave question of depopulation in France that is frequently discussed in the French medical press is the subject of a striking, though hardly convincing, article by M. P. Carnot in *Paris Médical* of April 17. After pointing out that in 20 years' time the French race will be swept out of existence if French women do not make what he calls a superhuman effort of maternity, M. Carnot very frankly states the actual conditions and their possible remedy. These conditions, already sufficiently serious in 1914, have been naturally much aggravated by the result of the war in depriving the two million unmarried women now in France capable of bearing children of the chance of finding husbands.

To take the place of the men who were killed in the war there are two obvious alternatives: (1) To marry French women to foreigners, a solution that seems to M. Carnot very dubious and one that has had so far no encouragement from the authorities, although it is the only way in which it is possible to secure legal husbands for all French women. (2) To permit polygamy during a certain period —a solution that no one wants and which would probably be useless as a check on depopulation since the high cost of living makes it difficult enough for a man to support one woman, and French families, as well as those of other nations, have for a long time been practising "birth control" on that account.

Before suggesting a third solution, M. Carnot quotes some Danish statistics to prove that in Europe there are now 13,000,000 more women than men, a figure that he believes shows the necessity for the legal recognition of some sort of matriarchal family, composed only of mother and children, of which he reminds his readers that many civilizations have given examples. This matriarchal family would be possible only if it were State supported, and, basing his argument on the fact that the supreme law of a race is not to perish, M. Carnot strengthens his defense by the axiom that in a well-organized society maternity ought to be a woman's career, since, socially speaking, every woman ought to become a mother.

This career for women has never been properly organized, but, he says, it should be both honored and recompensed by the State. The day when maternity is made a remunerative career many women will have children who now hesitate before the expense of bringing them up and the uncertainty of the future. Finally, M. Carnot believes that if it were not for the opposition of public opinion many women would be glad to satisfy their maternal instinct and become the mothers of children who would be their companions in old age. If this be true, the question is largely one of public opinion and economics. Before asking a woman to bear children her future and theirs must be assured by the State. To provide the funds M. Carnot suggests that bachelors and maids who have not fulfilled their social duties to the State should be obliged to leave their money to support the children of those who have.

THE ETIOLOGY AND PATHOGENESIS OF RUPTURE OF THE CIRCULAR SINUS.

THE causes which may produce a rupture of the circular sinus are rather numerous and varied. As to the predisposing factors, the anatomical arrangement of the sinus, the thinness and fragility of its walls, particularly of the wall in relation to the uterine decidua, and its part as a reservoir for receiving the overflow of the maternal placental circulation, are predisposing causes of the first order. If a sudden blood wave occurs, following a uterine contraction forcing the blood from the center to the periphery, the fragile walls of the sinus may give way, and an interesting experimental study would be to determine the necessary pressure for overcoming the resistance of the normal walls of the sinus. A bad insertion of the placenta is yet another predisposing factor and, since Pinard maintains that a bad insertion is not uncommon and is even rather frequent, it can readily be conceived how common a predisposition to rupture must be. In these circumstances the production of laceration of the sinus may be explained as follows: The uterine contractions commence at the fundus uteri and progressively diminish from the fundus to the internal os; there is a mathematical point at which the contraction becomes exhausted. On the other hand, the circulation takes place from below upward, so that it is clear that, maintained by the uterine contraction which prevents it from progressing, as well as by its gravity, the blood accumulates in the declivous portion of the placenta, with the result that rupture of its walls may ensue.

Long-standing endometritis is also a predisposing factor. At the time of pregnancy the lesion may develop an acute exacerbation involving the interutero-placental decidua and from the inflammation a rupture of the sinus results because it is, in reality, simply an emanation of the transformed uterine mucosa. Such instances must be, indeed, rare in practice, as it seems difficult at first sight to admit the possibility of such a lim-

ited endometritis, but nevertheless undoubted instances have been reported. Since inflammatory processes of the serotina are known to exist, it is not difficult to realize the possibility of such ruptures. Finally, multiparity is doubtless a factor because this obstetrical complication is more prone to occur in women who have had a large number of pregnancies.

The determining factors of rupture of the circular sinus are traumata, falls, rough riding, violent emotions, and traction on an accidentally or naturally shortened umbilical cord. Exertion of all kinds, coughing, defecation, or any cause which increases the blood-pressure in an organ with a slow circulation, but having a high vascular tension, may result in rupture of the sinus. It would seem therefore that uterine contraction was among the most important factors in this respect, since it exaggerates the already high pressure in the sinus. But contraction acts in still another manner by causing tension of the membranes whose points of attachment to the sinus may become torn. Rupture of the sinus is more apt to occur during labor at the time when the contractions are frequent and the vascular tension is high.

At the time of labor, when the bag of waters begins to form, traction is exercised by the intermediary of the chorion and decidua up to the margin of the placenta at a point where this organ is nearest to the internal os and the sinus may rupture in consequence. Besides these various mechanisms, it is quite possible that at the time of accidental rupture of the membranes, or during the passage of the child, the tear may extend to the placenta perpendicularly to its margin and not stop until the sinus has been opened. This is probably very uncommon, but its possibility deserves mention. Hemorrhage is sometimes met with, due to rupture of the sinus from some cause which is not apparent. The bleeding is quiet, occurring during sleep, and may be mistaken for a placenta prævia, but the cause is difficult to find. In certain instances, perhaps, sexual relation may be incriminated; also other factors of a general nature producing a morbid change in the vessels, especially of the marginal sinus.

LETHARGIC ENCEPHALITIS.

Economo, who rediscovered this malady and who is in consequence widely quoted in accounts of the same, contributes a long article on the subject in *Il Policlinico*, March-April, 1920, xxvii, 3-4. The author, who saw his early cases in Vienna in the winter of 1916-17, is not an Austrian but an Italian who at present practises in Trieste. His study is very thorough and freely illustrated. His personal material is not very extensive, for it numbers but thirteen cases, all of which are related in much detail. The observation period extended through portions of 1916-17, and no subsequent experience is related. Much space is devoted to the histological changes. The author believes the cause to be the streptococcus of Wiesner, which has a special attraction for gray nervous substance and travels along the lymphatic route. Its point of entrance is probably somewhere in the upper air passages, perhaps the tonsils, by reason of its selection of the lymphatic route through which it reaches the arachnoid space. This seems to have been worked out in the laboratory in connection with experiments on monkeys. A vascular reaction is set up, a proliferation of the adventitia which leads to compression phenomena sufficient to explain the ocular pareses. But while this is only a transitory phenomenon the neurons are also directly attacked and destroyed to some extent, so that actual foci of softening may develop and affect the nuclei of the motor nerves. Apparently these lesions can undergo spontaneous repair. Involvement of the nucleus of the vagus is one of the methods of fatal termination. The parvicellular perivascular infiltration which accompanies the disease is of the type seen in poliomyelitis. The author looks upon cerebral influenza, at least to a certain extent, as a wrongly diagnosticated encephalitis lethargica. The latter, the author believes, may occur sporadically and at times may appear in small epidemics and take on increased virulence.

Netter writes on the first beginnings of lethargic encephalitis in *La Presse Médicale* for April 7, 1920, xxviii, 20, giving numerous references to the early cases of the malady as variously observed. His own first experience was in the winter of 1917-18 at Paris. Economo, as above mentioned, saw his earliest cases in Vienna in 1916-17, and the author again has seen cases in the two winters which have elapsed since the first visitation, the period extending from late in November to some time in February. This is the very interval in which influenza in the great majority of epidemics has appeared. The connection between sleep disturbances and oculomotor symptoms is not peculiar to this affection, for the nerve centers for the two manifestations are in close proximity, and any lesion involving both could conceivably produce the association, as has been shown in the so-called Gayet's disease, which is not lethargic encephalitis. In regard to the so-called "nona" of 1890, this appears to have prevailed in Northern Italy and Dalmatia and to have had very many victims. Both the Italian and Hungarian governments were obliged to take cognizance of its existence, but it was not apparently regarded as contagious. A commission sent to investigate it in one of these countries found that it no longer existed, so that officially nothing was known of it. This in a measure explains our ignorance and the lack of official knowledge of "nona." Netter states that in a few scattered cases there is mention of ocular symptoms, but he is speaking probably of the global incidence of grippal lethargy during 1890, and no locality or reference is given. But of the antiquity of lethargic encephalitits Netter has not the slightest doubt. Aside from the

description of Camerarius in 1712, Albrecht von Hildesheim relates a case seen by him in 1695 in which a young girl of 20 was attacked by fever, headache, somnolence lasting eleven days, strabismus, and ptosis. This was a sporadic case and suggests the failure of authors thus far to consider the possibility that encephalitis lethargica may also have a sporadic incidence. The earliest cases in England occurred three in a family, while the earliest in France were in two men who were working side by side in a ditch.

Perforation of the Nasal Septum from Cocaine Snuffing.

It has been shown by a number of observers that cocaine snuffing, besides the acute or chronic poisoning to which the drug gives rise, may produce local accidents usually consisting of a destruction or perforation of the nasal septum, and it is probable that this lesion is more frequent than is commonly supposed. It usually occurs after repeated and numerous large doses of the drug have been snuffed, and takes place in from six to twelve months' time. Some individuals are perfectly aware of their lesion and sometimes even, as they are in the habit of introducing the finger frequently into the nares to relieve the persisting pruritus, they recall having removed epithelial *débris* by scratching, thus following the evolution of their destructive nasal process. Others are completely ignorant of the lesion and are surprised when informed that a communication exists between the nares. There is no functional disturbance and they only recall that they have had mild epistaxis from time to time. When the perforation has formed it is seated at some point of the septum composed of cartilage, the perpendicular laminæ of the ethmoid and vomer being never involved. The perforation is round or oval and in size varies from a few millimeters to more than a centimeter. In the majority of cases the edges are thin, clean cut, regular, and smooth, as if punched out. In one case the ulceration, which was the starting point of the perforation, was accompanied by fibrous productions similar to small hard polypi. The nasal mucosa is almost always pale and anemic over its entire extent, but it may be just the contrary—red and hyperemic. Usually smooth, it may be the seat of epithelial desquamation and covered by small pellicles. The pathogenesis of the process has not as yet been cleared up. Perforation of the nasal septum is a frequent rhinological lesion, as many causal factors may produce it. Lubet-Barbon does not seem to attach much importance to the necrosing action of cocaine and he is of the opinion that when perforation occurs from its use, the subject is a sufferer of some pre-existing nasal lesion, the cocaine acting as a secondary factor, while scratching is more apt to be the fundamental cause. Hautant accords a greater value to the vasoconstrictive action of cocaine and believes that the continued use of the drug ends by producing a destruction of the anatomical elements of the septum. All observers admit that the vasoconstrictive action is very energetic, and from the resulting intense anemia trophic disturbances are set up, going as far as necrosis of the tissues. On the other hand, scratching may aid the action of the drug by permitting the elimination of the dead tissue and thus becomes an important factor in the production of the perforation.

Scorbutus in the Late War.

Babes brought the subject of scurvy before a medical congress in 1891 when he pronounced it a toxic-infectious disease with a hemorrhagic tendency in which the buccal lesion pave the way for secondary infections. Predisposition is everything, for the disease chooses the weakly and badly nourished, especially those nourished or undernourished with an unbalanced diet. Other groups who suffer are convalescents, puerperæ, half-fed individuals, and those in whom the nervous, gastroenteric, cardiac, and respiratory systems are impaired. Babes continued his study of this affection over a number of years and made many observations—for example one to the effect that Vincent's bacillus and spirochete were often present in the buccal lesions of scurvy, but this proved to be a chance find and later it became apparent that fusiform bacilli in the lesion of scorbutus were not the same as those which cause the other malady. During the present war Babes (*Bulletin de la Section Scientifique de l'Academie Roumaine*, v, 4,) has seen considerable scorbutus in Russian and Turkish prisoners. The patients usually responded very promptly to treatment. The type showed much the same features as in earlier years—weakness, emaciation, ecchymoses, hardness and emaciation of the calf muscles, and blood-effusion in the joints, especially the knees. On the other hand the usual lesions of the mouth and gums were not very marked. There were a few cases of gangrene of the mouth and death from sepsis. The microorganisms of the buccal lesions, had the latter been uncomplicated, would certainly have led to the diagnosis of Vincent's angina, as both spirochetes and fusiform bacilli were represented. The author feels certain that the lesions of the gums made possible the development of sepsis; and while scurvy may from one angle be regarded as a malady of faulty nutrition leading to blood change and hemorrhage, the fact will not down that a hemolytic bacillus might also cause this hemorrhagic diathesis.

"Nona."

When the peculiar form of somnolence known today as encephalitis lethargica appeared in the Northern provinces of Italy in 1889 it received the designation of "nona," a term which has puzzled etymologists ever since. Dismissing outright the guess that it is a lay corruption of coma, we are thrown back on the conclusion that the literal meaning of the word, "the ninth," must first be eliminated. The word "nona" preceded its application to the disease as a vernacular expression, and is said to be used as a generic expression for somnolence. Sampietro in an article on encephalitis lethargica in the *Annali d'Igiene* for January, 1920, xxx, 1, gives a quite plausible etymology as follows: The Northern provinces are given extensively to silkworm culture, and terms technical to this culture are in familiar use. Every eight days or there-

abouts the worm becomes lethargic, or in other words, enjoys a sort of sleep. "The ninth" is therefore the time for sleep and hence used figuratively for sleep or somnolence. Whether or not this statement is biologically correct, it clearly represents a popular belief. The term is therefore a descriptive one which is open only to the objection that the lethargy is not the essence of the malady but only a symptom. No definitions from dictionaries are cited, and apparently the word in this sense has never been passed on by lexicographers and is provincial and colloquial to a notable extent.

Temperature of the Mammæ at the Onset of Lactation.

Guillemet and Vignes have taken the temperature of the breasts of 20 women in a maternity clinic (*Annales de gynécologie et d'obstetrique*, December, 1919, xiii, 10-11). A surface thermometer was fastened to each breast and covered. In 13 cases the temperature before the secretion of milk was 36.3° C., increasing on the first day of lactation to 37.1° C. and then falling slightly. In the other women there was an absence of type. It had already been shown that the temperature of the nursing breast could exceed that of the axilla. Of the 13 women to set a standard all were multiparæ. Secondary rise of temperature was seen in three cases with chapped nipples.

News of the Week.

The Typhoid Death Rate and the Water Supply in New York State.—Figures compiled by the New York State Health Department show that the death rate from typhoid fever in this State has decreased from 19 per 100,000 population in 1906 to 3.3 per 100,000 in 1919, this being the lowest death rate from typhoid fever ever recorded in the State. In this connection the progress made in securing a pure water supply is significant. In 1906 there were some 400 public water supplies which served a population of 6,100,000. About 50 of these supplies received some purification either by slow sand or mechanical filtration, and served a population of approximately 700,000. In 1919 there were 510 public water supplies serving a total population of 8,700,000. Of these water supplies, 125 were purified either by filtration, chlorination, or both, and served a population of about 7,000,000. In other words, the number of people receiving purified water was increased during this period 1000 per cent. The decrease in typhoid fever in this period is almost in inverse ratio to the proportion of people receiving purified water. The State Health Department believes these figures will leave little doubt in the mind of any one familiar with epidemiology as to typhoid fever during this period having been largely waterborne.

Chicago Reduction Class Closes Experiments.—The reduction class which Health Commissioner John Dill Robertson has been conducting in Chicago during the past month completed its experiment on May 20. The greatest loss in weight was scored by Mrs. Susie Jones, who weighed in on April 22 at 224 pounds, and who tipped the scales at only 200½ pounds on May 20. Other members of the class showed losses of 18, 16, 15¼, 11, 10 and down to two pounds.

National Association Opposes Lay Anesthetists.—The American Association of Anesthetists, at its recent meeting in New Orleans, passed resolutions placing itself on record as unalterably opposed to the employment of lay anesthetists, nurse anesthetists, and all other types of anesthetists who shall not have been graduated from recognized medical or dental colleges, and licensed to practise medicine or dentistry. It was further resolved that the American Association of Anesthetists would inaugurate and prosecute legislation to protect the medical and dental professions and the public from such inadequately educated and trained anesthetists whenever such action is necessary.

Dental Society Endorses Health Center Plan.—The New York State Dental Society, at its annual meeting in Albany, unanimously adopted a resolution approving the provisions of the health center bill which was introduced into the last Legislature by Senator Sage and Asemblyman Machold, and laying particular stress on the great need for provision for the proper care of the mouth and teeth of the rural population, and for instruction in the disastrous physical results of neglect to provide such measures. It is estimated that 90 per cent. of children seven years of age are suffering from mouth defects requiring correction. The Life Extension Institute, in 125,000 examinations, found 14 per cent. of those examined with marked infection of the teeth and gums. The resolutions of the Dental Society provide for the appointment of a committee for the purpose of cooperating with all other organizations concerned with or interested in the public health of the State with the view of securing favorable action upon the Health Center Bill at the next session of the Legislature.

Less Crime in New York State.—According to statistics compiled by Charles L. Chute, secretary of the State Prohibition Commission, reports from seventeen of the larger city and county courts in the State for the first three months of the year showed that 43,143 offenders of all ages were arraigned in these courts. During the same period last year 68,535 were brought before the same courts. This is a decrease of 34 per cent., which judges and probation officers are practically unanimous in attributing to the effects of prohibition. In the magistrates' courts of New York there was a decrease of 29 per cent. in the number of offenders brought before the courts. There has been a decrease of 52 per cent. in cases of public intoxication.

Post-Graduate Endowment Fund Makes Progress.—An announcement from the executive committee of the Post-Graduate Endowment Fund states that the fund has been increased by $20,354.77 during the week. This brings the total up to $1,264,801.57 of the $2,000,000 goal set.

Dispensary Appeals for Aid.—The Northern Dispensary, at Waverly Place and Christopher Street, New York, makes a special appeal for funds with which to carry on its work. This institution has given free medical or surgical care to more than one million people in the Greenwich Village section of the city during the ninety-two years of its existence.

Addition to Broad Street Hospital.—The Broad Street Hospital plant is to be enlarged by the addition of thirty beds, a six-story nurses' home, and a new clinic and dispensary. The main structure at South and Broad Streets is to be remodeled and a new building is to be constructed on the adjoining property at a cost of $215,000. The estimated cost of alterations on the main building is $172,000. About $75,000 of the required funds are still to be raised.

Fund in Memory of Dr. E. B. Cragin.—The trustees of Columbia University announce that former patients of the late Dr. Edwin B. Cragin have raised a fund of $3,500 in his memory which is to be devoted to social service work at the Sloane Hospital for Women.

Medical Society Opposes Paternalistic Laws.—The Massachusetts Medical Society of the South Bristol District, at its annual meeting May 6, passed resolutions opposing the passage by the State of paternalistic laws as class legislation and infringing upon the rights of the individual citizen. It considers as tending to universal socialism legislation favoring so-called health insurance, voluntary or compulsory, in all its various forms, including the maternity bill now before the Massachusetts State Legislature.

Sentenced for Selling Narcotics.—Dr. Daniel H. Hoyt, convicted in the Federal District Court on a charge of violating the Harrison drug act by furnishing cocaine to addicts, after being sentenced to four years in the Atlanta penitentiary, was released on $5,000 bail pending appeal.

Dr. Edward H. Cleveland, formerly superintendent of the Hospital and House of Rest for Consumptives, New York City, has become assistant superintendent of the Western Maine Sanatorium at Hebron, Me.

Dr. Theobald Smith, formerly of Harvard University, has been awarded the Douglas Flattery medal and $500 in gold by the Harvard Corporation in recognition of his successful scientific research in the prevention of disease and the conservation of health.

Dr. Q. L. Schofield of Wellesley Hills has received the Cross of the Chevalier of the Crown of Italy for work in the military hospitals at Montove, Italy, where he spent eighteen months in caring for Italian soldiers.

Dr. Herman C. Frauenthal has removed his office to 50 West Eighty-fifth Street, New York City.

National Exposition of Chemical Industries.—The Sixth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York, during the week of September 20 to 25 inclusive. It will be the largest distinctly industrial exposition ever held, and will surpass its predecessors by one-third.

Ohio and Indiana Surgeons Organize.—The Ohio members of the American College of Surgeons met in Cincinnati on May 6, when a State organization was perfected and the following officers elected: *Chairman,* Dr. Charles C. Hamilton, Columbus; *Secretary,* Dr. J. Edward Pierrung, Cincinnati; *Counsellor,* Dr. Walter H. Snyder, Toledo.

A State organization of the Indiana members of the American College of Surgeons was formed at a meeting held in Indianapolis, on May 7, and the following officers were elected: *Chairman,* Dr. Miles Porter, Fort Wayne; *Secretary,* Dr. E. D. Clark, Indianapolis; *Counsellor,* Dr. James Y. Welborn, Evansville.

The Lake Keuka Medical and Surgical Association will hold its annual meeting at Keuka College, Keuka Park, N. Y., on July 29 and 30, 1920.

Child Welfare Congress.—The National Congress of Mothers and Parent-Teacher Associations will hold its annual meeting in Madison, Wis., June 3-8, under the auspices of the University of Wisconsin.

A Move to Discontinue the Bowdoin Medical School.—A circular letter urging discontinuance of the Bowdoin Medical School was recently sent to the alumni of that institution with the request that a reply be given by April 19. In answer to this letter the faculty of the medical school advances the opinion that the matter has thus far had only partial and prejudicial presentation and asks for a suspension of formal judgment on the part of the alumni until the matter can be fairly considered. Reasons favoring the continuance of the school will be in the hands of the alumni before June 22, when the governing board of the medical school convenes.

United Hospital Fund Distributed.—The distribution of the $850,000 fund raised by the campaign of the United Hospital Fund, which aimed to secure $1,000,000, has been completed. Of the amount $400,000 was allotted by the distribution committee in February, being divided among nineteen of the larger general hospitals of the city. The remaining $450,000 goes to special hospitals, nine women's and children's institutions, and six homes for chronics and convalescents. The daily per capita cost of patients in the forty-six hospitals belonging to the fund was $2.02 in 1914; four years later it was $3.20, an increase of 58 per cent. In 1911, 39 per cent. of the patients were listed as free patients. In 1918, only 23 per cent. were free patients.

Gift of a Scholarship to Lyons University.—In *Paris-Médical* of April 24 is announced the gift of 100,000 francs by an American philanthropist, Mr. Douglas Slattery, to the Bacteriological Institute of Lyons. The interest on the 100,000 francs will constitute an annual scholarship for a pupil of the Lyons University, permitting him to devote his time to laboratory work on infectious diseases.

Charitable Bequests.—By the will of the late James B. Rodgers of Philadelphia the sum of $5,000 is bequeathed to St. Vincent's Home and Maternity Hospital. By the death of John M. Walton of Philadelphia bequests of $5,000 each to the Western Temporary Home and the Orthopedic Hospital and Infirmary for Nervous Diseases become operative. By the will of the late Adelaide Albright of Philadelphia bequests are made as follows: Hahnemann Hospital, $30,000, for the endowment of six free beds; Children's Homeopathic Hospital, $18,000, for the endowment of six free beds. Of the residue of the estate one-quarter each is devised to the Home of Our Merciful Saviour for Children and the Protestant Episcopal Hospital for Consumptives.

Medical Society Elections.—THE LITCHFIELD (CONN.) COUNTY MEDICAL SOCIETY, at its annual

meeting in Winsted April 29, 1920, elected the following officers for the ensuing year: *President*, Dr. F. W. Wersebe, Washington; *Vice-President*, Dr. John G. Adams, Canaan; *Secretary*, Dr. Harry B. Hanchet, Torrington.

The Worcester North (Mass.) Medical Society at its annual meeting in Fitchburg, April 27, 1920, elected the following officers for the ensuing year: *President*, Dr. C. F. Woods, Lunnenburg; *Vice-President*, Dr. R. S. Fly, West Townsend; *Secretary*, Dr. C. H. Jennings, Fitchburg; *Treasurer*, Dr. F. H. Thompson, Jr.

The Congress of French-Speaking Physicians of North America has chosen the following officers for its sixth annual congress to be held in Quebec this summer: *President*, Dr. A. Rousseau, Montreal; *Vice-President*, Dr. L. L. Augur, Worcester, Mass.; *Secretary*, Dr. A. Vallee, Quebec; *Treasurer*, Dr. A. Lessard, Quebec.

Obituary Notes.—Dr. George Howard Cantwell, graduate of Jefferson Medical College, and formerly a physician of the Panama Steamship Company, died in Bellevue Hospital, New York, on May 19, aged 51 years.

Dr. Valentine Winters Anderson, a graduate of the Louisville National Medical College, in 1900, died after a long illness, at his home in Dayton, Ohio, on May 10, aged 49 years.

Dr. Robert Norton Downs died at Philadelphia on May 1 at the age of 90 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1856.

Dr. Horace M. White died at Philadelphia on May 4 as the result of a carbuncle. He was graduated from Jefferson Medical College in the class of 1861.

Dr. Alwin Hugo Schwab of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1890, died suddenly while attending a patient, on May 15, aged 52 years.

Dr. Lyndon Bulkley Cady of New York City died in a local hospital following an operation on May 13, aged 32 years.

Dr. Emile Poirier, a graduate of Laval University Medical School, in 1881, died, after a brief illness, at his home in Salem, Mass., on April 29, aged 66 years.

Dr. James Adrian Goggans, a graduate of New York University Medical College, in 1877, died after a long illness at his home in Alexander, Ala., on April 25, aged 66 years.

Dr. Edward Sealey, a graduate of Bellevue Hospital Medical College, in 1884, died at his home in Newark on May 11.

Dr. James Lindsay Porteous, a graduate of the University of Edinburgh, in 1867, died at his home in Yonkers, N. Y., on May 13, aged 78 years.

Dr. Felix Barrett of Westbrook, Me., died after a long illness on April 27, aged 60 years. Dr. Barrett was a graduate of the United States Medical College of New York, in 1883, and of Bowdoin Medical College in 1893. He was a member of the American Electrotherapeutic Association and a former president of the Westbrook Medical Club.

Dr. Wade E. Simpson, a practitioner of Martinsville, Ind., died of heart disease on May 2, aged 42 years.

Dr. C. F. Cushing, a graduate of the Cleveland Homeopathic Medical College, in 1862, died of pneumonia at his home in Elyria, Ohio, May 3, aged 90 years.

Dr. John H. Daniels of Buffalo, a graduate of the Niagara Medical College, in 1895, died after a brief illness in a local hospital, on February 13, aged 53 years.

Dr. Samuel C. Helmick of Commercial Point, Ohio, a graduate of the Miami Medical College, Cincinnati, in 1871, died suddenly on April 29, aged 72 years.

Dr. John R. Prattee of Dover, N. H., a graduate of the Eclectic Medical College, Cincinnati, in 1888, died following a stroke of apoplexy, in a local hospital, on April 27, aged 59 years.

Dr. John Henry Barbat of San Francisco died after an illness of several months, on April 22, aged 57 years. He was a graduate of the University of California Medical Department, a former president of the San Francisco Board of Health and the San Francisco County Medical Society, and a Fellow of the American College of Surgeons.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, May 1, 1920.

The Place of Public Opinion in Preventive Medicine.—Sir George Newman, Chief Medical Officer of the Ministry of Health, is both in precept and practice the main exponent of the principles of preventive medicine as understood to-day in this country. As for many years medical officer of health of one of the big London boroughs, Sir George advanced preventive medicine greatly, and demonstrated by the results of his régime that intelligently conceived and thoroughly carried out measures of prevention were factors of the first importance in promoting good health. As chief medical adviser to the Ministry of Health, he is largely responsible for the plan of campaign of this body and in the Lady Priestly Memorial Lecture, delivered for the National Health Society at the Robert Barnes Hall, London, on April 22, last, he expounded his views. It may be said that the Lady Priestly lecture was instituted for the purpose of organizing annually a public address on whatever subject connected with public health might be considered most important at the time. Sir George Newman said in part that the increase of physiological and pathological knowledge, including that of infection, had been one of the outstanding features of the age. We now knew that disease was not something arbitrary, capricious, occult, or accidental, but was an effect of definite causes and conditions. We also knew that these causes and conditions were in a large and increasing measure controllable by man. To-day, therefore, for the first time, public and personal health had become purchasable. The problem could be stated in a word—the English people were suffering from impaired physique. Ten years of medical inspection in elementary schools had shown that no fewer than 1,000,000 children of school age were so defective as to be unable to derive reasonable benefit from their schooling.

The insurance returns from 1914-16 showed that more than half of the insured persons in England and Wales received medical treatment every year, and that among these persons alone there were upwards of 14,000,000 weeks of sickness a year, a loss of working time equal to 270,000 years per annum—most of which loss was due to preventable sickness. The coming of the Ministry of Health meant a new sort of attack on the strongholds of disease. It meant, of course, increased intervention by the State, improved organization, central and local, a bolder policy. This was good and desirable, but there was a further factor in reform which was in some ways more important than all these, namely, an educated community and an enlightened public opinion. As a nation Great Britain would never win through to a high physical standard until the great mass of the people were educated sufficiently to be able to choose the way of health. Healthy and complete nutrition was infinitely more comprehensive than mere feeding, mere filling of the stomach. It connoted a healthy body in all respects, a brain and nervous system in tone, a healthy muscular and digestive system, circulation of blood and lymph. But when we turned to the dietetic conditions of the great mass of workers, we found a tale of bread and beer, tea and pickles, canned meats and cakes, a bit of bacon and a piece of cheese. Sufficient, appetizing cookery, freshly prepared food, healthy conditions, and sound digestions, these essential things were often absent. The reason was not poverty, but lack of knowledge of the right food to buy and how to cook it. By our ignorance and our willingness to be ignorant, both in theory and practice, we provided the conditions which inevitably led to the growth of a deficient population. All this applied equally to the conditions of health in respect of fresh air and exercise. The advantages of continuous oxygenation of the blood were incalculable, but these advantages were not secured by ill-ventilated schools and factories, or by stuffy dwelling rooms. With few exceptions, the means of ventilation were there. What was lacking was the maintenance of the means by the individual and neglect of maintenance was due to lack of knowledge and to the dominance of bad habit. The lecturer lay stress on the value of games and recreation. He said that the nation ought to have available a complete scheme of education and recreative gymnastics to train both body and brain, combined with games, swimming, field sports and tennis. It was not enough for 40,000 youths to watch a football match; they must also play the game. It was not enough to make provision for physical development for children up to the age of 14 only; it was necessary to carry this on right into adult life. There were few problems more pressing than the provision of facilities for games, athletics, bathing, swimming, and all forms of healthy physical recreation. If we did not solve this problem, at least for the great industrial towns, we must not expect anything but low physique in the population. Nor, must we forget the women, the source of the new race. If music and dancing, golf, hockey and tennis were good for any young woman, they were good for all. Knowledge necessary for the maintenance of health and promotion of sound physique was equally necessary for the prevention of disease. Invalidism, disease and premature death were due to a relatively small number of morbid conditions. A large proportion of these diseases were directly preventable. The chief hindrance in the practice of prevention was lack of knowledge on the part of the public. Sir George Newman then proceeded to discuss the means for educating public opinion, and said that we must avail ourselves of the services of all who know in behalf of all who do not know. The admirable work of the voluntary health societies could hardly be over-estimated, and such a campaign as that represented in National Health Week was particularly valuable. "Why," he asked, in conclusion, "should we not have a 'Health Day' as well as an 'Empire Day,' or 'Hospital Day,' as a regular feature of our national life?"

Science in Great Britain.—Since the war a great deal of enthusiasm has been displayed for scientific education, in which, of course, is included medical scientific education. But money in sufficient amounts is not forthcoming to lead this enthuiasm into practical channels, and enthusiasm by itself does not bring forth much. At the annual dinner of old students of the Royal College of Science, London, held on the evening of April 26, references were made to this matter and to the need for increased financial support being accorded to scientific education and to the value of coordination of effort. Among the medical men present were Sir Richard Gregory, who presided, Sir Alfred Keogh, Sir Ronald Ross, and Sir Frank Heath. In the course of his speech, Sir Richard Gregory said that while technical institutions and universities in Great Britain and the United States received government grants amounting to about £1,000,000 in each case, those in America received something like £6,000,000 from private benefactions alone. Efforts were being made in different parts of the country, especially in Manchester and Liverpool, to arouse local enthusiasm for the work of the universities and higher technical education. It was hoped that these efforts would be the means of inspiring residents and citizens of these districts to offer that support to their institutions of scientific rank that was given so freely in the United States. The Marquis of Crewe, who also spoke, said that at present, with a population of 8,000,000, London had only one university to serve all purposes. The West Riding of Yorkshire and Lancashire, with half the populations, had two universities each, while New York was full of them.

Inspector of Anatomy for Scotland.—The Secretary for Scotland has appointed Dr. Norman Walker to be Inspector of Anatomy for Scotland, and Dr. Francis W. N. Haultain, to be an additional Inspector of Anatomy for a period of two months from that date.

Two Hundred and Twenty-two Nurses Decorated.—The latest figures from the War Department show that two hundred and twenty-two American Red Cross nurses, reserve members of the Army Nurse Corps, have received decorations or citations from the United States and various allied governments for their pluck and high professional skill.

LETTER FROM PARIS.

PARIS, April 15, 1920.

Encephalitis Lethargica.—The séance of the Academy of Medicine that took place last week, presided over by M. Laveran, was occupied by the consideration of the different forms of encephalitis lethargica. M. Vincent advocated the use of the Fochier treatment of injection of turpentine and pointed out that improvement must not be looked for until from 36 to 48 hours after treatment. M. Jeanselene quoted a case in which the paralysis was succeeded by spasmodic contractions of the muscles and discussed whether this symptom should be regarded as a sequel of the malady or a sign of its recrudescence, inclining to the latter theory. M. Achard also spoke of the successive phases of sleeping sickness noticed in the same patient and reported several cases in which, had the history of the phases passed through before admission to hospital not been known, an erroneous diagnosis of hemorrhagic meningitis would have been given. He concluded that these cases should be classed as serpiginous encephalitis. M. Netter, referring to his previous communication on the success of turpentine injections in serious cases of lethargic encephalitis, advocated the generalization of this treatment as soon as the diagnosis is made, and related his experience with nineteen patients, seventeen of whom were rapidly cured by this treament. This subject is very much to the fore in the French medical world. M. Paul Blum contributes a very lengthy article in a recent number of *Paris Médical*, in which he traces the known history of the disease that only made its appearance in France in 1918, and after noting the different publications on this subject, gives a detailed account of all its different phases.

A Shadowless Lamp.—A recent issue of *La Presse Médicale* contains an account of the invention by Professor L. Verain of the "Scialytique," an apparatus for giving light without casting a shadow. This result is obtained by a battery of fifty small mirrors so arranged inside a globe with a 100-candlepower light as to neutralize any shadow cast by the intrusion of an opaque body. The advantage of such a lamp over an operating table will be easily appreciated.

The Teaching of Foreign Languages.—M Léon Azoulay has recently issued an appeal for the teaching of foreign languages in the secondary as well as the primary schools and advocates the exaction of knowledge of at least two languages from every pupil who is a candidate for examination for any profession. The author says: "We insist on this reform because the need for it is most urgent and recent events have induced the powers that be to make practical modifications in every stage of our education. No one can conceive the consequences of such an innovation. Not only will it further intellectual, commercial, and agricultural progress by the information obtained and the emulation provoked, but it will improve our press in making it more scientific and more comparative aud our book trade in impelling it to wider, more useful, and more important enterprises, such as the encyclopedias that are so necessary and issued so cheaply among all classes abroad; besides all this, it would make France the center of the information that Germany was before the war."

Reception to Belgian Medical Students.—A reception was recently given by the medical students of the University of Paris at their delightful "Maison des Etudiants," as they call their students' club, in the old building, No. 13 rue de la Bucherie, that was begun in the fifteenth century and enlarged in the sixteenth for the use of the medical faculty of those days. The soirée was in honor of the eighty Belgian students from the Brussels University who had come to visit their Paris comrades.

Vital Statistics.—Professor Léon Bernard has made a report on "Hygiene and Its Outlook" to the Minister of Public Health. His statistics admittedly are not cheerful. He points out that 1,600,000 men, the youngest and most vigorous of the race, have been slain on the battlefield; that during the four years 1914-1917 the difference between the number of deaths and births shows a deficit of 883,000, and to this must be added 147,000 that corresponds to the country occupied by the enemy during this period. If to these figures are added the deaths whose number in 1918 was increased by the influenza epidemic, there is no exaggeration in putting the total number lost in consequence of the war at 3,000,000. With this premise Professor Bernard traces an admirable portrait of the growth of the attention paid to hygiene and the discoveries made by French savants to whom he pays an eloquent tribute and notes with regret the scanty provision made for teaching this subject in France.

An Anecdote of Landouzy.—His mention of the name of the late Professor Landouzy recalls an anecdote related by one of his friends. Professor Landouzy, whose name will always be associated with the zeal with which he fought the scourge of tuberculosis, was traveling in a first-class carriage when a general in the same compartment began to expectorate profusely on the strip of carpet between the seats. The professor, after enduring this in silence for a few moments, finally asked him to stop, with a few words about the result of his action, whereat the astonished officer, giving the only reason he could suppose for such a request, said, "Have you by chance any shares in the company?"

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 13, 1920, clxxxii, 20.

1. Disturbances Caused by Proteins. J. A. Turnbull.
2. Use and Abuse of Mechanical Supports in Orthopedic Conditions. Herman W. Marshall.
3. The Product of a Urological Clinic. William C. Quimby.

1. Disturbances Caused by Proteins.—J. A. Turnbull discusses hereditary and acquired sensitizations to foreign proteins, and the various ways in which the latter may be produced. He considers more particularly the treatment of hay fevers. In desensitizing patients to the pollens to which they are sensitive, he recommends the injection of small doses of pollen protein solution be begun ten or twelve weeks previous to the pollenating season, and administered every seven days; if treatment is started later the intervals between injections should be shortened. If the injection produces an erythema greater than one-half inch in diameter, the same dose is repeated the following visit; if less, the dose may be increased by one-half to double the previous dose. In some cases it is well to stop treatment previous to pollen liberation; others do better by continuing the treatments during the season. Cases in which there is a continuation of symptoms beyond the pollenating season, due to action of bacterial products, the writer desensitizes with bacterial extracts, using ex-

tracts from which the fats and waxes have been removed, making a solution, and using it subcutaneously. In some cases the continuation of the symptoms may be due to food products. Anaphylactic shock produced by the injection of a greater amount of the sensitive protein than the system can take care of may be relieved in from five to ten minutes by the use of adrenalin chloride 1-1000, giving ten to fifteen minims subcutaneously, intravenously, or intramuscularly.

2. Use and Abuse of Mechanical Supports in Orthopedic Conditions.—Herman W. Marshall emphasizes the importance of braces and mechanical appliances and compares their good features with drawbacks or failures resulting from all other methods. He says it would be possible to collect numerous cases in which massage and exercises have been given too early, or baking has aggravated rather than lessened symptoms, also cases in which surgery has delayed recovery, or plaster casts have afforded too much protection. Other patients who have received electrical treatment for restoration of muscle function have obtained benefit for muscles from the active contractions thus induced, yet the latter have influenced partially united or chronically irritated bone fragments in turn equally harmful. Disproportionate development of any single method to the exclusion of others can be a really malignant tendency at the present time and should be combated increasingly by balanced considerations of the whole field. Braces should not be condemned dogmatically and discarded completely as is so often done because of their obvious limitations. The responsibility for results rests rightfully with the physician rather than with apparatus. The writer sets forth the advantages of mechanical appliances in the treatment of industrial accidents and urges the education of insurance companies to the advantages of medical supports.

New York Medical Journal.

May 15, 1920, cvi, 20.

1. Influenza as a Pulmonary Necrotic Alveolitis Involving the Endocrines. Charles E. de M. Sajous.
2. Experiments with Transmitting Influenza Through Fleas. C. Engelbreth.
3. Acute Indigestion. Beverley Robinson.
4. Gastric Disturbances in Appendicular Inflammation. Samuel Floersheim.
5. Group Diagnosis. Jacob Gutman.
6. Heredity. L. D. McEvoy.
7. An Outbreak of Diphtheria in a Small City. Isaac W. Brewer.
8. The Relation of the Neurologist to Group Diagnosis. Charles Rosenheck.
9. Medical Opportunities for Women in Japan. Caroline E. Furness.

1. Influenza as a Pulmonary Necrotic Alveolitis Involving the Endocrines.—Charles E. deM. Sajous submits the following propositions which he believes open a new horizon for the study of influenza, its prophylaxis and treatment: True influenza is due primarily to the Pfeiffer bacillus, but this organism does not provoke its pathogenic effects in the classic manner, that is, in accord with Koch's postulates. When permitted by the defensive mechanism of the respiratory tract to reach the pulmonary alveoli, the Pfeiffer bacillus, finding all suitable conditions for its growth —hemoglobin, oxygen and temperature—therein develops colonies which arrest the function of these alveoli in the respiratory process, and besides cause necrosis of the alveolar walls, of the capillary network underlying the latter, and of the neighboring structures by interfering with their oxygenation and nutrition. The alveolar lesions interfere also with the respiratory process of the system at large, thus causing asphyxia of all organs, including the adrenals, whose hormone enables the hemoglobin to be converted into oxyhemoglobin, and also sustains the tone of the arterioles. The latter being dilated as a result, the general asphyxia is aggravated, while congestion and hemorrhagic foci occur in all organs, including the lungs. The above phenomena give rise to a symptom complex which has been attributed to bronchitis, bronchopneumonia, and lobar pneumonia, but which in reality is that of advanced influenza. The severity of an attack of influenza is proportionate to the number of alveoli invaded by the influenza bacilli, but a mild attack may be converted into a severe one by a secondary autoinfection. Sterilization of the respiratory tract is produced most efficiently by stimulating the lymphoid tissues of the nasopharyngeal area and the mucosa of the entire tract to the bronchioles with iodine fumes deeply inhaled, which promote phagocytosis and sensitize the *Bacillus influenzæ* to the action of these defensive cells. In the treatment of influenza the paramount aim should be to prevent access of the influenza bacillus to the alveoli. Among other prophylactic measures, the writer suggests that carriers be detected with the aid of agar plates, and that they be isolated and treated with iodine fumes and small doses of strychnine and thyroid gland until agar plates indicate that they are no longer carriers.

6. Heredity.—L. D. McEvoy refers to a former article in which the theory of zonal proliferation as a basis of structural variation was advanced as an hypothesis affording an explanation for the phenomena of heredity. The cell as the unit of structure in the zone had parted with a portion of its nerve filaments to the end that an organ might be formed, termed the neural control. This organ by securing cooperation between the zones forming a body, produced the function of coordination between the zones, and could be compared to a governing group of elements, each element retaining control of the zone which it represented, subject to the needs of the body. He now goes on to show that an unbalance in any mechanism of coordination reacts upon the neural control, tending to reduce the power to coordinate to a minimum. The dominant zones, because of the quantitative change in their chemical allotment, become weaker, and this weakness is transmitted to the nucleii extruded by them. When grouped in their container, thrown off by the body and fecundated, the new body formed inherits the loss of virility. The process being repeated may eventually part with the neural control to a more virile group, and an organism is formed retaining the ancestral vestiges of the once powerful combination, now atrophied and inert. A new protective mechanism will take the place of the old following the zonal law; thus zones depending upon the contractile power of muscular elements may establish constriction, or those having a protective armour may adopt a like envelope for the purpose of defense. This theory, he says, reverses the conclusions of Darwin regarding the biogenesis of life, and we can surmise that skeletal remains having relationship with existing species did not advance through successive stages of development, that the processes of environment and natural selection did not produce the distinctive changes in the structure of the cell enabling it to conform to any theory; but, contrarily, the cell had never changed though it might cease to proliferate if the zone of which it formed a part were unable to procure the definite chemical pabulum necessary.

Journal of the American Medical Association.

May 15, 1920, lxxiv, 20.

1. The Future of Obstetrics and Gynecology as a Specialty. Reuben Peterson.
2. Recent Statistics of Heart Disease, with Special Reference to Its Increasing Incidence. Frederick L. Hoffman.
3. Roentgenology of Tuberculous Enterocolitis. R. D. Carman.
4. The Diagnosis of Epidemic Encephalitis: Value of Nasopharyngeal Washings and of Cerebrospinal Fluids. Leo Loewe and Israel Strauss.
5. Lipuria Associated with Chronic Nephritis. Louis Bauman and G. H. Hansmann.
6. Acute Perforation of Meckel's Diverticulum by Foreign Body (Fishbone): Report of a Case. Frederic Hagler and John W. Stewart.
7. Uterine Rupture at Term After Pituitary Extract. Complicated by Premature Separation of the Placenta. Aline F. Maxwell.
8. The Technic of Nerve Suture. Byron Stookey.
9. Specific Nature of the Hemolytic Streptococcus of Scarlet Fever. Ruth Tunnicliff.

1. The Future of Obstetrics and Gynecology as a Specialty.—Reuben Peterson. (See MEDICAL RECORD, May 22, 1920, p. 887.)

4. The Diagnosis of Epidemic Encephalitis.—Leo Loewe and Israel Strauss have made studies with reference to the value of nasopharyngeal washings and cerebrospinal fluids in epidemic encephalitis. They find that Berkefeld filtrates of nasopharyngeal washings from cases of epidemic encephalitis produce character-

istic lesions when injected intracranially into rabbits. This finding has served them as an aid to diagnosis in 78 per cent. of the cases so tested. A minute filtrable organism, identical with that previously described by these writers, has been discovered in 11 of 17 nasopharyngeal washings cultivated, or 64 per cent. Inoculation of rabbits with the cerebrospinal fluid of patients with epidemic encephalitis confirmed the diagnosis in 12 of 16 fluids injected, or 75 per cent. Cultures of cerebrospinal fluids have been positive in 10 of 20 cases, or 50 per cent. The positive results obtained with the cerebrospinal fluid sharply differentiate this disease from poliomyelitis. Control studies in cases of brain abscess, brain tumor, psychasthenia, and uremia have been uniformly negative.

5. Lipuria Associated with Chronic Nephritis.—Louis Bauman and G. H. Hansmann point out that the several features of this condition which are now more or less well recognized are the occurrence of fat, fibrinogen or fibrin, red and white blood cells in the urine, the direct quantitative relationship between the fat ingested and that excreted in the urine, and the increase in fat elimination during rest in the recumbent posture. They report a case, the clinical, chemical and pathological data of which suggest a progressive nephritis, possibly of syphilitic origin, associated with lipuria and terminating in uremia. The lipuria was influenced by the amount of fat in the diet. The absence of coagulated protein, the scarcity or absence of cells in the urine, and the apparent absence of a fistulous communication, indicate that the lipuria was due to an altered permeability of the renal epithelium. The presence of lecithin and cholesterol was observed. In this case there was no increase of cholesterol in the blood. The occurrence of typical uremic symptoms without cerebral edema or retention of urea which was present in this case has been noted before. The incidence of syphilis in this case leads the writer to recall the work of Stengel and Austin, who noted the frequent occurrence of double refractive bodies in the urine in nephritis associated with syphilis.

9. Specific Nature of the Hemolytic Streptococci of Scarlet Fever.—Ruth Tunnicliff describes experiments showing that the serum of sheep immunized with hemolytic streptococci from the throat in the acute stage of scarlet fever has been found to contain opsonins and agglutinins for the hemolytic streptococci that prevail in the throat and complicating lesions early in this disease, but not for hemolytic streptococci from other sources, such as erysipelas, mastoiditis, measles, influenza, diphtheria, and the normal throat. The results of the absorption tests also indicate that the hemolytic streptococcus from scarlet fever forms a distinct group, scarlatinal streptococci removing the opsinins and agglutinins for these cocci; while absorption from a hemolytic streptococcus from erysipelas has no such effect. The writer believed that these results suggest that the hemolytic streptococci of scarlet fever form a distinct group from the immunologic point of view. The possibility is also suggested that the serum produced with this scarlatinal streptococcus group may prove of use in the diagnosis and treatment of scarlet fever, and eventually perhaps in determining the length of infectivity.

The Lancet.

April 24, 1920, cxcviii, 5043.

1. Milroy Lectures on the Higher Fungi in Relation to Human Pathology. Lecture II. Aldo Castellani.
2. A Presidential Address on Maternity and Child Welfare Work. Hector Charles Cameron.
3. The Treatment of Syphilis by the Antisyphilitic Serum of Query. J. Dobrainsky, J. H. Sequeira, and Theodore Thompson.
4. Recurring Sarcoma of the Small Intestine. W. H. Battle.
5. Infantile Diarrhea and Vomiting: Their Prophylaxis and Treatment. G. Douglas Sherwood.
6. Heart-Block: A Record of Twenty Cases. J. Strickland Goodall.
7. Congenital and Hereditary Defects in Recruits: Observations Based on the Medical Examination of 25,000 Men. John Sinclair Manson.

3. The Treatment of Syphilis by the Antisyphilitic Serum of Query.—J. Dobrainsky, J. H. Sequeira, and Theodore Thompson have made a trial of Query's serum in a case of gummatous ulcers of the leg of long standing associated with hyperkeratosis and deafness, and in two cases of tabes dorsalis, which had proved resistant to the recognized methods of treatment. Query's serum is prepared by inoculating monkeys with the filtered cultures of the organism of syphilis in bouillon. When the serum of the monkeys gives a strong positive Wassermann the animals are bled and the serum is collected and preserved in ampoules. The serum was used both subcutaneously and intrathecally. In each of these cases the intractable symptoms yielded to Query's serum in a most striking manner, and in the opinion of these observers the serum deserves a thorough further trial in the treatment of the tertiary stage.

5. Infantile Diarrhea and Vomiting: Their Prophylaxis and Treatment.—G. Douglas Sherwood claims that both diarrhea and vomiting in infants are practically always of infective origin, and that both symptoms, either singly or in combination, can be prevented by antiseptic and aseptic precautions. In the Upwick Vale Home, where an average of seventeen infants are lodged, fed and clothed every year, in the first three years of the institution's existence there was an average of six deaths a year from diarrheal disease. The technique which the author describes was then instituted and for the past twenty-two years no case of diarrhea has originated in the home, and there has not been a single death from that cause. Surgical cleanliness was applied to the nursery both for the prevention and treatment of diarrhea. Emphasis was laid on the following five points: 1. Food was kept in a larder and except at meal times was out of contact with the children and their service. 2. A separate room was used for the changing of the napkins, and where possible a separate nurse for the toilet. 3. The nates were washed with a disinfectant. 4. The nurse's and baby's hands were disinfected. 5. The napkins were immediately placed in a disinfectant.

6. Heart-Block: A Record of Twenty Cases.—Dr. J. Strickland Goodall presents an analysis of twenty cases of complete heart-block, which have occurred in his practice within four years. The main points brought out are the relative infrequency of rheumatic or syphilitic history; the almost invariable association of the condition with mitral regurgitation; the tending to sudden death on gastric distension or exertion; the occurrence of Stokes-Adams "fits" when the heart-block is complete; the frequency of pain as a symptom; the possibility of the condition being transmitted from mother to child; the ability of some patients to work and even to stand severe operations.

British Medical Journal.

April 24, 1920, 3095.

1. New Views of the Pathology, Diagnosis, and Treatment of Gastric and Duodenal Ulcer. Arthur F. Hurst.
2. An Address on Surprises in Diagnosis. Edmund L. Spriggs.
3. Results of the Peptone Treatment of Asthma. A. G. Auld.
4. The Myoclonic Form of Epidemic Encephalitis. Piero Boveri.

1. New Views on the Pathology, Diagnosis and Treatment of Gastric and Duodenal Ulcer.—Arthur F. Hurst attempts to answer the question as to what there is about some individuals that make them liable to gastric ulcer, about others that make them liable to duodenal ulcer, and about still others—the majority of people—that saves them from being liable to either. He states that in the average normal stomach the greater curvature reaches to the umbilicus or just below it in the erect position. Considerable variations occur from this in two directions; in some normal individuals the stomach is hypertonic and in others it is hypotonic. In the former the stomach curves obliquely to the pylorus, which is almost its lowest point; in the latter the stomach is hook-shaped and the greater curvature is situated more than an inch below the umbilicus. The hypertonic stomach usually empties itself more rapidly than the average normal stomach, while the hypotonic stomach generally, but not so constantly, empties itself less rapidly. There is reason to believe the hypertonic stomach shows hypersecretion, and that the hypotonic stomach generally shows hyposecretion, *but it may also show hypersecretion.* More recently it has been found

that the stomach in cases of gastric ulcer is generally somewhat hypotonic and almost invariably empties itself more slowly than the average normal. The writer has had the opportunity of examining patients who have recovered from duodenal ulcer as a result of medical treatment, occasionally after many years of complete freedom from symptoms, and has always found the hypertonic, rapidly emptying stomach still present. These observations, in the writer's opinion, prove that the characteristic *x*-ray appearance of the stomach in duodenal ulcer is not due to the ulcer as it is present before the ulcer develops and after it is healed. The same thing is true with regard to secretion, Crohn having found that the curve shows the same hypersecretion and hyperchlorhydria after a gastric duodenal ulcer has healed as it did before treatment began. From these facts the conclusion is drawn that there is one type of stomach in which a gastric ulcer will develop and another type which is likely to lead to ulceration of the duodenum, if the necessary exciting causes are present. An ulcer of the peculiar type found in the stomach occurs nowhere else in the body except in the first part of the duodenum and the part of the jejunum adjoining the stoma of a gastroenterostomy. The one common feature of these situations is the presence of gastric juice. Normal mucous membrane is not digested by gastric juice, but the presence of toxins, the most important source of which is the teeth, may lower the vitality of the mucous membrane. Chemical factors such as alcohol, and mechanical factors such as indigestible particles of food may also irritate the mucous membrane until it becomes less resistant to the digestive action of the gastric juice. The writer is convinced that the tendency to develop a duodenal ulcer is increased by excessive smoking, the nicotine apparently acting through the autonomic nervous system, thus increasing the hypertonus and hypersecretion of the stomach.

3. **Results of the Peptone Treatment of Asthma.**—A. G. Auld has used the peptone treatment in a fairly large number of cases of asthma, and states that his experience has proved instructive in respect to the grouping of asthmatical cases. One group quickly responds to the treatment and the effect is more or less lasting, while the other group is resistant, and is subdivisible into those totally resistant, and those in which, by careful immunization, the disease may be largely overcome. The cases resistant to treatment include nearly all those with chronic bronchitis and developed emphysema, cases presenting any degree of cyanosis, even without bronchitis, and those in whom a more or less oppressed condition of the respiration is never absent. The writer discusses the rationale of treatment and says that since contraction of an isolated muscular organ is only one element in a very extensive picture, and until some more convincing evidence is forthcoming, the anaphylactic shock and peptone shock may be regarded as produced by the identical toxic substance. Immunization by peptone is therefore applicable in cases in which the symptoms may be caused either by whole or split foreign protein. The milder cases of asthma are probably associated with the latter, clinical evidence for which has been recorded, and one attack affords little or no protection. In many of the severe cases of asthma, no doubt, a large molecule operates which is antigenetic, and is succeeded by a period of desensitization. In either case proteose confers on the body fluids a resistance to the induced poison, when used either in small immunizing doses, or in one dose large enough to produce a definite reaction. Non-specific immunization does not possess the independence of action which is the prerogative of the specific (in the bacteriological sense). Hence the necessity, during treatment and thereafter, of a carefully regulated mode of life.

Hygiea.

March 15, 1920, lxxxii, 5.

Two Cases of Total Extirpation of the Stomach.—Sundberg relates the case of a woman of 64 with cancer of the stomach, palpable and of several months duration. Laparotomy revealed diffuse cancerous infiltration of the gastric walls although the organ was movable and without lymph node metastases. Extirpation was subtotal, a small portion of the cardia being used to anastomose with the jejunum (cardiojejunostomy). The patient is living and well 15 months after operation and has taken on weight. The second patient was a woman of 65 with symptoms pointing to cancer for 18 months. Her general condition was good and the tumor while large was movable. Laparotomy showed cancerous infiltration of the gastric wall from pylorus to cardia. Total gastrectomy was performed and an esophago-jejunostomy made with addition of an enteroanastomosis. One week later death occurred suddenly from cerebral hemorrhage. The post-mortem examination showed that the operation had been technically successful.

Il Policlinico.

March 8, 1920, xxvii, 10.

The Cerebrospinal Fluid in Pertussis.—Genoese discusses this subject at length. During the past two years this affection has been especially burdensome in Rome and in certain cases nervous symptoms were so much in evidence that the author tapped the spine. The study of this fluid in this affection is by no means new and a number of finds have been placed on record. Thus far no consensus of opinion exists and no general laws have been laid down. The author tested six cases with the following result: The fluid was always clear and the pressure under which it emerged was above normal. The fact has been established by others in some degree and has been explained wholly on mechanical grounds as a consequence of the raising of the intracranial pressure as a result of repeated paroxysms of coughing. A more modern view is that the toxin of the disease is a stimulant of the secretory function of the choroid plexus. Both factors might conceivably be active at the same time. It has been found that when convulsions supervene the pressure of the fluid shows no added increase. In regard to the qualitative changes the albumin content is normal without the formation of a reticulum, the chlorides are normal, acetone is absent. Boveri's reaction is negative, the cytological examination is negative. There is an augmentation of the reducing substances in the fluid which could plausibly be associated with the increase of pressure. Injections of cocaine and stovaine produce hyperglycorrhachia without any increase of blood sugar and this reaction, Genoese says, is apparently purely mechanical and is due almost solely to the irritation which gives rise to congestionn of the meninges.

Revista Española de Medicina y Cirugia.

January, 1920, iii, 19.

Cosmetics of the Visual Apparatus.—Marquez, an ophthalmologist of Madrid, enumerates a variety of resources beginning with canthoplasties. He reports good results from his modification of the method of Fricke. The Dieffenbach operation he credits *re* priority to a contemporary Spaniard named Argumosa. The justification has been made only by a few Spanish authors, for in general Argumosa is ignored outright. The latter published a work on surgery in 1856 but many years before this period—in 1832—he had performed the operation and received credit for it in the Spanish work on diseases of the eye which was published by Calvo and Martin in 1847. Dieffenbach first operated in 1834 and got into print one year later. The author reports in detail and illustrates cases of Argumosa's operation. Next to canthoplasties he considers operations on the muscles for the correction of strabismus and completes his study by an account of the cosmetics of the globus oculi which deals with enucleation and artificial eye prosthesis. These three categories however by no means exhaust the subject and the author merely enumerates in passing the removal of pterygium, tattouage of the cornea for leucoma, cataract operations considered purely from the cosmetic angle, the supplementary use of glasses in connection with prosthesis—as after strabismus operations, etc., etc.

Book Reviews.

ANAPHYLAXIS AND ANTI-ANAPHYLAXIS AND THEIR EXPERIMENTAL FOUNDATIONS. By Dr. A. BESREDKA, Professor at the Pasteur Institute. With a Preface Dr. E. ROUX, Director of the Pasteur Institute. English Edition by S. ROODHOUSE GLOYNE, M.D., D.P.H., Pathologist, City of London Hospital for Diseases of the Chest. St. Louis: C. V. Mosby Company, 1919.

THE literature on anaphylaxis has developed a tremendous volume and a critical review of it is impossible except to a worker experienced in this particular field. As a result it is exceedingly difficult for the average physician to acquire a simple and clear exposition of the situation as it exists at the present time. Most of the text-books handle the subject in a very scant manner and the majority of the journal articles are confined to very narrow phases of the topic. It is therefore a great satisfaction to have the words of a master in this field written down for us in our own tongue, sufficiently clearly so that all may understand and briefly that all may read but yet with enough detail so that the whole story as it is now known is before us. The translator's work has been well done and he has added a brief chapter which summarizes the work which appeared after the completion of the paper. This small book should find many interested readers.

A TEXT-BOOK OF HUMAN PHYSIOLOGY. Including a Section on Physiologic Apparatus. By ALBERT P. BRUBAKER, A.M., M.D., LL.D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery; Formerly Lecturer on Physiology and Hygiene in the Drexel Institute of Art, Science, and Industry. Sixth Edition. Revised and Enlarged. With 356 Illustrations. Philadelphia: P. Blakiston's Son & Co.

IT is a pleasure to draw attention to a sixth edition of this well known text-book. Having been carefully arranged at the beginning, the successive editions have not shown any very great changes. The book has, however, been kept up to date; the present revision containing new material on carbohydrate metabolism, arterial pressure, and the action of the spinal cord and spinal nerves. Other slight changes have been made throughout the volume, and some new diagrams have been inserted. This book differs from many of its competitors in that it only professes to offer a selection of the more important facts of physiology, preference being given to such facts as will be helpful to students and practitioners of medicine.

LA FATIGUE DE L'APPAREIL VISUEL CHEZ LES OUVRIERS MINEURS. Par le Dr. M. STASSEN. Liege: Imprimerie H. Vaillant-Carmanne, 1914-1919.

THIS volume of 229 pages is a monograph on miners' nystagmus and other disturbances of vision among those who mine coal, as blepharospasm, amblyopia, etc. Numerous short case histories are given and the author controls a material of many hundred cases. There are a number of illustrations comprising lamps and graphics of the oscillations of the eyeballs. The work seems to have been finished or nearly so when the war broke out, so that publication has been delayed five years. The volume is much more than a personal book and is a complete monograph on all the ocular disturbances of miners.

DIE EXPERIMENTELLE BAKTERIOLOGIE UND DIE INFEKTIONSKRANKHEITEN mit besonderer Berücksichtigung der Immunitätslehre. Ein Lehrbuch für Studiernde, Aerzte und Medizinalbeamte. Von Dr. W. KOLLE, Direktor des Institutes für experimentelle Therapie o. Honorarprofessor an der Universität Frankfurt a. Main und Dr. H. HETSCH, Pof. Privatdozent, Oberstabarzt in Sanität-departement des Kriegsministeriums in Berlin. Fünfte, erweiterte Auflage. Berlin und Wien: Urban & Schwarzenberg, 1919.

THIS edition is in two volumes as was its predecessors and contains about four hundred pages more than the third edition. It has been quite carefully revised and apparently embodies the principal changes which have been made during the years of war, at least in Germany. The authors lament their inability to obtain foreign literature and this is plain in scanning their references or in the study of many of their articles. Some little use has been made of English and French work but the work of American bacteriologists and immunologists has been completely ignored. The work retains its character as containing much to point out the practical application of bacteriological findings, and the epidemiological and immunological discussions are exceptionally full. The colored plates are for the most part excellent.

SURGICAL CLINICS OF CHICAGO. Vol. III, No. 4, August, 1919. Octavo of 288 pages with 117 illustrations. Published bi-monthly. Philadelphia and London: W. B. Saunders Company, 1919.

THERE are many interesting clinical lectures in this number, among which may be mentioned those on peripheral nerve surgery, bone and other war cases by Dean Lewis, Nesselrode, Phemister, Ryerson, Pollock, Norris and Reich; A. J. Ochsner's on benign tumors of the parotid; McWhorter's on a case of large sarcoma involving the stomach; and Eisendrath's lecture on methods of examination in the diagnosis of abdominal tumors.

SURGICAL CLINICS OF CHICAGO. Vol. III, No. 5. October, 1919. Octavo of 259 pages with 94 illustrations. Published bi-monthly. Philadelphia and London: W. B. Saunders Company, 1919.

AMONG the more interesting features of this number are a fairly exhaustive discussion by Eisendrath on congenital cystic disease of the kidney and kidney tumors in general; Bevan's clinic on three abdominal tumors, a case of abscess of the pancreas, and a case of ulcerating tumor of the breast; Speed's discussion of the problems of surgical management in duodenal ulcer; A. J. Ochsner's description of the technique of partial gastrectomy, although the Balfour modification of the Polya operation is not mentioned; and Kretschmer's clinic on carcinoma of the bladder and the diagnosis and treatment of bladder stone.

KURZ GEFASSTE PRAKTISCHE BAKTERIOLOGIE für Aerzte und Studierende. Von Dr. L. PANETH, Assistent am kgl. Institut "Robert Koch" in Berlin. Zweite vollig umgearbeitete Auflage der "Feldmassigen Bakteriologie." Berlin und Wien: Urban & Schwarzenberg, 1919.

THE first edition of this handbook was the German war manual of bacteriology. It is very brief and condensed to the most practical and essential details and yet one is surprised to find how complete it is. Such a work will be a convenient means of refreshing one's memory when in the field but it will hardly find a place in the library of the laboratory where more extensive works will be preferred. It is well printed on good paper.

DIE LUMBALPUNKTION. Technik der Lumbalpunktion. Allgemeine und spezielle Diagnostik des Liquor cerebrospinalis. Therapeutische Anwendung der Lumbalpunktion. Von Dr. KARL ESKUCHEN, München-Schwabing. Mit einem Vorwort von Professor Dr. M. NONNE, Hamburg. Berlin und Wien: Urban & Schwarzenberg, 1919.

THE importance of the careful examination of the cerebrospinal fluid has often been emphasized so that there is no need for an apology for the publication of a book on the subject. This book is rather pretentious in its scope, for the author apparently intended to omit nothing from his discussion. The known methods of examination are set forth in detail and following them is a discussion of the findings in the cerebrospinal fluid in the conditions in which it may be abnormal. There is a section on the therapeutic use of lumbar puncture and a brief discussion of the technique. The subject is covered rather thoroughly though there is little evidence that much of the work recorded is the result of the author's own investigations. Comparatively few references are given. The work is more extensive than Levinson's book which was recently reviewed in these columns, but does not show as much original work. It is rather poorly bound.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held March 29, 1920.

THE PRESIDENT, DR. CHARLES H. CHETWOOD, IN THE CHAIR.

The Diagnosis of Chronic Gallbladder Pathologies.—Dr. ANTHONY BASSLER read this paper. (See page 899.)

The Surgical Consideration of Gallbladder Diseases.—Dr. JOHN F. ERDMANN read this paper. (See page 901.)

Dr. MORRIS MANGES said he had come to the conclusion that he agreed with Dr. Mayo that if one wanted to know the exact diagnosis when there was trouble in the right upper quadrant a laparotomy was the only way in which one could find it out. In making that statement, however, he meant *exact*, and not *approximate* diagnosis. What Dr. Bassler had told them after laying aside the classification and negative evidence, came down to basing the diagnosis upon the history and a sixth sense, and this sixth sense in the last analysis meant keeping in the back of one's mind that sometimes gallstones might exist without occasioning symptoms and that where there were symptoms in the way of ill-defined attacks of increased frequency the disease was advancing. Often too much was taken for granted in the diagnosis of gallbladder disease; there was too much "propter hoc." If a patient gave a certain set of symptoms which the physician seemed to have treated successfully he took for granted that because his treatment was successful his diagnosis had been equally successful. There were a number of conditions showing the same symptomatology, so he felt that they frequently took too much for granted. Dr. Bassler had referred to the Reyfuss tube as of little value in the diagnosis of gallbladder disease. Dr. Manges said he would like to substitute for that the statement that only a small amount of the information which could be obtained by the Reyfuss tube in diagnosis has yet been developed. That its negative value was not much, but its positive value might be very great, as for instance, when there was jaundice and absence of bile one could be quite sure of malignant obstruction, unless there was some anatomical variation from the normal in the biliary ducts or papilla. Studies which he had been making on stomach and duodenal contents by means of the Reyfuss tube had revealed some rather surprising things. For instance, the juice of grape fruit sent a low or normal acidity up to 180. There was a difference in the response of the stomach to such nearly related substances as oatmeal and rice, or the white and the yolk of an egg. We had no idea as yet of the adaptation and response of the gastric mucosa to various substances. He believed that in the future they were going to learn a great deal along these lines, but it was too early as yet to make any definite statements. As to making a positive diagnosis of gallbladder stone by the *x*-ray, he thought that the estimate that a diagnosis could be made in 33 per cent. was rather high; we should be satisfied to have the *x*-ray show motility, deformity, the presence of adhesions, and abnormalities of the stomach and duodenum. That was enough without always asking the *x*-ray to make a diagnosis of stone. In regard to the diagnosis of hypercholesteremia, he thought Dr. Bassler was correct, the good we had obtained from this procedure had not repaid the trouble. Dr. Manges said he was afraid of classifications, as the classification did not usually fit in with the particular case. The chief point to be brought out was that we should remember that there were such things as gallstones and cholecystitis in doubtful cases.

Dr. WILLY MEYER said that when a patient presented himself or herself, complaining of pain in the upper part of the abdomen, we all naturally thought of the stomach, the duodenum, the pancreas, and the gallbladder, but we had learned that the appendix played a great rôle in producing symptoms referable to this region, and also that the symptomatology of the appendix was more frequently combined with that of the gallbladder than with that of other organs. To make a correct diagnosis the most important factor and the one that both Dr. Bassler and Dr. Erdmann had emphasized was a careful history. When there was discomfort or pain in the upper abdominal region, or indigestion, we should think always of gallbladder disease. As aids in diagnosis we had the *x*-ray, the blood cholesterin, and the examination of the duodenal contents. The *x*-ray had not so far given the satisfaction we had hoped from it. Personally he believed that a diagnosis of gallstones in 32 per cent. of the cases by the *x*-ray was a rather high estimate; probably not more than 15 or 20 per cent. of gallstones could be diagnosed by this means. They would probably not improve this percentage until they had learned to make a roentgenogram of the gallbladder and of nothing but the gallbladder. If the *x*-ray showed the stone, all good and well; failure to show the presence of a stone, however, did not mean anything so far as the exclusion of gallbladder disease went. Coming to the use of the Einhorn tubes Dr. Meyer said he had made a very careful study of the duodenal contents and had compared the results with the operative findings, and on the basis of these studies he would have to disagree with Dr. Bassler. He thought the greatest advance that had been made in the diagnosis of gallbladder affections, particularly in the chronic inflammations, was the examination of the duodenal contents by means of the Einhorn tube. It was necessary, however, that the examination should be made correctly. The tube should be left in place, and the nurse should aspirate the contents every half hour. If this was done one would frequently find turbid fluid, cholesterol crystals, pus corpuscles, and absence of bile pigment. The conclusion had been reached that cholecystitis was a much more frequent disease than we had formerly thought. It was a very frequent disease. If one examined the duodenal contents and then during operation aspirated the gallbladder it would be found that the contents of the gallbladder corresponded to the bile found in the duodenal contents. This was important, because if one was operating for appendicitis and found a turbid fluid from the gallbladder in the duodenal content he could then go up and introduce a needle into the gallbladder, and if he found the bile turbid he could go ahead and remove the gallbladder. There were instances in which the failure to do a cholecystectomy in these cases, in the hope that cholecystostomy and drainage would cure the patient, had resulted in chronic invalidism. It was not only the colon bacillus that kept up infection in this locality, but other bacilli as well. He therefore believed that cholecystectomy was better than cholecystostomy. His experience had shown that recovery from cholecystectomy was almost as good as from appendectomy; it was almost 100 per cent. Something unforeseen must have happened if the patient died after the operation. Examination of the duodenal contents, not once but over a number of hours, would give great and important information. If the cystic duct was occluded one would get the discharge from the liver directly, but these were not very frequent cases.

Dr. EDWARD L. KELLOGG said the conclusions of the authors were entitled to respect because of their achievements in their special lines of endeavor. In the consideration of this subject the internist and the surgeon meet on common grounds. The scope of Dr. Bassler's paper did not permit him to tell of his methods of treatment. This was the more to be regretted because many surgeons maintained that these problems were surgical from the beginning; an opinion with which the internist was not apt to agree. The importance of recognizing the less serious pathological conditions was obvious when one reflected that probably most cases of cholelithiasis were preceded by cholecystitis. The less obvious conditions were easily overlooked, and the focal symptoms must be carefully looked for. Deaver suggested that "fair, fat, forty, and belches gas" gave a better idea of the symptoms than the clear-cut picture described in the textbooks. Long ago Moynihan called attention to the early symptoms of gallbladder disease, and particularly emphasized the point that symptoms might be referred to the stomach and not to the gallbladder, and might have a definite relation to the digestive cycle and the character of the food. We must, therefore, search care-

fully for focal symptoms. The *x*-ray certainly was of distinct value. Dr. Kellogg stated that personally he had derived valuable information from studying the bile extracted through the duodenal tube. It was striking to compare the clear, golden bile of the normal biliary tract with the turbid green or dark brown bile, containing flocculent mucus, observed in pathological states, and often this had been the point which had completed the diagnosis. This method had been rendered even more effective by Lyon's suggestion of injecting a solution of magnesium sulphate into the duodenum, and then aspirating the bile, by which he claimed to differentiate the bile from the common duct, from the gallbladder, and the liver. We should not forget the bacteriological study of the speciments, as often valuable information could be obtained. Dr. Erdmann's classical paper was most convincing, based as it was on an almost unrivalled experience. It was natural that the surgeon should see the problem from a different angle than the internist, because his observation started where that of the internist ceased. He was familiar with the failures of medical men, but probably rarely saw their successful cases. Doubtless there was a tendency to keep these cases too long under medical treatment, for which the patients were partly to blame, since they were seldom ready to submit to surgery until the resources of medical treatment had been exhausted. In this connection the laity should be educated to know the possible complications and to understand the importance of resorting to surgery when it was indicated, as they had been in appendicitis. The diagnosis having been made, and the advisability of medical versus surgical treatment being under consideration, Dr. Kellogg said he had formulated for himself this rule: "When in doubt operate." As to the comparative merits of cholecystectomy versus cholecystostomy, he did not believe the last word had yet been said. There was no doubt that in the past some surgeons had left too many gallbladders. Was it not possible that now they were taking out too many? He did not take issue with the leaders of the profession in this matter, but was perplexed by the following questions which, so far as he knew, had not yet been satisfactorily answered, "What is the function of the gallbladder?" "Why do the ducts dilate so markedly after cholecystectomy?" "What is the effect of this dilatation upon the liver function?" "What is the effect upon the individual of the ultimate incompetence of the valve in the ampulla of Vater?" There was no room for difference of opinion in the badly infected, thickened, papillomatous, or obstructed gallbladders, but it was in the lower grades of cholecystitis, perhaps without stone formation, shown by enlargement of the regional lymphatics and thick bile mixed with mucus, that the question arose. In cholecystectomy should the dissection be begun at the fundus or at the cystic duct? The latter procedure was apparently the choice of most surgeons, but did not seem to the speaker to possess sufficient advantages to justify prolonging the operation, as was apt to be the case if the gallbladder was much distended and the liver was difficult to rotate. In fact, in this condition he believed there was a real advantage in starting at the fundus, since this type of gallbladder, when separated from the liver, presented readily in the wound and could be followed down to the cystic duct with little difficulty. In the majority of cases, however, the reverse procedure was preferable. Should the common duct be drained after cholecystectomy? It seemed to him there was an advantage in so doing, as every case of cholecystitis might be complicated by cholangitis. He had found satisfaction with the method used by Dr. Bodine, that was ligating the stump of the cystic duct with No. 1 or 2 plain catgut and using tube drainage, expecting that in two or three days after the area had been walled off by adhesions there would be sufficient absorption of the catgut to permit a free flow of bile from the wound.

Of the two procedures, cholecystogastrostomy and cholecystoduodenostomy, the latter was preferable when possible.

Dr. G. A. FRIEDMAN declared that gallbladder disease was a surgical condition only, and since it was surgical and a very serious disease, it was very important that the physician should know how to diagnose it. Much had been said of the value of the duodenal tube, but this was not accessible to the general practitioner. He thought the value of the tube had been over-estimated by Dr. Meyer, and underestimated by Dr. Bassler; he preferred to take a middle ground. He had before pointed out the importance of pressure points in the intercostal spaces to the right in diagnosing gallbladder pathology, and he never told patients that they had gallstones. He told them they had a diseased gallbladder, for which they would have to be operated upon. If one told a patient that he had gallstones, and then at the operation stones were not found, the patient felt that he had been operated upon unnecessarily and lost confidence. He therefore told the patient, not that he had gallstones, but that he had an inflammation of the gallbladder, and that was a diagnosis that could be easily made, not by the duodenal contents, but in the ordinary routine examination made in every dyspeptic case. One should look for tender spots to the right at the level of the gallbladder, and compare the right with the left side. If there was marked tenderness in the continuation of the right axillary line, scapulary line, the posterior median line at level of gallbladder, one could be sure the case was one of gallbladder pathology and could safely hand the patient over to the surgeon. Gallbladder pathology with or without stones would be found. This search for tender spots could be made by any practitioner. They were present in only one other condition, and that was intercostal neuralgia; they were not present in primary or secondary carcinomas of the liver, or when the liver enlargement was due to pancreatic pathology, or in engorged liver due to cardiac decompensation. It had been said that most patients with cholecystitis had casts and albumin in the urine; he had lost a patient because of that condition which was overlooked. A patient having casts and albumin was given ether and devoloped soon after the operation an ether nephritis and died. Therefore, he thought that every patient sent to the surgeon for gallbladder pathology should have the urine examined for albumin and casts and the anesthetic given accordingly.

Dr. BASSLER, in closing, made a plea for the individual fifty years of age, or thereabouts, in whom all sorts of diagnoses were made—nephritis, arteriosclerosis, cardiac conditions, achylia gastrica, hyperacidity, constipation, etc.—without considering that the symptoms might be related to gallbladder disease. Perhaps the patient only complained of gastric symptoms, still if one kept in mind the possibility of gallbladder pathology and the necessity of paying some attention to it he could be of signal service to some older people. Dr. Bassler said he did not wish to deprecate the use of the duodenal tube, but he did not think it was quite as valuable as Dr. Meyer assumed. He wished to ask a surgical question. He had been making a study of seven cases in which cholecystectomy had been performed and symptoms persisted similar to those from which the patients had suffered before the pathological gallbladder had been removed. These patients showed what Dr. Meyer had described as bile dripping from the common duct; they were discharging grumous bile, débris, and bacteria, and yet they had no gallbladder. He had continued to aspirate these cases until, in one case, he obtained clear, bright yellow bile, apparently from the liver itself. People with a condition like this suffered a tremendous amount of distress, and it was not due to post-operative adhesions. The question was whether in all gallbladder cases there was not disease in the ducts, and whether in doing cholecystectomy one ought not to keep that in mind and make observations with a view of ascertaining whether cholangitis also existed.

Dr. ERDMANN, in closing, said he had intended to say something about the Einhorn tube. Just last week he had seen a patient in whom examination of the duodenal contents had been carried out by means of the Einhorn tube. The case was one in which the symptomatology was so absolutely simple that the diagnosis could have been made immediately on the basis of the history. Dr. Einhorn stated the examination with the tube had shown turbid bile. On opening the abdomen there was absolute constriction and closing off of the duct. Where did the fluid come from?

That brought up the question with reference to cholangitis. In doing a cholecystectomy one did not know whether that procedure was going to prevent cholangitis or not. He cited an instance in which following cholecystectomy a patient had a pseudo-angina pectoris, and it was stated that he had had two attacks of auricular fibrillation. This patient had pains radiating to the shoulder and down the arm, which were probably due to a cholecystitis with stone in the gastric duct. If gallstones were found following cholecystectomy it did not necessarily mean that the surgeon had overlooked these stones. The stones were found because the liver contained stones, and after operation these stones came down from the liver and the patient had to be reoperated. Dr. Erdmann recalled a number of instances in which patients had to be operated upon several times following cholecystectomy for the removal of gallstones. He recalled one case in an immigrant girl of 17 years at the Gouverneur Hospital who had favus and jaundice. On opening the abdomen three stones, as thick as a piece of stick licorice, and each three-quarters of an inch long, were removed, and hundreds of small stones the size of a flaxseed were found. He washed out the entire biliary tract with salt solution, and in less than a year afterwards operated on the girl again and found literally thousands of these small stones. This was a case of hepatic lithiasis. When one remembered that there were such conditions as biliary stones and cholangitis it would be understood that there would be patients who could suffer after operation upon the gallbladder or duct.

AMERICAN MEDICAL ASSOCIATION.

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(Special Report to the MEDICAL RECORD.)

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SECTION ON SURGERY, GENERAL AND ABDOMINAL.

First Day—Wednesday, April 28.

DR. DEAN D. LEWIS OF CHICAGO IN THE CHAIR.

One Hundred Goiter Operations: Mistakes in Retrospect.—Dr. JAMES T. MASON of Seattle, Wash., based this report on one hundred thyroidectomies performed by him during a period of eight years, under morphine and local anesthesia, with the necessary preliminary medical treatment. No bad effects had followed his plan of treatment. Early in the disease it might be difficult to make a diagnosis. In consequence of temporary rapid improvement following the use of various forms of medical treatment many drugs had been considered specific, and surgery had been neglected. The ideal time for operation was in the first six months. The patient operated upon before the first crisis did better than the one operated upon after this. Four-fifths of the thyroid had been removed and the symptoms had disappeared. There was no actual way to determine the amount of damage already done by the disease. All his cases had improved; secondary operations had been necessary in five cases. There were objections to the use of boiling water, and almost always reaction followed ligation. Theoretically, removal of part of the gland should give no reaction. Under local anesthesia he made an incision two centimeters long, dividing skin, platysma, and fascia in the same direction. The fibrous capsule was separated, the field made dry, and the electric cautery passed through down to the anterior surface of the gland, and a piece of the gland about the size of a shoe button destroyed. Vaseline was put on the outside of the wound. Usually there was a little muscular soreness, but otherwise no trouble. This procedure could be repeated every few days, further incisions being made two centimeters apart. This fractional destruction of the thyroid gland by means of the actual cautery in properly selected cases had proved satisfactory in his series of cases.

Diagnosis and Management of Intrathoracic Thyroid Growths (Lantern Demonstration.)—Dr. FRANK H. LAHEY of Boston, Mass., held that too little attention had been devoted to intrathoracic goiter, which could be so satisfactorily operated upon when recognized before the growth had threatened life by obstructing respiration. He classified thyroid growths under two types: those completely intrathoracic, in which no part of the goiter was palpable, as adenomata or cysts of the thyroid, and those incompletely intrathoracic, the lower pole being substernal, subclavicular, or intrathoracic, as in colloid, adenomyomatous, or cystic goiter. The location and anatomy of the thyroid gland were such as to lead one to expect the downward extension of the growth, whereas extension was directly forward. The various factors influencing the direction, and the mechanism of extension were described by the essayist. The clinical features to which attention was especially directed were respiratory obstruction and its periodicity, symptoms suggesting the diagnosis of asthma, and the feeling of substernal pressure. The following diagnostic measures were considered: Roentgen ray (substernal shadow and deviation of the course of the trachea); the inference of malignancy from blurred outline or changed voice; narrowing, distortion, or denting of the trachea on intratracheal examination; percussion dulness; palpation of the apex of the mass in the sternal notch or behind the clavicle. The special points of operative procedure emphasized were the avoidance of morcellation because of bleeding; of leaving behind adenomatous masses; of opening the connective tissue layer surrounding the tumor because of mediastinal infection or hematoma; of bleeding; of injury to the thoracic duct or recurrent laryngeal nerve. In the delivery of the tumor the special points to be observed were the importance of the proper line of separation, pressure with the fingers from below, the amount of force permissible, and division of the sternum. Hemorrhage should be controlled without injury to the nerve. Piecemeal delivery was not to be employed. The dissection of these intrathoracic masses must be within lines of cleavage. Intratracheal, local, or gas-oxygen anesthesia might be employed.

Advantages of Local Anesthesia in Thyroid Operations (Lantern Demonstration).—Dr. JOSEPH R. EASTMAN of Indianapolis, Ind., enumerated the advantages of local anesthesia (procaine and epinephrin), holding that nearly all operations on the thyroid could be performed under local anesthesia with greater safety, greater convenience, and greater precision than under general anesthesia. The advantages were: (1) the accomplishment of hemostasis through the use of adrenal extract; (2) easier dissection of skin flap; (3) greater ease in the delivery of the gland, filling the tissues over and under the gland with the solution facilitating the dissection; (4) by conversation with the patient the operator had a constant check upon such factors as pressure of instruments upon vital structures of the neck; (5) the patient could inform the operator at all times whether the head and neck lay comfortably; (6) gentle handling of the tissues was enforced; (7) postoperative nausea, vomiting, and bleeding were practically eliminated; (8) the patient could take nourishment immediately after the operation. Sensory nerve paths were blocked, no violence was done to heart, lungs, or kidneys, and no injury was done to the recurrent laryngeal nerve, with subsequent impairment of voice. In a limited number of cases general anesthesia presented certain advantages, such as the unconsciousness of the patient, the lessened necessity for gentleness in manipulation, and possibility of completing the operation more quickly, but these were doubtful advantages. The personality of the surgeon was important in operating under local anesthesia, which implied the employment of regional anesthesia in line with the principles of anoci association. The patient need know very little of what was going on, and the terror of the operating room could be removed by proper preparation beforehand. These operations should be left to surgeons of patience and technical skill. It was hardly necessary to reiterate that the prevention of pain after operation should receive the same attention as the prevention of pain during operation. A pillow under the hollow of the back and under the head and neck would reduce the time of operation. Fewer artery clamps were necessary with local anesthesia. Artery clamps should not be left on the neck throughout the operation; it was better always to clamp the vessels, cut between, and ligate.

It was one of the advantages of local anesthesia that the patient protected himself by making complaints of traction or other discomfort. The position of the patient on the table was very important. There should be slight elevation of the trunk, with the neck curved slightly backward.

Technique of Thyroidectomy (Lantern Demonstration).—Dr. WILLARD BARTLETT of St. Louis, Mo., said the Kocher technique or some modification thereof had been employed up to the present time, and it had fulfilled the requirements where the patient had received the proper preliminary treatment. At the same time, the indications for thyroidectomy might be considerably broadened by the employment of a special technique based upon pathological rather than anatomical considerations. In the operation which he wished to present one waived cosmetic considerations, the sole aim being to destroy as much thyroid tissue as possible, which could not be done under other technique. It was an emergency operation, giving the most direct and bloodless approach to the tissues, saved the time spent in ligation, shock was rendered unlikely because the operation was short, the nerves were blocked and very little traction was made. Likewise, postoperative thyroidism was not to be expected, absorption not taking place, the wound being left wide open. This emergency tecnique was intended for the relatively small number of doubtful cases in which no guarantee of safety could be given after classical thyroidectomy. In many toxic adenomata the patient was so sick that the classical Kocher operation was not satisfactory. The preparation of the patient for this emergency operation was the same as under other circumstances. As soon as the patient had reached the maximum improvement she was taken to the operating room, the head of the table was slightly elevated, the face was turned away from the operator, and the site of the incision was marked out just posterior to the anterior border of the sternomastoid muscle. The incision was then made over the most prominent part of the lobe, forgetting all cosmetic considerations. There was no need for touching the jugular. A diamond-shaped area was infiltrated by two needle punctures. The operation was done in two sittings for the reason that the patient's strength was not sufficient for the completion of the operation at one. As such a patient must not be kept long on the table it was well not to wait for complete nerve block, but to proceed with the operation as soon as possible after the patient was placed on the table. The incision allowed one to approach the tumor by the most direct route. Fewer vessels were encountered than by the so-called collar incision, and the resulting scar would lay upon a performed ridge on the sternomastoid muscle. As soon as the skin incision was made sutures were introduced, to be tied later, then held out of the way by an automatic spreader. After gentle retraction the sternomastoid muscle was split longitudinally; it was seldom necessary to cut in any other way than longitudinally. In this technique the upper pole of the gland lay squarely exposed in the incision. A slight amount of traction would give all the exposure necessary. The exposed lobe was now caught with light clamps and lifted gently. The whole area was flooded with alcohol, and as a further precaution against absorption the furrow around the gland was often packed with dental cotton, provided there were room enough. The upper pole was then divided, the capsule and goiter substance divided. It was relatively easy to gently snip out the upper pole, provided there were no perithyroiditis. If adhesions had to be broken up a whiff of gas might be given. He left a few clamps in very sick patients; where the patient was not so sick he left the wound wide open. He had left as many as thirty-four clamps in experimenting to see how many the patients could bear.

Dr. HENRY S. PLUMMER of Rochester, Minn.. opened the discussion on these four cases. It was difficult to diagnose substernal goiter. The risk of postoperative hyperthyroidism varied with the stage at which operation was resorted to.

Dr. EMIL GOETSCH of Brooklyn, N. Y., asked Dr. Mason why he preferred to use the cautery repeatedly instead of ligation. Reduction in partial thyroidectomy was either reduction of gland substance or reduction of vascularization. He could not see, on theoretical grounds, why one should do repeated operations which were certainly more mutilating than ligation. In exophthalmic goiter one could not say that there would be a crisis six months later; one could not predict. Referring to Dr. Lahey's paper, the speaker said one must remember that in some instances these growths were accessory thyroids, a point to be considered in the etiology of these tumors. He did not see why one should go back to local anesthesia in toxic cases, when one could use gas and oxygen with anoci association. It was not unusual to see a pulse of 140 to 150 fall to 110 or less and remain so throughout the operation. This would seem to be an index to the toxicity, which seemed to be less with gas and oxygen.

Dr. E. G. JONES of Atlanta, Ga., referring to the amount of tissue to be removed, said operators of today had profited by the experience of the pioneers, with the result that they were troubled very little with so-called recurrence. Dr. Bartlett's technique was important in helping to handle these very unsatisfactory cases in a satisfactory manner. It might not be satisfactory from a cosmetic point of view, but that was a minor consideration. Whether one employed local or general anesthesia the anoci association should begin the first time the patient was seen. During the entire time of care the patient should be relieved of all factors which militate against the success of the operation. The speaker called attention to the relative rarity of goiter in the South as compared with its incidence in other parts of the country.

Dr. A. J. OCHSNER of Chicago thought a great deal of comfort would be derived from Dr. Bartlett's views. There was no good reason for leaving on the clamps. He had compared hundreds of cases of both local and general anesthesia, and as a rule the patient who had been operated on under local anesthesia was less badly off than the one who had been operated upon under general anesthesia. As a rule he performed all goiter operations with local anesthesia provided the patient was not excessively afraid of it. Referring to Dr. Lahey's remarks concerning subclavicular goiters one point should be emphasized, namely, that a sharp cough might burst the pleura. To prevent this he immediately put a moist sponge in the place of the goiter immediately after its removal, then proceeding with the operation. The explanation which Dr. Lahey had given concerning the goiter being pressed down by the strong muscles was plausible. When degeneration of the heart had once occurred in hyperthyroidism this would not be overcome. In order to avoid degeneration of the heart one should operate early.

Dr. CROTTI had operated so far in more than a thousand cases and he considered ether and oxygen the best anesthetic. A few fundamental principles should be borne in mind. One must have a complete knowledge of the anatomy of the region; one must be sure that he is operating in the right line of cleavage, and no attempt should be made in intrathoracic goiter to remove the gland until the upper pole has been ligated and the whole isolated. One must work very gently around a goiter. In the presence of bronchitis or catarrh local anesthesia should be used; when no such condition existed general anesthesia could be used.

Dr. HARRIS considered nerve blocking in thyroid operations one of the most satisfactory procedures in surgery. It could be accomplished by a single needle puncture on either side of the neck, the entire side of the neck being anesthetic, so that any operation could be done upon it without pain. Under complete blocking the patient would arrive upon and leave the table in better condition than under general anesthesia, there was less secretion in the trachea, and the time of recovery was shorter.

Dr. GEORGE W. CRILE of Cleveland, Ohio, held that there were objections to the use of local anesthesia alone or to general anesthesia alone. In toxic goiters there was interference with respiration, consequently all inhalation anesthetics interfered with oxidation. With local analgesia with gas and oxygen there was not this interference with oxidation. In certain cases he had allowed the wound to remain open in order to prevent toxic absorption and because the patient was more comfortable. On all sides operators had come to realize the importance of conserving in every way possible all the factors of the patient's resistance. The

perfection of the technique of administering anesthetics, whether local or general, had made possible great progress in the surgery of goiter.

Dr. MASON, in closing the discussion, replied to Dr. Goetsch's question as to why he preferred repeated excision to ligation by reiteraing that he employed repeated excision when he felt that the patient was not a safe risk for ligation. He cited a case in which the patient had had three excisions. The large percentage of cases that had to be reoperated were the earlier cases operated upon six or seven years ago.

Dr. LAHEY, in closing, reiterated that if the trachea be dislocated to one side there must be an intrathoracic growth. In difficult cases where the delivery of the gland was accomplished only by manipulation he did not see how it was possible to prevent injury of the recurrent laryngeal nerve. He thought the patient should be warned beforehand of the possibility of such injury.

Dr. EASTMAN, in closing, considered local anesthesia of great value and especially applicable in bad cases. The man who habitually employed local anesthesia, as a routine method in goiter operations, would be better prepared for its use in serious cases in which it was demanded. There was local anesthesia and local anesthesia—the local anesthesia as employed by one who uses it habitually, and that as employed by the man who uses it in a patronizing manner when the seriousness of the cases demanded it. Especial attention was called to the very trifling detail of making slight compression of the skin for the first introduction of the novocain, thus preventing pain with the introduction of the hypodermic needle. By attention to this small detail one could prevent the destruction of the patient's confidence at the very outset. The thickening of the panniculus adiposa greatly facilitated the operation. The elevation of the lobe upon the water-bed facilitated the shelling out of the growth. He left no clamps upon the neck during the operation.

Dr. BARTLETT, in closing, referred again to the importance of the incision just behind the sternomastoid, the notation of the anatomical details, the absence of injury to the jugular and the recurrent nerve, the infiltration of the diamond-shaped area, the use of the little spreaders, exposure and splitting of the ribbon muscles longitudinally, the exposure and opening of the external capsule, the pouring in of the alcohol, the lifting up of the goiter and the application of the clamps.

Chronic Cystic Mastitis (Lantern Demonstration).—Dr. JOSEPH C. BLOODGOOD of Baltimore, Md., made a pathological grouping of the cases of mastitis, based on the tissue removed at operation, as follows: (1) Breast the seat of disease with large blue-dome cysts of the galactocele type, (2) Breast the seat of disease with no large blue-dome cysts of the galactocele type. He further subdivided the cases of this group into those with areas of adenomatous hyperthrophy only; a few small cysts or few dilated ducts, or both; and dilated ducts only. (3) Chronic cystic mastitis resembling the description given by Schimmelbusch and Reclus, or the adenocystic type of senile parenchymatous hypertrophy described by the essayist. (4) Chronic cystic mastitis of the Schimmelbusch type, with mitotic areas suggesting early carcinoma (adenocarcinoma in chronic cystic mastitis). (5) Breast the seat of fully developed carcinoma with surrounding chronic cystic mastitis. (6) Breast the seat of distinctly beningn lesions with surrounding chronic mastitis. Emphasis was given to the observation that cases presenting these blue-dome cysts were benign. This finding was a better indication of a benign lesion than any other gross or microscopic finding. On nicking the dome of these cysts the color disappeared and the contents flowed out. The fear of cancer caused some surgeons to remove the breast which was the seat of chronic mastitis. When they found little cysts or dilated ducts from which they could express yellow, brown or green fluid, they were inclined to remove the breast, on the ground that this chronic cystic condition might be an etiological factor in the production of cancer, or that if left the danger of cancer was increased. He knew of no fact to demonstrate that this fear was based on fact. The earlier observations of Schimmelbusch, Reclus and the essayist, which gave the impression that at least fifty per cent of the cases of chronic cystic mastitis were associated with cancer and had not been borne out by later observations and experience. The clinical grouping of the cases, included, first the various clinical pictures given in the pathologic grouping present before operation, and second, cases presenting identical clinical pictures observed in Group 1, not subjected to operation.

Dr. WILLIAM C. MACCARTY of Rochester, Minn., had seen many cysts of the breast described by Dr. Bloodgood, but whenever he had seen such a cyst he had also wanted to see the other gland structures because he had seen cancer the size of a pin head two or three centimeters from the cyst. He had also probably missed such a cancer because formerly he had depended upon the gross examination of the breast. To-day he would submit every portion of a breast with such a cyst to careful microscopic examination. Any breast, it made no difference what the gross appearance was, whether there was one or a dozen cysts, regardless of the size of the cysts, should always be examined with the microscope. He had seen cysts removed and the patient come back with cancer of the breast. He considered cysts in the breast more dangerous than Dr. Bloodgood had led one to believe.

Dr. BLOODGOOD, in closing the discussion, said Dr. McCarty's position and his narrowed themselves down to the matter of taking out or leaving in the breast with these cysts. The speaker's series of 329 cases of chronic cystic mastitis with two deaths from cancer seemed to him a good argument in favor of the "leave it in" policy. He would not say that cancer did not develop side by side with cysts, but with cancer cysts were conspicuous by their absence. He did not care how the diagnosis was made, but if Dr. MacCarty must have the whole breast for examination, how could the breast be saved? The "take it out" policy would mean the mutilation of every woman with a lump in her breast.

Brain Abscess.—Dr. ALFRED W. ADSON of Rochester, Minn., reviewed the surgical treatment of brain abscess, enumerating the early signs of the disease, and emphasizing the importance of early diagnosis and early operation. The differential diagnosis between brain abscess and associated lesions was discussed and lantern slides presented showing the various possible positions of brain abscesses. In the cases which he had studied in the clinic seventeen were nonoperative and nine operative. Of the seventeen, three cases were non-certified in that one patient died after leaving the clinic, two recovered slowly but with symptoms. Of the nine operated cases four recovered and five died.

Surgical Experience with an Intracranial Approach to Chiasmal Lesions (Lantern Demonstration). Dr. GEORGE J. HEUER of Baltimore, Md., discussed the findings in thirty-seven cases, twenty-four of which had been operated upon by his method of intracranial approach. On six of the twenty-four a second operation was performed. In this series two per cent were hypophyseal and the rest chiasmal lesions. These tumors might grow to considerable size before they gave symptoms, and the direction of the intracranial extension of these tumors might be upward, forward, lateral or posterior. The extent of the lesions might be determined by clinical and roentgen-ray examinations, confirmed by necropsy. In practically every case the tumor was accessible by the intracranial method of exposure. The need of a satisfactory intracranial approach to chiasmal lesions had led him to employ the technique as described by means of lantern slide illustrations.

Dr. DOWMAN of Atlanta, Ga., was pleased to know that Dr. Adson had had such a high percentage of recoveries in brain abscesses; this had not been his experience. He had had no experience with the intracranial route of approach as described by Dr. Heur. Where there had been a large amount of sellar excavation, showing that the tumor had made definite progress downward toward the sphenoid, he had been inclined to do a decompression operation by means of the transsphenoidal route, which he believed to be less dangerous and much easier of accomplishment than the intracranial method. Where there were difinite symptoms in lesions in the neighborhod of the

chiasm the intracranial route was preferable. The high mortality in these cases, attributable to the fact that the reach the surgeon at a very late stage, brought up the question of education in the recognition of this class of cases. The surgeon could do a great deal in the matter of technique, but he could not hope for favorable results when the patients continued to consult him at such a late stage.

Dr. DORRANCE of Philadelphia, basing his observations upon his war experience, called attention to the danger of meningitis and hernia after operating the dura. The technique used in France called for the introduction of a tracar through the dura into the abscess, the insertion of a piece of split tubing or a special variety of rubber tissue, the dilation of the channel, and the introduction of dichloramine-T. With wide exposure the mortality was comparatively low.

Dr. ADSON, in closing the discussion, said in all cases removal had been extensive and he had washed out with normal saline, packing with gauze, except in two cases in which he had inserted a drain. Contamination of the dura by pus was very apt to result in death. The duration of symptoms varied, but the average duration in his cases was six months. Some cases passed through the stage of hypersecretion, entering a stage of hyposecretion. In every such case there was minus metabolism and low pressure; in other words, death occurred in patients who were hypopituitaries at the time. He agreed with Dr. Heur that both the transsphenoidal and the intracranial methods of approach were indicated. The fact that a patient had a pituitary lesion did not mean that that patient must be operated upon. Something should be done for him before operation.

Hemangioma and Lymphangioma: Their Response to the Injection of Boiling Water (Lantern Demonstration.)—Dr. FRANCIS LE S. RIDER of St. Louis, Mo., referred very briefly to the history of this procedure and particularly to the work of Dr. John A. Wyeth of New York. Hemangioma and lymphangioma bore a close relationship to each other clinically, the chief difference being concerned in the difference in the nature of the contents of the vessels or spaces. Each might develop in any part of the body, but the face was a particularly favorable locality. Growth was usually slow, and not associated with pain. The danger to life from these growths depended upon the location and size. Surgical treatment was limited to tumors which were favorably situated, and in which operation could be undertaken without great hemorrhage, loss of important structures, or disfigurement. The technique of injection and types of cases were illustrated by means of lantern slides. The injection of boiling water into a hemiangioma was followed by a mild systemic reaction. Complete disappearance of the tumor had usually resulted in his experience. The injection of boiling water into a lymphangioma was frequently followed by violent systemic disturbances, and the results contrasted negatively with those obtained in hemiangioma. Some benefit was obtained, but complete disappearance of the tumor had resulted in some of his cases. He emphasized the importance of the exercise of caution in the employment of this method in lymphangioma because of the fact that this growth favored greater inflammatory invasion than did hemangioma, and excited more marked systemic disturbances.

Second Day—Thursday, April 29.

Chairman's Address: Military Nerve Surgery.—Dr. DEAN D. LEWIS of Chicago said in this address that absolute repair of peripheral nerves could be secured if surgical principles were observed. The introduction of the silver stain by which neuraxes could be recognized had made it possible to say that the regenerative process took place in the proximal end of the stump, while Wallerian degeneration went on in the distal end. The mechanism of regeneration was described. Certain factors were concerned in the failure of this process of regeneration. The first of these was the formation of scar tissue; the second was failure to take into consideration the internal topography of the nerve; the third was the length of time which had elapsed between the receipt of the injury and the attempt at nerve repair. Cases in which the most satisfactory repair was obtained were those operated upon within from three to three and one-half months after the injury. Up to the ninth month the results were fairly satisfactory; after that there was a distinct falling off of results. Primary nerve suture was the most important thing; the type of suture did not make much difference, so long as it insured closure of the epineurium. The technique of primary end-to-end suture was described. Many methods had been suggested for the prevention of scar-tissue formation after suture. The best way was to make the dissection along the intermuscular septum, burying the suture between the septa. Where there was a defect, tubulization was necessary. Out of 135 cases of nerve suture it had been necessary to tubulize in only five. By the exercise of greater care it might have been possible to use an end-to-end suture in these. Autotransplantation had been resorted to in some cases. One observer had found no return of motor function after a year to eighteen months. The speaker had examined clinically some cases in which autotransplantation had been done and had found a definite Tinel sign in some. In those cases of autotransplantation in which there was evidence of increase in the transplant, if the Tinel sign was present re-exploraton should be done, resection made and end-to-end suture employed. Neurolysis had been done in another group of cases. There was a good deal of difference of opinion as to the value of neurolysis. In the first place there was a tendency for peripheral nerves to recover spontaneously. Out of six hundred wounded three had recovered spontaneously and rapidly. In physiological interruption of nerve function without anatomical division neurolysis was important. There was a definite time relation in which neurolysis should be performed. Performed late, it gave a low percentage of recovery. Another group of cases, not often seen in civil life, included causalgia, which was one of the most distressing conditions encountered. It was characterized by a peculiar burning pain in the extremity below the point of injury, constant as a rule, paroxysmal at times, and finally so severe as to give rise to mental changes. The best way to control these cases was by means of the injection into the nerve of sixty per cent. alcohol. Within twenty-four hours the pain would disappear and did not recur. As a rule there was very little motor palsy; when present it generally disappeared within a few weeks. The speaker emphasized the importance of the early exploration of the peripheral nerve after injury. Waiting and making clinical examinations was a loss of time.

Squamous Cell Carcinoma of the Kidney.—Dr. ALEXANDER PRIMROSE of Toronto, Canada, reported a case with a multiplicity of lesions, including malignant growth in the kidney, congenital "horse-shoe" kidney, and calculous pyonephrosis. The study of this condition shed important light upon the etiology of malignant growths of the kidney. Primary carcinoma of the kidney was not of frequent occurrence, particularly if one excluded hypernephroma. Hypernephroma was now supposed to be derived from adrenal rests, while primary cancer originating in kidney tissue was derived from the renal tubules. A study of the literature left no doubt that such tumors arose from the transitional epithelium of the pelvis of the kidney. Two types of cases were seen, first, those of infiltration carcinoma, and second, those of adenocarcinoma. Malignant squamous cell carcinoma of the kidney gave rise to extensive metastases. The presence of stone in the kidney was an etiological factor. Such cases should be treated in a conservative manner. In the presence of septic processes immediate relief of urgent symptoms should be accomplished by the least amount of trauma. When symptoms of acute infection had subsided, more radical measures might be employed.

Dr. ARTHUR DEAN BEVAN of Chicago contrasted the views held twenty-five years ago concerning kidney tumors with those of the present time. Whereas formerly the majority of kidney tumors were considered carcinoma, now it was the view that hypernephroma was the common type and that it originated in adrenal rests. Out of a hundred cases of kidney tumor perhaps eighty would be hypernephroma. Carcinoma was very rare. He had had only four cases in which the microscope showed definitely carcinoma. It orig-

inated either from the epithelium of the pelvis and the calyces or from the tubules of the kidney as adenocarcinoma. In his limited series the tumors were malignant papilomata of the pelvis of the kidney, such as occurred in the bladder and occasionally in the ureter. Leucoplakia as observed in the bladder, ureter, and pelvis of the kidney developed in the presence of some form of irritation, notably calculus.

Dr. WILLIAM J. MAYO of Rochester, Minn., thought the consideration of the constitution of the kidney would elucidate the question of solid tumors of this organ. He agreed with Dr. Bevan regarding the frequency of hypernephroma, but he did not accept the view that this tumor originated in adrenal rests. The case reported was exceedingly interesting because it occurred in a "horse-shoe" kidney, which added to the difficulties of removal. He had had a number of cases of cancer of the kidney and had found the operation exceedingly difficult. There was always the danger of getting into the duodenum in the course of the operation. He cited two cases in which this accident had occurred. He had since had two similar cases and had known of a number of others in which the duodenum had been accidentally opened. Another accident that might occur in operating on the right side was getting into the vena cava. He had had this happen in two cases. This accident was not as dangerous as might appear, as it was possible to mend the vena cava.

Dr. JOHN J. GILBRIDE of Philadelphia called attention to the difficulties of diagnosis in consequence of the absence, more or less complete, of local signs or symptoms until the disease was well advanced. Even after one was able to palpate a definite mass in the kidney the urinary changes might be little known. In cases of hypernephroma or sarcoma there might be absence of blood in the urine until the patient was suffering from uremic coma or died. Elevation of temperature and increase in pulse rate might be noted, giving rise to the suggestion of infection. Even after extensive study and careful *x*-ray examination the diagnosis of infection might be made. These were possibilities to be borne in mind.

Dr. ALBERT J. OCHSNER of Chicago called attention to the physiological reasons for the rarity of squamous cell carcinoma of the kidney. Three conditions helped to cause the production of carcinoma: first, irritation, as from the presence of stone in the kidney; second, stasis; third, acid medium, present all the time. So long as the urine was normal, even in the presence of uric acid or oxalate of calcium stones, the irritation was slight because of the constant washing away; but in the presence of stasis the irritation was sufficient to give rise to cancer.

Congenital Hypertrophic Pyloric Stenosis in Infants: Review of 175 Cases in Which the Fredet-Rammstedt Operation was Performed.—Dr. WILLIAM A. DOWNES of New York City presented this series, which included every case operated on by the Fredet-Rammstedt method from May, 1914, to January, 1920. There were 145 recoveries and 30 deaths, giving a mortality of 17.1 per cent. All cases of death in the hospital following operation were classed as operative deaths, although several had resulted from gastroenteritis, from two to four weeks after operation. The majority of the patients discharged as cured had been followed to the present time, and in no cases had there been return of symptoms. Two patients had died of pulmonary conditions one and one-half years after discharge. In these cases necropsy revealed that the pyloric tumor had entirely disappeared. The diagnosis in these cases was made from the physical findings. Vomiting was the first symptom, the onset dating from this occurrence. Upon inspection of the abdomen visible peristaltic waves passing from left to right might be noted in nearly every case. This was of great value as a diagnostic sign. The tumor might be found. Just before palpating the abdomen the stomach should be emptied, after which the hard, movable nodule at the pyloric end of the stomach might be found in nearly every case. A few whiffs of ether might be given. Once this nodule was distinctly felt its recognition would be easier afterward. It was extremely important to develop the ability to feel the tumor, as this diagnosis had been proved correct in over ninety-nine per cent. of the cases. It had not seemed wise to wait for an *x*-ray to be taken, as immediate operation had seemed to offer the only means of saving life in these cases. The history and the physical signs established the diagnosis. Medical treatment was justified provided the baby did not lose more than twenty per cent. of body weight during this time. If there was no improvement, or if the patient was better one day and worse the next, it should be considered in the severe group, and immediate operation should be recommended. Objections to surgical treatment no longer held, in view of the perfection of technique.

Dr. DEAN D. LEWIS of Chicago had performed twelve gastroenterostomies, with three deaths. All had rather a stormy time. He now considered the Fredet-Rammstedt operation the simplest and best for the purpose, and intended to employ it hereafter. He had operated in two cases in which the diagnosis of plyoric stenosis had been made, in which there was projectile vomiting and in which the tumor was supposed to be present, but upon operation no tumor was found.

Dr. HILL of St. Louis, Mo., had found five cases of pyloric stenosis in one thousand children born in a foundling hospital. It developed in about one case in two hundred. From the increasing number that came for operation it would seem that the condition had been overlooked in the past and that physicians were just beginning to recognize it. When patients were operated upon early they were in fair condition and the results were good, but when the patients were brought in practically dead, as was too often the case, of course the results of operation were not so favorable He had performed the Rammstedt or Fredet-Rammstedt operation in twenty-two cases, with twenty-one recoveries and one death. In the case that died there was suppression of urine twenty-four hours before the patient was admitted to the hospital, convulsions had occurred before admission, and the temperature was 103° F. The patient died of uremia. He had to reopen the abdomen in two cases, in one of which this was due to not making the opening large enough at the first operation. He made a second incision alongside the first. The child recovered. In the other case artificial respiration had to be resorted to. In six cases the wound broke open and had to be resutured.

Dr. STRAUSS of Chicago thought there was a distinct field in the surgery of children and infants. He had seen, since 1914, 163 cases of congenital pyloric stenosis with three deaths. Of this number 160 were treated surgically, the remaining three, medically. He insisted upon fluoroscopic examination because contractions under the fluoroscope were absolutely pathognomic. It also gave indications as to whether the case should be operated upon or treated medically. The speaker emphasized the technical point of shelling out the mucosa instead of infolding it. When this was done there was not one drop of vomiting, and the child could take food immediately after the operation.

Dr. LE WALD of New York City emphasized the frequency of this condition in children, and the importance of *x*-ray diagnosis, which he had brought out in 1912. He had stated at that time that no case in which *x*-ray examination was made would fail to give a diagnosis. Of all the gastrointestinal examinations which he had made in the last ten years he knew of no condition in which the diagnosis was so definite as in congenital pyloric stenosis. The diagnosis had been made in one hundred per cent. of these cases. The differential diagnosis between cases which might recover under medical treatment and those which should be treated surgically could be made with accuracy. The findings, whether fluoroscopic or plate, made little difference to the surgeon, but if the case was under medical care and one wished to convince the medical attendant and perhaps the family of the seriousness of the diagnosis and the necessity of surgical intervention, we knew of no better way of accomplishing this than by demonstrating the lack of passage of food through the pylorus up to four hours.

Dr. ARTHUR DEAN BEVAN of Chicago had been strongly impressed with the importance of operating in these cases under local anesthesia. It was so much

easier and safer that it had revolutionized the Rammstedt operation. There was a great difference between the old operation under general anesthesia and the present-day plan of operating under local anesthesia. On account of the starved condition of these patients there was a tendency to slow wound repair, consequently special care should be taken to get perfect closure, and to cover the wound with adhesive plaster so as to make it impossible for it to open. Special attention should be paid to the after-management of these cases. The adhesive straps should be kept on for twenty days, until wound repair was assured.

Dr. RANSOHOFF of Cincinnati, Ohio, thought the Rammstedt operation made the appeal of complete efficiency and absolute simplicity. All modifications seemed unnecessary. He had had one death from the opening of the duodenum. He asked Dr. Downes to give the exact procedure of the closure of these wounds of the duodenum. He also asked the essayist if he had found enlarged thymus more frequently in cases of congenital pyloric stenosis than in other children.

Dr. DOWNES, in closing the discussion, presented lantern slides to describe the technique as he had employed it. He did not subscribe to the views expressed by Dr. Bevan regarding the use of local anesthesia in these cases. He had tried it in various cases without very satisfactory results. It was important not to allow the stomach to extrude and not to let the intestine come out into the wound, and with a child struggling and crying, as it would with local anesthesia, he did not see how this could be prevented. He always used ether, never chloroform. He could make no statement regarding the frequency of enlarged thymus in these cases.

Dr. BEVAN added that he had operated upon between fifteen and eighteen hundred cases under local anesthesia and the infants did not struggle at all. Occasionally the child vomited, but this might happen no matter how well the anesthetic was given.

Ulcer of the Jejunum Following Gastroenterostomy.—Dr. WALLACE I. TERRY of San Francisco, Calif., had carried out various experiments, during the winter of 1901, with the idea in mind that gastric juice was responsible for these ulcers, but his premise had not been established. Non-absorbable sutures had been suggested as the almost exclusive cause. His own opinion was that the principal factor was the introduction of non-neutralized acid gastric juice, and that trauma further lowered the resistance of the jejunum. Whether infection played a part was a question. Two types of ulcer had been recognized, marginal and jejunal. Three cases were cited. Pain and tenderness referred to the left of the umbilicus were the striking symptoms in these cases and in others found in the literature. The pain might be referred. From his investigations he concluded, in part, that the exact etiology of these ulcers was still in doubt; that probably the principal factor was the conversion of acid chyme which had lost its neutralizing quality; that trauma from retained non-absorbable sutures might play a part; that great care should be taken in the use of non-absorbable sutures for purposes of anastomosis; that patients should be instructed with regard to suitable diet for a year; and that the patient should be urged to seek competent advice for abdominal pain.

Dr. J. SHELTON HORSLEY of Richmond, Va., said jejunal ulcer after gastroenterostomy was found in a small but definite number of cases caused by the operation; without this operation it practically never occurred. Trauma and the use of non-absorbable sutures favored its occurrence, but it occurred in the absence of non-absorbable sutures and trauma. There seemed to be something defective in the physiology of the stomach and intestine following this operation. Pyloroplasty would restore the physiology of the stomach in a few months so that by *x*-ray examination it could not be distinguished from a normal stomach.

Dr. WILLIAM J. MAYO of Rochester, Minn., said gastrojejunal ulcer would happen very rarely if one used fine catgut instead of silk or non-absorbable sutures. He was glad to see from a recent article by Moynihan that this had been his experience. Twelve years ago the speaker had reported before the American Surgical Association twelve cases of so-called marginal ulcer. He had never seen a true jejunal ulcer. The ulcers he had seen had been in the suture line. He had seen cases in which the suture line had worked through the abdominal wall and had been removed by means of a toothpick. He emphasized the use of fine catgut for sutures, turning in a fine line of tissue, and being careful about the blood supply. He had seen only three cases of gastrojejunal ulcer in which catgut had been used. The final diagnosis could be made by *x*-ray in over ninety per cent of cases. In a large majority of cases when patients returned after gastroenterostomy complaining of the same symptoms which were present before the operation, the diagnosis of gastrojejunal ulcer might be made.

Dr. ALBERT J. OCHSNER of Chicago thought Dr. Mayo's results did not come from the use of one kind of suture or another, but because he made the gastroenterostomy at the lowest point of the stomach, so that there was no accumulation of acid gastric juice. In all the cases in which the speaker had found jejunal ulcer there was saculation of the stomach.

Dr. STRAUSS of Chicago directed attention to the possibility of infection in these cases, and referred, in this connection, to the work of Rosenow, who had brought out the view that ulcer was a localized infection. Bacterial infection undoubtedly played an important rôle in the breaking down of the tissues and the production of ulcer.

Dr. TERRY, in closing the discussion, agreed with Dr. Horsley with regard to the part played by acid secretion. Pyloroplasty as done by Dr. Mayo restored the acid chyme to the duodenum instead of allowing it to go back into the jejunum. The matter of *x*-ray diagnosis was very important.

Surgery of Cancer of the Large Intestine.—Dr. ARTHUR DEAN BEVAN of Chicago based this paper upon experience with cancer of the colon in his clinic. In the diagnosis of this condition the *x*-ray was the largest single determining factor, and yet it was not infallible. The large intestine from the cecum to the middle of the sigmoid was one of the most favorable locations in the body, from the standpoint of permanent cure of carcinoma by operation at an early stage, when the process was limited to the primary focus. By the proper mobilization of the colon a large block of tissue widely removed from the primary focus could be safely excised. From the rectosigmoid to the anus, the prognosis as to a permanent cure of cancer was less favorable, because the anatomical features prevented the removal of a large block of tissue including the primary focus. Colostomy as a preliminary step was a life-saving measure, and should precede any radical operation in the presence of obstruction. He employed a simplified technique for this in which there was nothing original except that he employed local anesthesia, a single suture and one or two bone buttons about an inch in diameter. By means of lantern slides the speaker illustrated the technique employed in removing carcinoma from the cecum to the rectosigmoid junction, the three-step procedure which had been developed in his clinic, and the technique of operating on carcinoma from the rectosigmoid junction to the anus. An inguinal anus was made for all cases except small carcinomas in the lower rectum; these were best handled with the cautery knife.

Operation for Carcinoma of the Rectum.—Dr. GEORGE W. CRILE of Cleveland, Ohio, reviewed mortality statistics and the results obtained by various individual operators. Investigation and animal experimentation showed that the high mortality of operations for cancer of the rectum was not due principally to shock, hemorrhage or peritonitis, but to absorption of the toxins of feces and of the infected wound. On these premises, an operative synthesis had been established and applied in thirty-two consecutive operations without a death. The operation included primary colostomy under anoci-association, the incision being sufficiently large to permit of ascertaining the extent of hepatic, lymphatic and local involvement. The colostomy was sharply angulated by the insertion of a flanged short glass tube under the loop of colon and on the surface of the skin, thus diverting the fecal stream so that none passed through the rectum. In about a week or ten days, or when the general and local conditions were satisfactory, the major operation was performed in the usual way. Between the colostomy

operation and the major procedure, and for a time after the major operation, the dietetic and hygienic regimen of tuberculosis was followed. Since he had begun to consider the patient as a whole, planning the operation in the way which best conserved the patient, he had seen an immense improvement in the immediate results, greater oportunity was afforded for making a wider resection, and the operability of these cases was increased.

Dr. DANIEL F. JONES of Boston, Mass., opened the discussion on the papers of Dr. Bevan and Dr. Crile. He assigned two reasons for the improvement in the statistics of cancer of the large intestine, first, the immobilization of the colon, and second, the giving of a safety-valve by colostomy or cecostomy. However, due credit should be given to the general practitioner for his part in this improvement, for the good results were obtained in cases that were operated on early, and not because of any particular technique employed. The importance of educating the general practitioner in the early diagnosis of cancer could not be emphasized too strongly. He could not be expected to make a diagnosis of carcinoma of the colon, but he could be educated to recognize the symptoms suggestive of this condition and to send the patient to one who could make the diagnosis and operate early. The surgeon and not the general practitioner should decide the question of the operability of these cases. Referring to Dr. Crile's paper, the speaker said statistics were of no value unless one knew the percentage of cases seen by the man who operated upon the given patients. The value of preliminary colostomy was very great.

Dr. WILLIAM J. MAYO of Rochester, Minn., had learned much from these papers as to how the high mortality in these cases could be materially reduced. The points in technique given by Dr. Bevan and the suggestions regarding the after-care of the patient given by Dr. Crile were all valuable. The question of operability brought out by Dr. Jones was also important. In the majority of instances the patients sent into the large hospitals for operation were not sent in by men of large experience, but by those of lesser experience, and as a consequence, in a large percentage of the cases the patients were sent home as hopeless. That was true in the ordinary form of dispensary examination. In their earlier work they had a low mortality and a high percentage of cures, but seventy-five per cent. of the cases were sent home as hopeless, and only thirteen out of a hundred were alive at the end of five years. When they operated on seventy per cent. they had twenty-five per cent. alive at the end of five years instead of thirteen.

The discussion was continued, by invitation, by Colonel Waring of London, England, Dr. Demarest of Paris, France, and Captain Voncken of Liége, Belgium.

Dr. CRILE, in closing the discussion, said that inasmuch as he did not go into the technique he might have left the impression that the colostomy was permanent, which was not the case. He emphasized the importance of cutting off the fecal streams at a certain situation. End-to-end anastomosis could be secured and then the temporary colostomy could be dropped back. So far as statistics were concerned, nobody could make a satisfactory series of statistics. The series would not run even for various reasons.

Roentgenologic Experience with Pneumoperitoneum. (Lantern Demonstration.)—Dr. ARTHUR STEIN and Dr. WILLIAM H. STEWART of New York City, made the observations detailed in this paper, which was read by Dr. Stewart. The findings were based on one year's practical experience in a series of nearly eighty cases in which there had been no untoward effects following oxygen inflation of the peritoneal cavity (pneumoperitoneum) for purposes of roentgen ray examination of the abdominal organs. They considered the information gained a distinct advance. The method should be reserved for cases which could not be cleared up by ordinary diagnostic procedures. It was a strictly surgical procedure; the needle should be introduced only by one who had had surgical experience. A lumbar puncture needle was used, attached to a sterilized rubber tube connected directly with the oxygen tank. The oxygen was allowed to flow gently into the abdominal cavity until sufficient distention was caused to displace solid organs. Two to four liters would be sufficient. If the nurse by chance should turn the oxygen on too fast the rubber tube would slip off the lumbar puncture needle and no harm would be done. The posture that gave the most satisfactory information was with the patient lying on the abdomen. The oxygen separated the organs more satisfactory than with the patient in any other position. Deflation or withdrawal of the injected oxygen from the abdominal cavity after the roentgen picture was obtained had become a routine procedure to guard against subjective discomfort. This was necessary in order to render the method painless. The method yielded startling revelations and promised a wide extension of the diagnostic scope of the roentgen ray in general abdominal surgery as well as internal medicine. For the differential diagnosis of tumors of the liver and spleen, for the diagnosis of atrophic cirrhosis of the liver, pathological conditions of the gall bladder, and many other abdominal conditions, the method was a useful addition to the diagnostic equipment. The method and apparatus employed by the essayists were described by means of lantern slides.

Dr. GEORGE E. PFAHLER of Philadelphia thought the method had increased the usefulness of the *x*-ray to a considerable extent. One should keep in mind, however, the ordinary method before depending upon this. In practically all instances it was possible to demonstrate the liver and the spleen by means of the ordinary fluoroscopic or plate method. The method was of distinct advantage in demonstrating irregularities on the lower border of the liver or on the right border of the spleen, in distinguishing dense shadows found in the lower part of the chest from the solid tissues in the abdomen or the liver or the spleen, and in outlining enlarged glands or adhesions in the chest. From a technical standpoint the speaker asked Dr. Stewart what he did with the needles during the time that the patient was lying on the abdomen.

Dr. ORENDORFF of Philadelphia had injected oxygen more than four hundred times. Some patients had received it as many as ten times, and many from five to eight times. He was using it as a therapeutic agent in cases of peritoneal adhesions.

Dr. STEWART, in closing the discussion, reiterated that the method described should never be used except where the information could not be obtained by the ordinary means. Answering Dr. Pfahler's question regarding the needle, he said the needle was not kept in place, but was reinserted for purposes of deflation. The simplicity of the apparatus was important. He had eight cases without a rise of temperature and without a fatality.

Ether-Oil Colonic Anesthesia.—Dr. WALTER LATHROP of Hazleton, Pa., spoke from the standpoint of the operating surgeon, basing his remarks upon an experience of nearly a thousand cases of various kinds, chiefly goiter. The experimental work of Gwathmey, Baskerville and Wallace, to determine the rate of evaporation of ether from oils, and the tests made by them with vegetable, animal and mineral oils, had demonstrated, among other points, that while ether boiled at 36.6 degrees C., it did not escape violently from an oil-ether mixture, as from an aqueous mixture when heated to a higher degree, nearly to 37 degrees C., or body temperature, and that the rate of separation of ether from oil quickly acquired a definite and fairly fixed speed. This rate of separation was important, as a proper content of ether might be maintained in the blood to produce a desired effect, as for example, the surgical stage of anesthesia. Four factors, acting in harmony, helped to maintain an even anesthesia: 1. The constant rate of evaporation of the ether from the oil. 2. The distention of the colon, causing less ether to be absorbed than when partially distended. 3. As the ether left the oil both mixture and gut were cooled, and this retarded elimination and absorption. 4. The difference between the absorptive power of the colon and the eliminative capacity of the lungs. Within five minutes after the injection of the mixture into the rectum it was heated to body temperature. Some of the ether left the oil in the form of gas, which was absorbed by the blood in the capillaries about the colon. The ether was carried through the liver by the greater circulation to the heart, and from there it was pumped into the lungs, where some of it was excreted by the

air passages, while the remainder was re-absorbed and carried on to the brain and central nervous system. The odor of ether and paraldehyde could be detected on the breath in from three to five minutes after the administration of the preliminary dose. The accumulation of mucus or saliva, seen often in inhalation anesthesia, was absent; there appeared to be no irritation of the lungs, as only the ether required for narcosis passed through the respiratory tract, and the bronchial secretions which were increased by local irritation under inhalation methods were absent. The respiration was normal as a rule, and very seldom noisy or stertorous, if the anesthetist watched the patient. The eye reflex was usually retained, even though good muscular relaxation was present. The pulse maintained an even plane, in ordinary cases remaining full and strong, if the pulse was already rapid, as in hyperthyroidism, it usually remained so. The blood pressure varied. In cases of great nervous tension, as in exophthalmia, observation had shown that the blood pressure fell after the patient was asleep, usually rising immediately on the regaining of consciousness. The diastolic pressure was usually low. After oil-ether colonic anesthesia there was less vomiting or nausea, the patient was usually comfortable, and could retain nourishment. Of great importance was the fact that there was considerable analgesia for some time, often two or three hours, which added to the ease of the patient. Anoci-association, as carried out by Crile, could be employed with this method, and no doubt was very valuable in many conditions, especially exophthalmia and hyperthyroidism. Ether-oil anesthesia was especially useful in head and neck operations, where the operator was not troubled by either the cone or the anesthetist. In hernia, especially as seen in patients with asthma, the patients slept calmly throughout, with none of the choking and cyanosis seen under ether by inhalation. Patients with short thick necks were especially good subjects for colonic anesthesia. The most valuable of all its uses was in conditions of high nervous tension. In the matter of technique of administration, it was important that the method be employed by one having experience. The patient should be under observation for twenty-four hours or more. The evening before the operation an enema of soap suds (two pints) was given. A second enema of one or two pints of clear tepid water was given early the next morning. If, for example, the operation were scheduled for 11 A. M. at 9.30 two drams of olive oil (warm), three drams paraldehyde, and four drams of ether were given, the patient being kept as quiet as possible. At 9.50 morphine, gr. ¼, and atropine, gr. 1/150, were administered hypodermically. At 10.20 ether, three or four ounces, olive oil (warm), two ounces, were given. The oil and ether were first put in a bottle and thoroughly shaken. The patient should be on the left side, with both knees flexed, the right acutely so. A rectal or colon tube was used with a funnel, and inserted not over six inches, care being taken to have the mixture in the tube and all air expelled before inserting the tube. The mouth and nose were covered with several thicknesses of gauze. The injection was given slowly, about one ounce per minute, the funnel being held about three inches above the level of the patient. The tube was clamped and allowed to remain in the rectum so that the mixture might be withdrawn during operation should there be any indication for doing so. If the patient showed any excitement, fifteen or twenty drops of chloroform would usually overcome this. If the patient could not retain the oil and ether mixture, the attempt to administer it should be abandoned. The patient should be ready for operation in from twenty to thirty minutes from the time of the last injection. The reversed Trendelenburg position seemed to aid in maintaining an even plane of anesthesia. The jaw should be supported to prevent obstruction of respiration. After completion of the operation the bowel should be well irrigated with tepid water until it returned clear. The colon might be gently massaged from right to left to aid this. One pint of water was then introduced into the bowel and left, or olive oil might be given (four ounces) to prevent irritation. Ether-in-oil colonic anesthesia was contraindicated in rectal diseases or where pain was caused by its administration.

Dr. JAMES T. GWATHMEY of New York stated categorically the fundamental principles which had been demonstrated in the evolution of colonic anesthesia: (1) It was one of the easiest methods to administer, requiring only a rectal tube with funnel attached and quiet surroundings for the patient. (2) It was one of the safest methods, the margin between full surgical anesthesia and a toxic dose being greater than with any other method. (3) It was one of the most pleasant methods for the patient, as attested by the fact that those who had tried other methods preferred the colonic. (4) It resulted in a greater relaxation of the musculature than was usual with any inhalation anesthetic. (5) It required a smaller amount of ether per hour than any other method of administering ether, the estimated amount being two ounces per hour, which seldom varied. (6) It was regulated as easily as any inhalation method; by covering the face with a towel to deepen the anesthesia, by placing an airway tube to lighten, or by unclamping the rectal tube and draining the residue and flushing thoroughly, it could be terminated at any time so far as the anesthetic was concerned, the patient continuing to sleep from the other drugs used. (7) The brain was more completely protected against reflex stimuli than by any other method of inhalation anesthesia, as proved by the fact that the patient at times changed his position or conversed with the surgeon, as in spinal analgesia. This was to be differentiated from the so-called analgesia, but really amnesia, with nitrous oxide and oxygen. (8) The complete analgesia and anesthesia of the colonic method was dependent upon the synergistic action of all the drugs concurrently given with the ether. An extra amount of ether would not have the same effect. (9) The quiet sleep and analgesic stage for a few hours after the anesthetic was terminated was an advantage to the patient. (10) While the rate of absorption was slightly different with each patient, dependent upon the age, temperature, and general condition, it was constant. An anesthesia deep at one time and light at another was physiologically impossible. The tendency to light or deep anesthesia was recognizable within fifteen minutes after administration, and was easily regulated in the manner described.

Dr. ALEXANDER PRIMROSE of Toronto, Canada, corroborated Dr. Lathrop's experience. Rectal anesthesia afforded the greatest possible comfort to the operator in cases in which it was indicated. He had employed it in a large series of cases with gratifying results.

Dr. J. SHELTON HORSLEY of Richmond, Va., had found the method disappointing in exophthalmic goiter cases, probably because of the impaired eliminative power of the liver and kidneys caused by the disease.

Dr. GEORGE W. CRILE of Cleveland, Ohio, said the removal of the psychic factor was important.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Edited by Dr. JOHN H. JOPSON. 519 pages, with illustrations. Published by William J. Dornan, Philadelphia, Pa.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Vol. 44 for the year 1919. Edited by Dr. G. GRAY WARD. 389 pages, with illustrations. Published by Wm. J. Dornan, Philadelphia, Pa.

ERGEBNISSE DER GESAMTEN MEDIZIN. By Prof. Dr. TH. BRUGSCH, Berlin, Germany. 652 pages. Published by Urban & Schwarzenberg, Vienna.

STANDARD NOMENCLATURE OF DISEASES AND PATHOLOGICAL CONDITIONS, INJURIES, AND POISONINGS, 1919. 347 pages. Published by Government Printing Office. Washington, D. C.

THE FOURTH ANNUAL REPORT OF THE STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS. No. 34. 260 pages. Published by Wright & Potter Co., State Printers, Boston, Mass.

Miscellany.

Death of Dr. Hernandez of Venezuela.—Doctor José Gregorio Hernandez was born in Libertad, Province of Trujillo, Venezuela, in 1864, and at the age of 14 entered the Colegio Villegas, in Caracas, graduating with the degree of Bachelor of Philosophy in 1882. He attended the Central College of Medicine and took his medical degree in 1888. He studied abroad during the next three or four years, in Paris, London, and Berne, specializing in physiology, histology, and bacteriology. In 1892, after his return, he was placed at the head of the department of experimental medicine in his alma mater, where he remained without intermission for twenty-seven years, up to the time of his death, save when abroad for study. He once made a special trip to Madrid to study histology with Ramon y Cajal. He was very devout and wavered at times between theology and medicine, making several journeys to Rome, and at one time actually beginning the study of theology there. Medicine for him was founded on physiology and this in turn on physics, chemistry, and mathematics. Perhaps as an expression of his sacerdotal bent he never married, saying whimsically that he was wedded to that "pagan lady Minerva." His biographer, Dr. Ovalles, places him in the class with Newton and Kant, as one so absorbed in science as to have no room for domestic life. Hernandez had traveled extensively in North America. On the whole he is best likened to some of the medieval friars, who, sheltered in the cloister, pursued their scientific studies undisturbed. Like Professor Curie he met his death by being struck down by a vehicle—in his case an automobile.—*Anales de la Direccion de la Sanidad Nacional.*

Postabortive Tetanus.—Lapauze, a student at the University of Bordeaux, has devoted his graduation thesis to the publication of sixteen new cases of this accident, four of which he personally beheld. The condition is notably rare and almost always follows criminal abortion. The incubation period is about nine days, and the evolution agrees with that of external wound tetanus. But one victim survived, which is rather a surprise, as post-abortive tetanus counts as 100 per cent. mortal. For this reason the author would always inject serum in every case of criminal abortion as prophylactic, for this is all that can be done to save life. He would flood the cavum uteri with serum and inject it into the spine, as well, if the disease develops. The particulars of the surviving case are not stated, so that credit for any special resource cannot be awarded.—*Revue Française de Gynécologie et d'Obstétrique.*

Differential Diagnosis of Rabies. — Porak contributes a synthetic review of the literature of rabies to the *Gazette des hôpitaux* for January 10, 1920, xciii, 4, from which the following on differential diagnosis may be cited. The phenomena of hydrophobia may be simulated unconsciously in a bitten subject who believes the dog to have been rabid, although such cases are extremely rare; for evidently in psychogenic simulation nature is not closely followed and the behavior of these obsessed subjects does not usually closely resemble the symptom complex of rabies.

An authentic case reported by Barbantini exhibited all the clinical phenomena of the disease, but these subsided at once when the dog, which was supposed to have died of the disease, reappeared in his normal condition and began to caress his master. Another case was reported by Raymond, in which a veterinary seemingly recovered from true hydrophobia when it was shown that a mistake had been made in affirming that the dog which had bitten him was mad. The offending dog had been confused with another animal. In these cases the symptoms come on much sooner than they normally should.

The patients are not to be confounded with subjects of hysterical hydrophobia, for in the latter there need not be any definite history of a bite by an animal supposed to be rabid. Certain hystericals have as a part symptom of their condition inability to swallow water and even the thought of swallowing may cause the same reaction. Of organic diseases tetanus and hydrophobia have often been confused and in not a few other acute infectious maladies inability to swallow has led to confusion, this including poisoning with the *Solanaceæ*, in which the dryness of the throat may make swallowing impossible. Delirium tremens may simulate hydrophobia so utterly that, according to Babes, rabies in a drunkard would probably be masked as delirium tremens. Acute ascending myelites, especially Landry's paralysis, closely simulate the paralytic form of rabies. If a subject who developed tuberculous meningitis should have been bitten by a rabid dog, the similarity of the symptoms in the two diseases would probably create no little confusion between that affection and hydrophobia.

Alcohol in the Cerebrospinal Fluid.—The first observation concerning the presence of ingested alcohol in the cerebrospinal fluid was reported by Sabrazes in 1905. After that period Carrara of Turin studied the subject, making a report in 1913, and Lenoble and Daniel have since taken it up and have made a series of reports thereon, the latest in October, 1919. The points determined were the amount of alcohol ingested, the duration of elimination—which should average ten days, the reactions and technique used, etc. It was learned that if 325 gm. of absolute alcohol is swallowed the drug will enter the cerebrospinal fluid in a concentration of 0.02 per 1000. If the amount ingested is 350 gm. the figure is 3 c.c. instead of 2. If 400 gm. is swallowed, the figure will be 4 c.c., while for 450 gm. it will be 6. The alcohol enters the urine more rapidly, but also leaves it rapidly. The composition and cell count of the fluid are not affected. The forensic importance of the presence and degree of ethylism is self-evident. In addition there is a marked clinical significance, for the discovery of alcohol in the cord will throw light on a number of conditions, as comas, cerebral hemorrhages, meningitis, etc. Alcoholism can simulate numerous conditions which this research may expose. The tests used give the same reaction for alcohol and acetone, hence the latter must be excluded. It is possible that chloral and other drugs may cause further confusion. The method used is that of Grehant and Nicloux, in which potassium bichromate and sulphuric acid are the reagents.—*Gazette Hebdomadaire des Sciences Médicales de Bordeaux.*

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Original Articles.

ON THE CURE OF CANCER.*

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SURGEONS seem to have given up making statements in regard to the cure of cancer. Operations are reported as successful soon after they are performed, but there are relatively few reliable statistics in regard to the ultimate cure of the disease. Some years ago the lapse of two or three years after the removal of a cancer surgically was counted as a cure, but the error of this was soon learned and five years was regarded as the proper time, while some surgeons have been frank enough to say that no date can be fixed when the patient is free from danger of a relapse. But those of us who have had the opportunity of watching many patients see large numbers of recurrences even within the first year, many within three or five years, and others again ten or even fifteen years after operation.

The explanation of the recurrence of cancer is commonly stated to be, that there has been some portion of the diseased tissue left, which has proliferated into new lesions, or that there had already been transference of cancerous elements to lymphatics, blood vessels, or other structures which had continued the disease. Of this no absolute proof has ever been given. It is only observed that recurrences continually do present themselves in or near the scar following removal, and sooner or later other portions of the body are attacked, until gradually a more or less generalized carcinosis develops, which ends in death, in a large proportion of cases.

The real reason why recurrences are so common is that nothing is generally done to arrest or alter the cause which first induced normal cells to take on and continue the abnormal and destructive action which results in the lesion which we call cancer. The only thing that surgery does is to attempt to remove mechanically some portion or all of the diseased tissues which has already been formed, the *product of the disease*, without attempting to change the conditions of the system which led to its production. As well might one excise a syphilitic gumma, or a tuberculous lesion, or a gouty toe, and expect final success.

One hundred years ago the great surgeon, Abernethy, wrote "There can be no subject which I think more likely to interest the mind of the surgeon than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings with it nothing but disgrace, if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance." He then goes on to indorse Lambe's dietetic treatment, giving reasons why it should be fairly tried.

If proper dietary and medical treatment are valuable after an operation they are eminently desirable at the very first suspicion or recognition of a malignant tumor, when they can commonly check its progress or remove it entirely, as I shall hope to show presently. In former writings* I have quoted from a large number of eminent physicians and surgeons who, during the last hundred years to the present time, including Dr. W. J. Mayo, have incidentally referred in the strongest language to the definite or probable existence of some constitutional disorder which has rendered futile their efforts to control the disease.

When we recall that under surgical care the deaths from cancer have risen about 30 per cent. since 1900, while under medical care the deaths from tuberculosis have fallen about 30 per cent, in the same length of time, as shown by the United States Mortality Tables, is there not good reason to feel that a mistake has been made in the understanding and treatment of cancer? When we also consider that there are at the present time in the United States from 250,000 to 300,000 cases of cancer, with new ones constantly developing, and that there were about 90,000 deaths from the disease here during the past year, we should seriously reflect, and examine the evidence which has been repeatedly presented in regard to the constitutional nature of the disease and its relief by means other than surgical. The *x*-ray and radium have undoubtedly been of value in removing some of the local lesions included under cancer, but no one can rightly presume to claim that they can permanently effect a change in the basic or underlying causes of the disease, and no reliable statistics are available as to their permanent cure of true cancer; they do little more than the knife though in a different way. Most of the arguments for surgery, and the pictures shown, relate to cutaneous epithelioma, which can be satisfactorily cured by even simpler means.

*Address before the Tioga (N. Y.) County Medical Society, September 2, 1919.

*Bulkley: Cancer, Its Cause and Treatment. Vols. I and II, P. Hoeber, New York; The Medical Treatment of Cancer. F. A. Davis & Co., Philadelphia.

and with less disfigurement, when not too far advanced.

In our present study on the cure of cancer, ordinary cutaneous epithelioma, as it is really a local affair, is excluded, and reference is made only to true cancer, a constitutional disease, as it affects the breast and internal organs, which latter is not often cured by the knife, *x*-ray or radium.

The question arises, can cancer be cured? Long study and observation, together with the many illustrative cases which I have reported from time to time in the journals and in the volumes referred to, have convinced me assuredly that this can be affected, if sufficient time, patience, and knowledge are expended along proper lines.

Tuberculosis had an enormous fatality twenty-five years ago, but when medical acumen was properly applied the mortality from tuberculosis began to diminish steadily over 30 per cent, by proper dietetic, hygienic, and medicinal measures; for tuberculin has played but an insignificant part in this gratifying result. There can be no question but that the same can be accomplished for cancer, if like means are faithfully and intelligently employed.

But we all recognize that tuberculosis can be overcome only by the most intelligent and persistent care over a long period of time, and also that a relapse may occur if the patient neglects treatment or stops too soon; or, even if after being discharged cured he or she returns to exactly the same mode of life and habitation the trouble may recur.

The same is true of cancer. If it is due to constitutional causes, as has been repeatedly shown, and these can be removed or radically changed, then the systemic process which has caused certain previously healthy cells to depart from normal and take on a malignant action is reversed, and a normal blood stream causes them to again take on a normal action, or they are disintegrated and removed; just as are the products of inflammation, or even the deposits in adiposis, tuberculosis, syphilis, arthritis deformans, etc. Laboratory studies of the blood in cancer have shown remarkable changes in its various constituents, which steadily return to normal as the disease is overcome by proper treatment, while when neglected these lead to the well known cachexia and death from cancer.

There has been altogether too much loose talk in regard to malignancy. The life and death processes in the body are all one, varying from varying causes. For normal and malignant growth are dissimilar only in their methods and activity of growth.

It may be well to remind you of certain definite facts concerning cancer which have been determined by laboratory research, and are almost universally accepted by physicians and surgeons.

1. Cancer is but a deviation from the normal life and action of certain of the ordinary cells of the body.

2. Cancer is *not* caused by a microorganism or parasite.

3. Cancer is *not* contagious.

4. Cancer is *not* wholly of traumatic origin, although local injury may determine the location of the cancerous process.

5. Cancer is *not* hereditary in any appreciable degree.

6. Cancer is *not* altogether a disease of old age.

7. Cancer does *not* especially belong to or affect any particular sex, race, or class of persons.

8. Occupation has *not* any great influence on the occurrence of cancer.

From the absence of any specific cause of cancer and from the many systemic and constitutional symptoms observed in these patients, as has been repeatedly shown, we must fall back on faulty metabolism, or erroneous tissue metamorphosis, as the basic cause for the aberrant action of certain, once normal, cells which form the heterogeneous growth to which we give the name of cancer.

It would take far too long to detail fully here the laboratory and clinical evidences of the truth of this statement, which have been fully detailed elsewhere, but the briefest mention of some of them may be of service in understanding what shall follow.

1. The *blood* has been shown by the laboratory to exhibit many manifest changes, as already mentioned, which indicate vital alterations in the action of the organs which form blood, and so control the nutrition of the body and its cells. A lowered alkalinity of the blood is most common in cancer patients, early and late.

2. The *urine* as an indicator of the state of the arterial blood stream, from which it is formed, has been shown by many to present abnormalities, which, while not pathognomonic, are of significance. Careful and repeated volumetric analyses of its many constituents show that the total output of urinary solids is greatly deficient, both in patients with very early disease and during its entire course. Many observers have demonstrated grave errors in its nitrogenous and sulphur partition, and indican is a common feature.

3. The *intestinal secretion* is almost invariably deficient, and constipation, even in early cases is so common that the toxins produced by the millions of micro-organisms generated through intestinal stasis and fecal putrefaction must be looked upon as one of the prime elements in the causation of cancer. Sir Arbuthnot Lane has spoken of cancer as one of the terminal results of intestinal stasis.

4. The *saliva*, upon which the proper digestion of the starchy elements of food depends, is almost always found to be acid, instead of alkaline or neutral, as I have verified by hundreds of tests both in private and hospital practice; in the latter I have it tested and recorded a quarter of an hour before and after each meal.

But the clinical and statistical studies afford further convincing proof of the correctness of the position which is being developed.

1. Mention has already been made of the remarkable results which have been obtained in tuberculosis by most careful medical knowledge and attention, as compared with the sad, steady rise in the mortality of cancer attending the constant neglect of the same.

2. Aborigines, living simple lives, largely vegetarians, have been shown by any number of observers, in many lands, to be almost if not entirely free from cancer, while many have also reported the definite increase in the disease, and in its mortality, in proportion to their adoption of the customs and diet of so-called modern civilization.

3. Statistics from many countries show that increase in the consumption of meat, coffee, and alcoholic beverages, appears to be coincident with a very great and proportionately greater augmentation of the mortality from cancer. In England the consumption of meat has doubled during the last fifty years, while the deaths from cancer have increased *fourfold.* The United States consumes one half of the total amount of coffee handled in trade everywhere.

4. Nerve shock and nerve strain have been shown to have a direct influence in the production of cancer, and there can be little doubt but that the enormous strain of modern life is an element of importance in this direction; this occurs both through metabolic disturbance, and by operating directly on living cells which take on an aberrant action. Microscopic study has shown great changes in the centrosomes and chromosomes of cells about to be cancer-genetic.

5. The spontaneous disappearance of cancer, as occasionally reported by competent observers, shows that certain conditions of the system may arise which are antagonistic to malignant growth, which points to the possibility of influencing the system in a manner to accomplish the same results.

Laboratory experience has repeatedly demonstrated the controlling effect of diet on cancer in animals. In one extensive series of experiments 75 per cent of 75 inoculated mice developed tumors, while under normal diet, whereas only 19 per cent of other 75 inoculated mice developed such tumors when under a diet with vegetable proteins; moreover the tumors in the latter were hardly larger in 30 days than those in the former in 10 days.

In regard to the cure of cancer what then are the elements to be considered? Naturally they relate both to the removal of the causes which study and experience have shown to have an influence in its production, and also to the employment of agencies which promote such a return to normal metabolism, as shall overcome the disease. This latter is accomplished by such proper activities of the various portions of the system as shall lead to a correct blood stream, which in turn tends to remove offending elements from the body. Both of these are essential and efficient in the cure of cancer, as long experience has shown; neither are sufficient alone.

In many reviews I have been quoted as regarding meat eating to be the cause of cancer: this is only partially true, as may be judged from what has preceded. The true cause is a metabolic disturbance arising from diverse agencies, prominent among which are errors of diet, especially along the line of meat, coffee, and alcohol, together with faulty living and imperfect action of some of the organs of the body. In one decade in England it was found by the Registrar General that cancer mortality was more than twice as great among well-to-do men having no specific occupation as it was among males in general, the ratio being 96 to 44. It was also shown that cancer was much more prevalent per 100,000 in those parts of cities which were occupied by the well-to-do than in poor sections of the city.

Proper diet is unquestionably of the first importance in the prophylaxis and cure of cancer, without which all other measures are relatively worthless. But proper medication and hygienic elements, over a long period, are also absolutely essential, of which I shall speak later.

In order that the patients in my Medical Clinic for Cancer at the New York Skin and Cancer Hospital should understand and follow out a suitable diet, I prepared a card of instructions some years ago, which I have used in public and private practice ever since, in innumerable cases, and with the best results. This has been printed in large numbers and may be freely obtained from the hospital by personal application or by letter.

This diet is not presented as absolutely perfect, that would be difficult to determine, but I have not had occasion to change it much and have revised it but once. Other similar articles of diet, than those mentioned may undoubtedly be taken, but the card is very serviceable as it stands. It was carefully worked out with the dietitian of the hospital so as to represent 2500 calories a day, with about 140 of vegetable protein, and is planned for a patient of about 150 pounds, not taking much exercise.

Cancer is generally considered so hopeless, and the mind of the laity and of the profession is so set on surgery as the only hope, and latterly on *x*-ray and radium, that it is difficult to induce some to believe that there is any hope from other measures, and they sometime hesitate to enter upon the prolonged course of treatment necessary to effect a cure. But as they experience the improvement in health and the lessening of the local trouble under careful treatment they are quite satisfied that if they keep steadily on an uphill track toward health, they are not likely to go down hill again. Also when they realize the prolonged treatment necessary to overcome tuberculosis they are content to thus avoid the knife, with its unsatisfactory results. Many a patient has afterwards told me that they had suffered more mentally by the continued worry and warnings of friends and surgeons, urging an operation, than they had from the disease or the treatment.

The first element of success in the medical treatment of cancer is for the physician to be so thoroughly convinced of its value that the patient shall also have an absolute confidence in it. This will aid both in carrying out every detail of treatment and in giving a hope of cure, which latter undoubtedly assists in the recovery, even as the common despair of cancer patients unquestionably acts prejudicially on the disease; for Tuke and others have shown incontestably that the mental state has a very great effect upon the body in health and disease.

In regard to the actual medical treatment of cancer it is difficult to speak briefly and correctly,

so varied may be the measures required to meet many conditions, over the long period during which treatment must be carried out. It is understood, of course, that as dietary and other errors which contributed to cause the cancerous growth have probably existed for a long time before the growth has been recognized, so a continuance or recurrence of them may induce a repetition of the disease. It is necessary, therefore, for patients to clearly understand that the maintaining of a proper diet indefinitely is essential, and that correct medication and hygiene must also be continued a great while in order to secure and maintain a correct metabolism and proper tissue metamorphosis.

As laboratory and clinical research have shown many systemic errors in early and late cancer, so the medical treatment must be adjusted to meet and overcome these many errors from time to time. It must be clearly understood that there is no "cure all" for cancer and probably never can be. It is impossible to rationally conceive how any one single remedy or measure could possibly effect such a permanent change in the system as would result in producing and maintaining the perfect blood stream necessary to overcome the cancerous tendency. The history of cancer is strewn with the wrecked hopes of innumerable sufferers who have tried the many "Cancer Cures" often vaunted so loudly both by those within and outside of the medical profession, only to end in disappointment. One serum after another has been tried, with seemingly good results at first, owing largely to psychological factors, only to be discarded after a relatively short course. The reason for these constant failures is of course found in the true nature of the disease itself, as has been already briefly presented.

But there are certain chemicophysiological lines along which experience has shown that much can be done with advantage in the medical treatment of cancer. Some seven years ago Dr. Forbes Ross of London published a work on cancer in which he demonstrated scientifically, and very conclusively, the reason why potassium salts were of such great value in its treatment. It was a great satisfaction to find from one who had long been a cancer surgeon, such a scientific support to the practice which I had followed for thirty or more years, and which I now commend to you.

Both in my private and hospital practice I have long used a certain mixture, as a first treatment, in innumerable cases of early and late cancer. The formula is as follows: ℞ Potassii acetatis ʒi, Tincturæ Nux Vomicæ ʒss, Extract Cascaræ fld. ʒi—ʒiv, Extract Rumicis radicis fld. ad ʒiv. Teaspoonful in 1/3 tumbler of water, half an hour before eating; the amount of cascara is varied according to the amount of constipation existing, so as to secure about two good movements daily. The amount of potassa can also be much increased, to secure better action of the kidneys, or to act more efficiently on the local lesion; Ross gives even very much larger doses of the potassa. I have many patients who have taken this mixture for months with only the best results.

But very many other remedies may be required from time to time. It was mentioned a while ago that the total solids in the urine were very deficient; I have often found them not one-half of the amount which was called for by the body weight of the patient, when by careful treatment it was brought up even to above normal. Sweet spirit of nitre in addition will often greatly aid in this, also caffeine in two grain doses, after two or three of the meals.

As one wearies of this mixture the acetate can be given with the nux in an infusion of quassia after meals, and the constipation can be controlled by a cascarin compound tablet (cascarin, podophyllin, aloin, aa gr. ¼) one or more at bedtime.

Iron is often called for in these cases and some form of phosphorus, both of which are important ingredients of normal blood cells. During some period of a prolonged course of treatment many other remedies, tonic, digestive, or other, may be called for, which it is impossible even to mention in a brief address. I only want to impress on you the value of the particular combination I first mentioned, and second that the very greatest amount of thought, patience, and skill are necessary in order to cure cancer. These patients should be seen and watched often and carefully; once a week is not too often. Frequent volumetric urinary and blood analyses assist very greatly in guiding the patient to health. The total volume of the daily urinary output should also be known and recorded, and tested as to its volumetric acidity, and its specific gravity, to learn if the amount of urinary solids are such as are called for by the body weight of the patient. This latter should also be frequently recorded and the tonic treatment guided thereby. In fat subjects it is desirable to reduce the weight, for it is well recognized that cancer goes badly with them. It may seem superfluous to have dwelt upon these homely details, but as "eternal vigilance is the only price of liberty," so in the medical treatment of cancer eternal vigilance alone can accomplish its cure.

It may now be asked what proof I have to offer that cancer can be cured? I would answer that the occasional reported cases of the spontaneous disappearance of lesions recognized as cancer by competent surgeons, shows that a condition of the system may arise which overcomes the cancerous tendency; this leads us to hope and expect that sufficient care and medical acumen may find measures to accomplish the same result; this has been the case, as evidenced by the many cases I have reported, which were well attested by many physicians and surgeons.

If I am asked for accurate statistics as to the mortality of cases thus treated, I cannot present them, for many patients have been seen only in consultation, and many late and post-operative cases have been referred to me, in hospital and private practice, where the general carcinosis was so great that naturally little could be affected. But even in these latter cases the result of most careful dietary and medical treatment have often been so gratifying as to excite comment. When the patients have been under full and complete treatment for some time there is infinitely less suffering, and they have passed away peacefully, without any hypnotic, as I have repeatedly re-

ported. Indeed my observation and experience have satisfied me that morphine, by deranging the metabolism and checking the secretions, often does more harm than good, and my patients have very seldom required it.

When it is remembered that the ultimate mortality of those once stricken with true cancer is commonly accepted as 90 per cent., I am vividly impressed with the vast difference observed in the hundreds of cases which have been cared for along proper medical lines. In my writings I have reported in full over thirty cases of cancer, from among many others, in which the benefit of a properly regulated medical treatment was startlingly manifest. Some of the earliest, well attested breast cases had been followed, two of them for 13 years, and two of them for 16 years, remaining perfectly well, without operation. Two very severe uterine cases, which had been refused operation by several surgeons, remain well for over three years, with no recurrence. Cases with deep-seated cancer in other localities have also been reported, where the results were most striking.

Undoubtedly the most hope for the cure of cancer lies in its early stages, as the surgeons have so constantly affirmed, for after there have been abundant glandular infiltrations and metastases, it is difficult to overcome the disease, because it is recognized that all these cancerous cells themselves contribute a hormone which is poisonous to the system.

But in the earlier stages of the disease the results of complete medical treatment have been most gratifying. In many cases, even where some already had glandular involvement, where the diagnosis had been made by prominent physicians and surgeons, and even when immediate operation, as the only hope, had been insisted on and in some instances arranged for, I have seen the mass and the adenopathy slowly fade away until nothing remained, the patient in the meantime gaining every way in health and happiness.

Time does not permit of giving any extended histories illustrating what has been said, but brief mention may be made of a few, some of which have been already reported in my books.

CASE I.—Mrs. B. C. E., aged 44, seen first in 1892, had a sharply defined tumor of the right breast, tender on pressure, which she had noticed about four months. A well known, prominent surgeon was consulted, who pronounced it undoubtedly cancer, and urged its instant removal. Within six months, after careful treatment, it had entirely disappeared, and remained so for sixteen years, when she was lost sight of. Another similar case, aged 45, seen in 1894, was also watched sixteen years, the breast remaining perfectly normal, and two others for fourteen years.

CASE II.—Mrs. S. J., aged 33, a hard working woman, with two children, was seen at my medical clinic for cancer, February 28, 1917, for a painful lump in the right breast fully an inch and a half in diameter, with sharp edges and axillary adenopathy. The surgeon on duty confirmed our diagnosis and wanted to operate immediately. Within one year the lump and adenopathy had entirely disappeared, and shortly after a surgeon visiting the clinic was told that she had had a cancer, and examining carefully he decided that it must have been in the *left* breast, as there was there a slight chronic mastitis. On several later occasions four other medical men made the same mistake, and the same thing occurred in a private patient in my office. She has now remained well nearly three years, continuing treatment at the clinic.

A single illustration out of many may be given to show how much benefit can possibly come from medical treatment even in desperate cases, recurring after operation.

CASE III.—Mrs. C. M., aged 39, had a very complete operation at the New York Skin and Cancer Hospital for the removal of a tumor the size of a hen's egg from the right breast, with dissection of enlarged axillary and supraclavicular glands. Within one year she returned with ulceration along the line of incision and multiple cutaneous nodules around it. The right arm was enormously swollen and helpless and the liver enlarged two inches beyond the ribs, with nodular margin. When she left the hospital five months later the ulcer had entirely closed, most of the cutaneous nodules had subsided, the liver retracted within the ribs, and the arm had returned to the size of the other arm by accurate measurement. The case attracted great interest and was watched by other attendants at the hospital.

Three cases of inoperable uterine cancer are worthy of mention.

CASE IV.—Mrs. F. L. A., aged 48, weighing 105 pounds, was first seen on March 21, 1916. About one month before several surgeons had found that she had an inoperable cancer of great extent, and refused to operate, giving the opinion that she would hardly live six months. Microscopic sections examined by two pathologists showed it to be a "rapidly growing malignant epithelioma." The improvement under careful medical treatment was immediate and most remarkable, and on December 6 she weighed 110 pounds. In less than six months after she was first seen the surgeon pathologist who had given the opinion above, examined her and wrote "There are no evidences of any disease remaining which can be detected on examination," and on October 20 he wrote "She appears to be absolutely free from disease." She was watched often, coming in from Bangor, Maine, and to-day I have a letter from her saying she was perfectly well and needed no treatment, three years and a half after being first seen, and after she was given only six months to live.

CASE V.—Mrs. H. F. J., aged 52, seen first August 2, 1916, was quite a similar case of inoperable uterine cancer, with some cauliflower excresence. She made rapid improvement, and on October 20 the same surgeon pathologist reported that she was "free from disease, though the healing is not quite complete." A recent letter tells that she remains well.

Another quite recent case still under treatment is yet more unusual in the history of uterine cancer.

CASE VI.—Mrs. W. G., aged 43, came under my care February 6, 1919. In the fall she had seen four surgeons, two of them well known, who found an enormous uterine cancer, on which they refused to operate. She was told there was nothing to be done, no medical treatment, that she had not six months to live, and must go home and take morphine for her great pain. On January 19 she had explorative laparatomy performed in a New York hospital, when it was found that there was enormous infiltration of adjoining parts, and further operation was declined and the wound closed, and she was given not two months to live.

When first seen she was in a deplorable condition, with very great and offensive vaginal discharge, and could hardly crawl upstairs to my office. She has been seen frequently and the progress of the case has been hardly believable. For two or three months past she has claimed that she was well, with absolutely no pain, sleeping perfectly, and exercising freely. The vaginal douche has come out clean and odorless now for several months. Yesterday she was in my office, coming from her home in Northern New York without fatigue, and seemed as well as any one could be. She remarked that "the last three weeks have been the best ever in my life," over seven months after she had been given

two months to live. On May 11, 1920, she was seen in perfect health.

An interesting case of inoperable cancer of the stomach, so diagnosed by several surgeons, now under treatment, has shown very gratifying gain in many ways.

CASE VII.—Mr. D. F. B., aged 68, emaciated and pale, with yellowish skin, has lost 10 pounds in the last six months, with distress over the epigastric region. On examination there was a solid mass about two inches in diameter in the right gastric region, painful on handling. Under treatment the mass has diminished much in size, there is relatively little pain, he has gained some pounds in weight, and seems quite a different person.

If time permitted I could give cases with cancer in various other localities where the results of treatment have been most satisfying, including the rectum, kidney, bladder, prostate, esophagus, buccal cavity, tongue, lip, etc., but what has been mentioned must suffice to show that careful dietary, medicinal, and hygienic treatment can have a great influence over malignant disease.

I realize that the accounts I have given are somewhat surprising, in view of the course usually run by cancer cases, but I can assure you of the truth of all that has been said, and that the cases have all been diagnosed and observed by other physicians and surgeons during their progress. Naturally these cases have been selected from many others, some of which have not responded so well to treatment for various reasons. Some few cases have yielded to the solicitation of others and have undergone operations, but rarely with my consent. Others have wearied of the diet and restrictions, and have disappeared from view. Some have lived far away and have been seen only once or twice, and were not traced, while many were seen in consultation, and could not be followed. A number of advanced and post-operative cases have died easily under my care, but without morphine, which I have very rarely ordered. The number of deaths of which I am cognizant are relatively few compared with the acknowledged mortality from cancer, a few dozen among the hundreds observed; but undoubtedly there are many more than I know of.

What, then, are the conclusions to be drawn from the material now presented? They may perhaps be briefly stated as follows:

1. Cancer is *not* a fearful something of unknown origin, which attacks one person or another, without reason, as the laity suppose.

2. Cancer is but a deviation from the normal growth of previously healthy body cells, which, for some reason, not yet fully understood, take on an abnormal method of growth, and, having once begun, they continue a wild and destructive career, invading other organs and ultimately causing the death of the patient, unless checked in some manner.

3. Cancer has been studied, perhaps more than any other disease, and millions of money and infinite labor of countless intelligent and faithful workers in laboratories have been expended in endeavoring to determine its real cause, but as yet without any unanimity of opinon thereon.

4. Most of the laboratory work has been done on the microscopic study of the tissues, and experimentation on lower animals, principally rats and mice, as also on the morphology of the blood, but not on its plasma, and with relatively little clinical investigation.

5. No one has yet seen the very beginning of cancer in internal organs, although microscopic studies of cutaneous epithelioma have taught much in regard to the earlier changes in cells about to become cancer-genetic; this relates especially to changes in the centrosomes and chromosomes in the nuclei, which control the nutrition and action of the cells.

6. Claims have been made that cancer is due to certain misplaced epithelial cells, or "embryonic rests" of pre-natal origin, but these are found to be of common occurrence in every one, and no explanation has been offered why some and not all of them take on morbid action, or why this should be delayed until later periods of life.

7. Supported largely by laboratory studies, which have been interpreted as pointing to a purely local origin of cancer, surgeons have striven with increased zeal to cure the disease simply by the extirpation of the diseased mass and surrounding tissues, and as the wounds generally heal well they have in times past claimed that cancer was thereby cured.

8. But the very frequent return of the disease in the same locality or elsewhere in one, two, three, five, ten, to fifteen years, has taught many of them the futility of this hope. Moreover, the steady rise of nearly 30 per cent. in the mortality of cancer, since 1900, with the present acknowledged death rate of 90 per cent. of those once attacked, has convinced many that surgery is a failure in its attempts to cure cancer.

9. During the past hundred years many prominent surgeons and physicians, recognizing that the frequency of relapses indicated that the knife could not extirpate the disease, have remarked casually, in many writings and books, that there must be some underlying cause which induced a recrudescence of the malady, and many have casually suggested that it probably lay in the diet or mode of life of the persons affected. But these occasional remarks seem to have been overlooked or not appreciated by the profession, and certainly not acted upon, for the glamour of surgery appears to have blinded the eyes of the profession and laity, indeed until recently little if any attention has been paid to the medical aspects and treatment of cancer.

10. Careful clinical study of patients with early and late cancer have revealed constantly so many deviations from normal in them, and in their secretions and excretions, pointing to deranged metabolism, that the conclusion seems clear that these are connected with the genesis and continuance of the cellular disturbance which we call cancer. This is confirmed by their disappearance as the disease recedes under proper dietary, hygienic, and medicinal treatment.

11. Statistics and close observation have shown that the existence and mortality of cancer have definitely increased, to an alarming degree, with the rapid increase of so-called modern civilization in all parts of the world. Aborigines, and peoples who live largely on rice or vegetarian products, have been shown to be almost if not entirely free from cancer. But as the same peoples mingle with foreigners and adopt their customs of eating and living, cancer has

surely and steadily increased, often to a very great degree.

12. Statistics again show that cancer has increased coincidently with the increased consumption of animal protein, coffee, and alcohol, together with indolence and luxurious habits in general. Of late years attention has also been called to the effect of salt in the production of cancer, and to the absence of potassium in much of the food as a very important feature.

13. Careful laboratory experiments on animals have demonstrated a remarkable influence of certain foods in inhibiting the growth of inoculated cancer.

14. Long experience has shown that an absolutely vegetarian diet, with the total exclusion of animal protein, has a great influence, in the arrest of cancerous development, and in the removal of lesions already formed.

15. Experience has also shown that proper medication and hygiene, directed to the restoration of a perfect metabolism and of a healthy blood-stream, continued a long enough time, together with a correct diet, can and does remove the disease, by reaching its cause.

We have thus seen that true cancer is not purely a local disease, cured by the knife, caustics, *x*-ray or radium, which only remove the *local product* of a long-existing constitutional error, while the internal cause remains, ever ready to produce new lesions and to ultimately destroy life. How long this constitutional error has existed and has been operative it is impossible to tell.

The lesion of cancer undoubtedly begins in a cell, or in a group of cells, which multiply erroneously and seem to have the power to induce other cells to join them in their rampant and malignant action. Those diseased cells, like all the other cells of the body, produce a hormone, or internal secretion, which in this instance has a poisonous action, as has been proved by laboratory experiments on animals.

As the cancerous process goes on, the already erroneous blood stream, excited as we know by all hormones from healthy cells, is further disturbed by this poisonous hormone, and the blood cells and their hemoglobin are altered, as shown by the laboratory, and a pernicious anemia is produced, resulting in the well-known cachexia of carcinosis; this, if not checked, ends in death. Thus we see that the pathological history of carcinoma is not mysterious, or need not be mysterious, but that it is more or less akin to what we know of the pathology of other diseases.

Have we, then, solved the whole cancer problem? This is not by any means claimed. The medical history and treatment of cancer have only begun. Careful laboratory studies on the plasma of the blood, and also on the secretions and excretions, together with abundant clinical study of the disease in every possible aspect, will no doubt result in yet far greater advance in its treatment. Let us hope and expect that observation and study may advance along these lines until there shall result even a much greater diminution in the morbidity and mortality of cancer than medical acumen and patience have thus far produced in tuberculosis.

39 West Fifty-eighth Street.

THE DIET AND HEALTH;

AMOUNT AND KIND OF FOOD REQUIRED.

By JOHN AULDE, M.D.,

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"We can live without friends, we can live without books,
But civilized man cannot live without cooks."
—Bulwer Lytton.

A survey of the food problem to be of practical value to the general reader who is lacking in the rudiments of dietetics, should aim to correlate the essential factors which have a direct bearing upon health maintenance. While we cannot all aspire to achieve success or prominence in the culinary art, in view of the universal prevalence of deficiency diseases, it is important that every citizen, both young and old, should have reliable information as a guide in the selection of the dietary.

This knowledge, spread broadcast, is bound to instil in the minds of the intelligent laity the fundamental principles underlying nutrition, so that correct eating will become a habit and the study of domestic science a popular avocation. While the American people are blessed with a superabundance of food, we cannot deny the obvious truth that they are woefully lacking in prevision—like Mrs. Newrich, who turned her pink-lined seal-skin coat inside out when caught in a storm, to prevent the fur from getting wet!

Thus, the average business man, who is particular in regard to his bookkeeping, his stock taking, his cost prices and margins, and his overhead expenses, will be astonished when told that his annual consumption of food material is approximately represented by a truckload of bricks and a wagonload of hay besides a tankfull of water and other liquids with a capacity of five barrels—about one hundred and fifty gallons. It will also create no little surprise when he is told that all these various edibles and fluids have a definite chemical composition so that their intrinsic value may be computed with mathematical precision—to the fraction of a gnat's heel—the bricks to maintain structure and function, the hay to furnish heat and energy, the liquids to distribute nutrient material and mineral salts and carry the vital current to perfect the transcendental metamorphosis known as human life.

Digestion and assimilation, rather occult problems for the general reader, can be so fully explained in non-technical terms that "he who runs may read," and with reasonable care and attention to the guiding principles in selecting the dietary we can make health catching instead of disease. Even a limited knowledge of dietetics will enable the chronic invalid to become optimistic, perhaps quoting Horace Mann, "Human Life! How exhaustless and boundless the theme!"

Included in this program several kindred and no less important topics suggest themselves, such for example, as the employment of water and other liquids, the function of mineral salts, especially as related to so-called deficiency diseases, the role of infections and poisons, the correct dietary for health maintenance, and finally, how

to trace the cause of chronic ailments, all of which should be carefully and conscientiously studied and presented from the modern, scientific viewpoint—concise, exact, compact.

The amount and kind of food required depend upon various factors, such as age, occupation, climate, and season of the year. Thus, during infancy and childhood, milk constitutes the most important item. In adolescence, while milk is frequently discontinued, we have no other food material so well calculated to round out the dietary, to promote physical growth and mental development, and as age advances, the addition of milk to the usual dietary often means the difference between prolonged valetudinarianism and a rugged old age.

It is well known that occupation is a prime factor in creating a demand for food. With rare exceptions, the office and factory employee never eats as much as those engaged in outdoor work, whether light employment or manual labor, like the carpenter, bricklayer, or farmer. But it is a patent fact that sedentary workers do suffer from hunger, simply because the dietary is not properly balanced—the foods selected do not satisfy the normal demands of the system, and there arises a craving for some temporary substitute to supply the deficiency, ice-water and soda water for those who suffer from intestinal indigestion, because of the inability to digest the excessive amount of starchy food eaten, candy and sweets for those who lack certain essentials in the dietary required to promote oxidation, pickles for spinsters who aim to subsist on tea and toast, and others whose normal sense of taste has been demoralized by rich and highly seasoned foods, where alcoholic stimulants are taken for the narcotic effects.

Failure of the army ration system in the late war to supply a "balanced ration" is worthy of mention in this connection. It is only necessary to recall the insistent demand of the men on duty and in the camps for candy and chocolates—to counteract the depressing effects attending the constant supply of an excessive quantity of nitrogenous food. Quoting from Major John R. Murlin, of Washington, D. C., an attaché in the Food Division of the Surgeon-General's office (*Journal of the American Medical Association*, Sept. 21, 1918, p. 950), we find the garrison ration provided a daily issue of 20 ounces of meat and 3.52 ounces of sugar and syrup, together. The mess records give the average daily consumption of meat, 13.67 ounces, sugar and syrup 4.11 ounces, or 17.78 ounces all told, an apportionment notably defective—whether considered from the scientific deductions of physiological chemistry, or the dictates of common sense. The army ration total amounted to 4.24 pounds while the food eaten amounted to 3.41 pounds, and the food utilized by each man per day, based upon an average of 185 messes, amounted to 1.63 pounds, a trifle less than half the food eaten.

Dr. Murlin makes a plea for *readjustment of the garrison ration* on a basis more nearly approaching the requirements of field conditions, admitting, however, that a distinction should be made between the training ration and the actual field ration, as in the other allied armies. "For example," he says, "the British home ration, used in the training camps in England, provides only 3,400 calories, whereas the field and trench ration provides 4,250 calories. The French normal ration, used in training camps, provides 3,300 calories, the strong ration, used in actual campaign, 3,600 calories. The Italian territorial ration, used in the training period, provides 2,500 calories, while the combating rations, used in campaign, provides 3,300 calories. The present garrison ration of the United States Army, if selected as written in the regulations and as used in computing the value of the ration, would provide nearly 4,800 calories."

The caloric value of the food consumed by the mess referred to was 3,664, the consumed cost, 42.17 cents and the waste cost 2.99 cents, but no data are available for calculating the mineral constituents.

Special attention should be directed to the gross weight of the food eaten—assuming the same allowance for an entire year of 365 days at 3.41 pounds per day, the total is rather startling, 1,244.65 pounds! Add to this the weight of the water and other liquids taken, six to eight glasses daily, amounting to three or four pounds, we have a total intake in weight running up to about a ton and a quarter.

In view of these startling statistics, isn't it time the schoolmaster was abroad?

Many years ago the writer received a valuable suggestion from an intelligent and practical gentleman who had had considerable experience as a commissary in the logging camps of Northern Michigan. He said a steward in charge of feeding several hundred men during the winter, who were to be kept at work, with no communication with the outside world, should make it a cardinal principle to spend as much money for sugar and molasses as he did for meat, as in that way only could sickness be prevented, efficiency secured, and a friendly feeling maintained in the gang. With an excessive meat diet, he said there was always much sickness, constant "soldiering," even sabotage, with no end of fights on the least provocation.

It is not necessary to emphasize the need for a modification of the dietary incident to climatic and seasonal changes, except to criticize the attempt, in the temperate zone, to combine certain tropical and subtropical features with the usual or ordinary dietary, such as fruit before breakfast.

Reliable data are now available relating to the value of different food materials as a result of extended laboratory investigations. In some instances, animals have been submitted to a restricted diet for the purpose of determining whether the particular food selected would produce the disease from which humans suffered when subsisting upon this special or limited dietary, or with a view to determine what, if any, injurious effects are likely or liable to result, say, from a diet limited to one particular food, or a combination of two or more. Observations on animals, of course, cannot deal with the mental make-up, but valuable data can be collected regarding physical growth, health maintenance, and

reproduction, in all of which the human family is intensely interested.

One of the early tests of this nature (1897), was an attempt to cause the appearance of beriberi, multiple neuritis, by an exclusive diet of polished rice, fowls being selected. When the birds had reached the stage of dissolution a watery extract of the polishings quickly restored them to normal. Since then, laboratory studies have demonstrated that the curative effects of the rice-polishings are due to the presence of what is termed an "accessory food" factor, which is soluble in water, but as yet not isolated (unidentified).

Another interesting experiment (1909) consisted in extracting bread and milk with ether and alcohol, using the residue as a food substance, but it was utterly lacking in nutrition—the animals died from starvation. In the belief that the deficiency was due to a lack of fats (lipoids) in the diet, fats were added, but without appreciable benefit, although when the extracted material was returned to the denatured milk and bread, recovery was prompt. Later studies have shown that milk also contains, in addition to the mineral constituents, potassium, sodium, calcium, phosphorus, and chlorine, an unidentified accessory food factor, which is soluble in fats—and milk as well as certain other animal foods, along with the vegetable foods containing the water soluble substance found in plants, are now referred to as "protective foods."

We are indebted to E. V. McCollum, Ph.D., now of Johns Hopkins University, for his report on extended series of experiments (*Journal of A. M. A.*, May 12, 1917, p. 1379), bearing upon the nutritive value of several natural foodstuffs in general use, and from which the following summary has been compiled—to present the evidence in concise, non-technical terms. Only such extracts are made as will serve to confirm the claims advanced for the pressing need for greater care, even precision, in selecting the dietary.

The first series of experiments were made upon rats limited to an exclusive diet of corn (*a*) which, in the language of the author, "leads to complete failure of young animals to grow, and death usually supervenes within two months."

Another group (*b*) had butter fat in addition to corn and a third lot (*c*) had corn with clotted milk (casein). A fourth group (*d*) had corn and a combination of mineral salts similar to that found in milk—but there was little growth in any case, the least objectionable diet being that containing the mineral salts.

Then the effects of the addition of two foodstuffs were tested, as follows: (*e*) Corn, clotted milk, and mineral salts, (*f*) Corn, butter fat, and minerals salts; (*g*) Corn, butter fat, and clotted milk.

In the case of *e*, the rate of growth for over five months was less than half the normal, but with the addition of butter fat, rapid growth set in, aud during the following three months two litters of young were born, the second litter being successfully reared.

Case *f*, in which no addition was made, was unfavorable; the rate of growth was slower than normal, she never produced young, and showed decline after the age of six months—lack of protein.

In case *g*, there was no growth at all during a period of six weeks, but with the addition of mineral salts it began, the animal reached full adult size and produced three litters of young, all of which were successfully weaned.

When it is added that these records represent each a group of not less than four rats, restricted to distilled water, the significance of the dietary will be apparent—and the most instructive feature, aside from the function of the fat soluble and water soluble accessory factors, now called vitamines, is the "stimulating" effect of the mineral salts upon growth and reproduction.

The question naturally arises, Does the deficiency of mineral salts in humans lead to physical decadence and mental deterioration? Was the commissary of the logging camp correct in his diagnosis that nitrogenous food in excess leads to sickness, strikes, and fights?

Examination of the wheat kernel shows deficiencies similar to those found in corn—it lacks three essentials required to promote growth, reproduction, and rearing of young, namely, protein, the rebuilding material, mineral salts, and the fat soluble accessory food factor (vitamine). Apparently, the water soluble vitamine is ample in cereals.

The following summary covers the records of a series of investigations in which each group included not less than four rats, the water supply being distilled.

(1) With wheat, clotted milk, dextrin, a gummy substance obtained from starch, and mineral salts, rats grew rapidly to adult size, but all were short lived. When six months old they were emaciated and showed swelling of the eyelids (xerophthalmia) and local hemorrhages—assumed to be due to a lack of the fat soluble vitamines.

(2) With wheat, clotted milk and butter fat, growth was very slow. "After being stunted during five months, on the addition of a suitable salt mixture, the animals experienced a wonderful acceleration of growth, and a complete recovery from a condition of partial baldness, accompanied by a roughening of the skin and tail. Animals in this group have frequently suffered from a purulent bronchitis."

(3) With wheat, salts and butter fat (no casein) there is stunted growth, lack of fertility, and early decline.

(4) With wheat, casein, salts, and butter fat, "it becomes capable of supporting growth, reproduction, and rasing of young which closely approaches the normal." Later, we shall earn something definite about the particular mineral constituent responsible for the "wonderful acceleration of growth" in case 2, especially when we come to study the function of mineral salts in nutrition—a very important question, and one, too, which seems to possess an extreme low visibility.

The oat kernel deficiency is similar to that found in corn and wheat, but "the addition of casein, salts, and butter fat does not lead to normal growth." In a series of three experiments

the growth for three months was near normal, but after that the record shows that the rats lost weight and all were short lived. Limited to rolled oats and casein, or rolled oats and salts, there was practically no growth—and it is stated that normal growth cannot be secured when the oat kernel amounts to 70 to 80 per cent. of the food supply. However, when the oat proportion is reduced to 60 per cent., with the addition of 10 per cent. of gelatin (agar-agar), along with dextrin, salts and butter fat, the growth is fully up to normal—thus showing that gelatin is superior to casein as a protein when combined with oats.

In this connection it will be pertinent to mention the mistaken notion, or superstition, that rolled oats constitute a complete dietary for growing children, because we have precisely the counterpart of the failure in nutrition in the public schools, one-third of the pupils being classed as "backward" or "feeble-minded," the usual addition of milk to the diet being the only redeeming feature. Our author remarks, "We have not yet determined the cause, but it is evident that a high intake of oats over a long period causes injury to the rat. This is true also for the cow, and I believe, also for swine."

The significance of these demonstrations will be appreciated when it is recalled that Atwater's tables show the caloric value of one pound of boiled oatmeal at 285—so that a man would have to eat nearly eleven pounds daily to secure 3,000 heat units!

Of course, it will be claimed that such disastrous results may be avoided if other food materials besides gelatin were combined with oats in making up the dietary, and this is true, provided the supplementary foods are selected from the particular class which supplies a larger percentage of protein, like the leaf, for example. Rats fed on corn, 50 per cent, along with alfalfa and peas, 30 and 20 per cent, respectively, attained full size and the fourth generation was successfully weaned, thus showing that a properly constituted vegetarian diet is quite possible. The advantages of the leaf over the seed are that it contains a larger percentage of a complete protein as well as the fat-soluble essential—and this observation is substantially true and applies generally to food from the leaf.

Only a limited survey of these intensely interesting investigations has been attempted, but it is doubtless sufficient to demonstrate that health maintenance depends upon factors well within the reach of persons of ordinary intelligence—the entire question reverts to the individual, so that his health depends upon his willingness to comply with the deductions warranted and demonstrations made with respect to the essential elements or factors in nutrition. Thus, we have before us as a basis for future study these various elements designated by name, protein, the reconstructive, fat and fat-soluble accessory food factors, carbohydrates (starch and sugar), and the water-soluble accessory food factors. These fat-soluble and water-soluble factors are known as vitamines, the former being found principally in animal food materials, the latter almost exclusively in vegetable foods.

Most important of all, however, is the mineral constituents, as will appear from the following experiments: Rats fed on corn and flaxseed, 90 and 10 per cent. respectively, gained in weight less than one-third of an ounce in four months—they were stunted, "brought to nutritional disaster," but on the addition of mineral salts they grew at the normal rate, gaining nearly four and a half ounces in weight during the next three months—because the mineral salts had restored, or rejuvenated, the functional activity and physical energies of the protein molecule.

Another series of rats had a more liberal diet, at least in respect to variety, namely, corn, millet seed, oats, wheat, and hemp seed, equal parts of each, but gained in weight in the course of three and a half months less than one-eighth of an ounce. On the addition of mineral salts, normal growth set in at once—and it should be added that 40 per cent. of the salts were calcium, or lime.

Confirming this deduction, our author refers to an experiment with dogs, restricted for periods varying from two to eight months to a diet consisting of peas, crackers, and cotton-seed oil. There was sloughing of the mucous membrane of the mouth, diarrhea, ulceration of the stomach, and skin eruptions. Repeating this experiment with rats, with the addition of calcium carbonate (chalk), sodium chloride (common salt), and butter fat, made the diet "sufficiently complete to enable young rats to grow from weaning time to full adult size," the only defect being slight loss of hair.

Applying this evidence to humans, it proves that we may have various untoward physical symptoms from a dietary deficiency which is liable—and likely—to be overlooked or underestimated. In this instance, there was lack of protein, mineral salts, and butter fat, three essentials that are wanting in a diet composed entirely of seeds.

The dietary essentials for both humans and animals include protein, fat, carbohydrates (starch and sugar), and mineral salts, but recent investigations have shown that "accessory" food factors are necessary to supplement these in order to secure perfect nutrition, namely, the fat-soluble and water-soluble vitamines. The vitamines are still unidentified, but their presence has been demonstrated, as illustrated in the preceding summary. Furthermore, these investigations have shed a flood of light upon the cause and treatment of various formidable disorders, some of which have baffled the medical professions for generations—scurvy, rickets and neuritis, for example, and pellagra has been a scourge in Italy and southern Europe for two centuries. It is possible to maintain health only by a careful and critical study of the injurious effects of a restricted dietary, together with correct interpretations, regardless of preconceived notions, popular beliefs, or newspaper display.

For example, pigeons restricted to a diet of polished rice, and distilled water, will die in twenty-one days from polyneuritis, but when in the last stage of dissolution they are given a small portion of a watery extract of the polishings, they quickly revive—in the course of an hour they will be hopping around and apparently in normal con-

dition the following day. In this instance it is assumed that the rice polishings contain the water-soluble vitamine, the endosperm, the albuminous or nutritive substance being merely storage material, protein, starch, sugar, fats, and mineral salts, to provide for the early support of the embryo.

It would be well to recall the deficiency in the oat kernel without the addition of gelatin, because guinea-pigs restricted to a diet of milk and oats will die in six weeks (42 days). When dissolution seems imminent the addition of orange juice will relieve all the untoward symptoms, and the continued use of the orange juice will enable the animals to live and thrive. The factor responsible for this deficiency is still unsolved, but the most plausible theory points to failure of the oats protein to yield the necessary aminoacids—in other words, it is not complete.

Another dietary, limited to seeds (flaxseed and corn), which arrests growth, brings out still further complications, since it has been shown that the addition of mineral salts is quite sufficient to promote normal nutrition. This is a contradiction of McCollum's dictum, as follows: "There are but two types of food mixtures which give very satisfactory results in the nutrition of experimental animals. These are: (1) Combinations in which seeds, tubers, edible roots, and meats are either singly or collectively combined with suitable amounts of the leafy portion of the plant, and (2) combinations of seeds, tubers, roots, meats, and leaves, singly or collectively, with liberal amounts of milk. The leaf, aside from its skeletal tissues, is rich in cells and a large part of it is active protoplasm. There goes with this difference in function between the leaf and the storage organs (seeds) a corresponding difference in dietary properties."

Now, as a general proposition, this is true, but attention has just been directed to one exception, and still another must be noted, in the case where there was perceptibly no growth for three and a half months on a dietary limited to five seeds, namely, millet, corn, oats, wheat, and hemp. Here, also, the addition of mineral salts was promptly followed by normal growth—and it will be worth while in this connection to mention the popularity of a well-known mineral salt (*calcarea ostrearum*) as a factor in the treatment of all chronic diseases. Its scientific position and adaptability are demonstrated by these investigations—and for the very good reason that most of our adult population limit their dietary to seeds, tubers, roots, and meats, the employment of the leaf or milk being rare or occasional; hence, the efficiency of this mineral salt to recoup the deficiency in the protein molecule.

We find an apt illustration of McCollum's theory in the diet limited to corn, peas, and alfalfa, two seeds and one leaf, on which the fourth generation of rats were successfully weaned. Analysis of this dietary shows that it is well balanced to promote nutrition; it is rich in protein and mineral salts, due to the alfalfa and the peas, the corn being lacking in both these essentials, as shown in the following tabulation:

TABLE SHOWING MINERAL SALTS AND PROTEIN.

	Total Ash.	Calcium Per Cent.	Magnesium Per Cent.	Protein Per Cent.
Alfalfa	7.380	2.146	0.223	14.3
Corn (maize)....	1.450	0.009	0.136	8.4
Peas	2.900	0.023	0.034	24.6

Magnesium is included in the table for the reason that this mineral is closely related to calcium as an antacid, catalytic, and reconstructive, and to a certain extent interchangeable; but at the same time they are mutually antagonistic. Water or food containing magnesium in excess as compared with the calcium content, will derange the digestion, impair nutrition, and sooner or later lead to serious involvement of the nervous system. Moreover, this chemical deviation lessens resistance to infection, so that it is rare, indeed, to meet with any of the usual, or common ailments in which substitution is not the prominent, or even the paramount feature.

Some years ago the writer gleaned a valuable pointer from a successful dairyman regarding the *nutritive value of alfalfa hay*. He said he had completely reorganized his plans for feeding the cows because of the demonstrable virtues of alfalfa. Instead of feeding hay and grain he fed alfalfa alone, with the result that he escaped the usual expense for grain, his stock were maintained in better physical condition, the quality of the milk was improved and more uniform, while production was increased 30 per cent.

It is doubtful if corn and peas together would furnish a satisfactory diet for humans, even with the addition of a leaf, such as cold slaw, lettuce, asparagus, or spinach, owing to the mineral deficiency, but this may be overcome by combining with them other food materials carrying calcium and magnesium in the proper proportions. Thus, turnip-tops contain over fourteen times as much calcium as magnesium; whole milk, over nine times; butter, twenty-two times, while cheese contains over twenty-five times as much—and the personal likes and dislikes for these foods is usually a reliable guide in outlining the treatment in chronic ailments.

A diet limited to seeds is certain to produce carbohydrate dystrophy, a condition frequently, if not generally, seen in children, and practically universal in adults, the evidence being the rejections under the selective draft of more than two million men. Naturally, the question will be asked—Who is responsible for this unpromising outlook? Not the medical profession, special dietary instructions to the chronic invalid being regarded for the most part as harmless persiflage—and the public knows too much that is not so.

Defective nutrition, therefore, is not limited to the poor and the ignorant, but it is here that we find the most convincing proofs of the popular fallacies regarding a rational dietary. In the course of a paper, entitled, "Defective Nutrition and the Standard of Living" (*Survey*, March 20, 1918), F. A. Manny, of the New York Association for Improving the Condition of the Poor, presents some pertinent facts which bolster up, if they do not confirm, the experimental studies on animals. He says, "The growth of stunted children can be promoted with almost startling rapidity. The weight charts of the boys in truant schools,

for instance, show almost perpendicular advances as soon as a chance for normal growth is afforded." And he adds, also, "There is a limit to the powers of the food clinic and the dispensary," and "All these measures of relief are social makeshifts compared with the immense work of education and economic readjustment that lies ahead. . . . Unless we recognize that defective nutrition in childhood is only one aspect of poverty and only one aspect of ignorance, and shape our social program accordingly, food clinics and the remedial work of social agencies may only increase the number of children reared in families too poor or too neglectful to be safely entrusted with the reproduction of the race." Evidently, poverty needs an educational splint.

1024 Walnut Street.

PSYCHOANALYSIS.

By H. LAVESON, M.D.,

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Psychoanalysis is a method of psychotherapy based upon the principle that where there is present marked and persistent impediment in the life of the individual, whether it amounts to the blocking characteristic of nervous disorders or only to such obstruction of effectiveness as is represented in many so-called normal individuals, it is due to the existence in the psyche of unconscious, that is, repressed sexual effects, regressing toward an early infantile mode. The central point of this psychoanalytic principle is that in its basic postulate of repression as the causative factor in the neuroses, we have not to do with a pathological but with a biological principle, and that therefore psychoanalysis does not incriminate the nervous invalid alone, but along with him the whole social organism. It is an indictment not alone of our patients but of ourselves. It does not contrast the normal and the neurotic personality as unrelated genera, but sees unabashed the line of unbroken gradation between these types. The essential idea, then, of psychoanalysis is the personal analysis. It is not the analyis of our patients, it is the analysis of ourselves. If one has lacked the opportunity or the patience or the courage to face the personal analysis in all its rigor, he is unacquainted with psychoanalysis. He is lacking in the essential data. He is counting without his host. It is not, Freud said, the discovery and counting and tabulating of complexes that is the object of psychoanalysis, but the sole object of psychoanalysis is the overcoming of a patient's resistances. A resistance, then, may be described as a blind emotional bias, whereby we are permitted to see things according to preference rather than as the facts warrant. Abrogating the course of intelligence and truth, resistances allow us to blink the facts of life and indulge in pleasanter alternatives. If this, then, is resistance—if this is the obstacle which so crushes the spirit of the neurotic patient and causes him the pain and stagnation of interest characteristic of psychic disorders, it would appear to be the task of the psychoanalyst to liberate the mind of such patient from the incubus of his besetting morality. If fear morality is the stumbling block to the health of the nervous patient, and if fear morality is merely an altered spelling of resistances, the sole recourse of psychoanalysis then is to rid these invalids of their resistances.

Psychoanalysis is the most recent and advanced procedure for the treatment of the neuroses. Other psychotherapeutic methods deal only with the superficial manifestations of the neuroses and therefore cannot produce a fundamental cure. Psychoanalysis concerns itself primarily with the cause of symptoms, with the real underlying mechanism. It not only penetrates into the origin of symptoms, but the analysis at the same time is the treatment. It is a study of man's unconscious motives and desires as shown in various nervous disturbances and in certain manifestations of everyday life in normal individuals. It has been demonstrated that the manifold symptoms of the neuroses result from unfulfilled desires, often extending back to the earliest years of childhood. These desires not only influence the formation of character traits, but likewise are responsible for many forms of nervous illness.

Rightly understood and used, psychoanalysis may be compared to surgery, for psychoanalysis stands in the same relation to the personality as surgery does to the body, and they aim at parallel results. It is well recognized that in the last analysis nature is the real physician, the healer of wounds; but prior to the development of our modern asepsis and surgical technique the healing produced by nature was most often of a very faulty and imperfect type—hideous scars, distorted and crippled limbs, with functions impaired or incapacitated, resulted from the wounds, or else nature was unable to cope with the hurt and the injured one succumbed. Science has been steadily working for centuries so that healing could take place with the least possible loss of function or permanent injury to the individual. Marvelous results have rewarded these persistent efforts, as the brilliant achievements of surgery plainly indicate.

Meantime, however, little thought was given to the possibility of any scientific method being available to help man overcome the wounds and conflicts taking place in his soul; hurts which retarded his development and progress as a personality, and which frequently in the struggle resulted in physical pains and symptoms of the most varied character. That was left solely to religion and metaphysics. Now, however, the same assistance that surgery has given to the physical body psychoanalysis attempts to give to the personality. That it cannot always succeed is as much to he expected, and more, as that surgery does not always succeed, for the analytic work requires much of the individual. No real result can be attained if he has not already developed a certain quality of character and intelligence which makes it possible for him to submit himself to a facing of his naked soul and to the pain and suffering which this often entails. Here, as in no other relation in life, an absolute truth and absolute honesty are the only basis of action, since deception of any kind deceives no one but the individual himself and acts as a boomerang, defeating his own aims. Such deep searching and penetrating into the soul is not something to be undertaken lightly nor to be considered a trivial or simple matter, and the fact is that where a strong

compulsion is lacking, such as sickness or a situation too difficult to meet, much courage is required to undertake it.

In order to understand this psychology which is pervading all realms of thought and seems destined to be a new psychological-philosophical system for the understanding and practical advancement of human life, it will be necessary to go somewhat into detail regarding its development and present status. For in this new direction lies its greatest value and its greatest danger.

The beginning of this work was first published in 1895 in a book entitled "Studienüber Hysterie," and contained the joint investigations into hysteria of Dr. Breuer of Vienna and his pupil, Dr. Sigmund Freud. The results of their investigations seemed to show that the various symptoms grouped under the title of hysteria were the result of emotionally colored reminiscences which, all unknown to the conscious waking self, were really actively expressing themselves through the surrogate form of symptoms, and that these experiences, although forgotten by the patient, could be reproduced and the emotional content discharged.

Hypnosis was the means used to enable the physician to penetrate deeply into the forgotten memories, for it was found through hypnosis that these last incidents and circumstances were not really lost at all but only dropped from consciousness, and were capable of being revived when given the proper stimuli. The astonishing part about it was that with the revival of these memories and their accompanying painful and disturbing emotions, the symptoms disappeared. This led naturally to the conclusion that these symptoms were dependent upon some emotional disturbance or psychic trauma which had been inadequately expressed, and that in order to cure the patient one merely had to establish the connection between the memory and the emotions which properly belonged to it, letting the emotion work itself out through a reproduction of the forgotten scene.

Catharsis, another psychoanalytic method differing from suggestion treatment, has gained recognition during the last few years. The aim of treatment by suggestion is essentially an abolition of disordered ideas, the determination of their cause being considered of little importance. The method of catharsis, however, endeavors primarily to trace the disordered ideas to their source by means of psychoanalysis. The cathartic method presupposes that the patient is hypnotizable and rests on the extension of consciousness which appears in hypnosis. Freud set up as a goal the removal of the disease symptom and attained this by transferring the patient back to the mental state in which the symptom first appeared. Then there came to the hypnotized patient memories, thoughts, and impulses which had previously escaped consciousness, and if he communicated these mental processes under intense expressions of affect to the physician, the symptom was overcome and its return prevented. This apparently regularly recurring experience Freud explains by the fact that the symptoms stood in place of suppressed psychic processes which could not appear in consciousness. The therapeutic efficacy of this method he explained as a discharge of an affect dammed up, as it were, which had remained from the suppressed mental processes. This simple scheme of therapeutic attack was complicated nearly all the time, however, by the fact that not a single traumatic impression, but usually a complex series of such impressions, shared in the origin of the symptom. The chief characteristic of the cathartic method which puts it in contrast to all other methods of psychoanalysis, lies in the fact that in this procedure the therapeutic efficiency does not depend on a suggestive command of the physician. It anticipates rather that the symptoms will disappear if the attempt, which appeals to certain presuppositions concerning the mental mechanism, succeeds in bringing the mental processes into different channels from those they have previously followed in the formation of symptoms.

An entirely sufficient substitute for the cathartic method Freud found in the associations of the patient, that is, in the involuntary thoughts which are mostly perceived as disturbing ones and therefore under ordinary circumstances disregarded; these involuntarily press to the psychic surface in the recital of the patient to the physician and betray the disease complex. He allows the patient himself to determine the theme of the daily work and by this means proceeds from the complex which is present in the foreground of the patient's mind (free association). Thus one receives all kinds of material which belongs to a solution of the symptom, broken into fragments, interwoven in different connections, and distributed over widely separated periods of time; but in spite of this apparent disadvantage the new technique far surpasses the old. In order to strengthen these associations, Freud uses the following outside means of assistance: He has the patient recline comfortably on a couch while he sits on a chair behind and out of his line of vision. He does not insist upon the eyes being closed and avoids any touch as well as every other procedure which might lead to hypnosis. Such a seance goes along like a conversation between two similarly awake persons of whom one is relieved of every muscular tension and every distracting sense impression which might disturb the concentration of the attention upon his own mental affairs. Before he proceeds to details, he urges them often for several sessions to sketch a general picture of their whole illness and most intimate family and life surroundings, to tell him everything which comes into their heads, whether they think it important, irrelevant, or nonsensical. With special emphasis it is asked of them that no thought or association be omitted from the communication because this telling might be shameful or painful.

An experiment which does not require any instruments at all and promises to become of steadily growing importance is "word association." The patient is given perhaps a hundred words, and let him speak the very first word which comes to his mind when he hears the given ones. You call rose, and he may say red or flower or lily or thorn; you call frog and he may answer pond or turtle or green or jump, and if the hundred words are chosen with psychological insight, his hundred answers will allow a full view of his mental make-up. That is not seldom efficient to secure the diagnosis of complex mental variations. The method yields still more if the time for such a reply is measured by

a stop-watch which gives the fifth of a second and is fully sufficient for all practical purposes. From such simple facts of the mental inventory the association experiment may lead to complex questions which slowly may disentangle the confused ideas, for instance, of a dementia præcox, and thus lead to subtle differential diagnosis.

Mention must be made here of the fact that Freud believes dreams to have a certain influence upon the production of functional nervous disorders. For this reason he endeavors by means of psychoanalysis to recall to memory the dream experience which has been dislodged into co-consciousness and to incite the patient to free expression of words. The dream presents itself as a rule as an incomprehensible composition of certain elements which are not in the first instance conscious, but which are later recognized by the process of free association. We may regard the dream as a product that comes from a subconscious origin. The technical unfolding of these unconscious sources is a mode of procedure that has always been instinctively employed.

Many of the dreams of children are manifestly wish-fulfillments. This is also true of many dreams of adults. A child that was sent hungry to bed was heard to murmur in its sleep the names of its favorite dishes. A male patient of mine who lost a very lucrative position seven years ago dreamed recently, the night before he quit a very poor job, that he was back with his old firm and everybody was very glad to see him. Another patient of mine who was robbed by his partners of a contract proving his copartnership dreamed that he found the contract and was reading it with a great deal of pleasure. There are a great many dreams in which the wish-fulfillment is not so obvious but can be easily discovered if one knows all the circumstances preceding the dream. For example, an unhappily married woman dreams that she is again doing bookkeeping for the firm for which she worked before her marriage. A widow who is barred from remarriage because she is burdened with a child, dreams that the child dies of diphtheria. A very tired school-teacher dreams one morning that he is in his classroom giving a lesson. Such anticipating dreams and consolation dreams are very common. Dreams in which a person satisfies some bodily need or which imply that he is free from some malady are obvious wish-fulfillments and promoters of sleep. Thus a thirsty man dreams that he is at a banquet where champagne is dispensed in abundance; a professional acrobat troubled with a boil on his neck dreams that he is performing as usual, etc. Many sexual dreams are so thinly disguised that there can be no doubt as to their meaning, *e.g.* the dream of the man running up the street. If so many dreams easily permit themselves to be interpreted as wish-fulfillments, why may we not assume that wishes are the motive power of all dreams? And if in so many dreams the wish, especially a sexual wish, is represented in a symbolic way, why may we not assume that other dreams too may be the symbolic utterances of the unconscious? At any rate, it is perfectly permissible to put these dreams to the test, and if after such an examination the dreams reveal allusions or references to significant matters or desires in the dreamer's soul and permit an intelligible or meaningful synthesis, there can be no objection to regarding the dreams as the symbolic fulfillment of these desires. If the psychoanalyst's investigations prove, or create the probability, that all other psychic phenomena hitherto regarded as obscure, meaningless, and causeless, *e.g.* neurotic symptoms, certain lapses, reveries, hypnagogic, and hypnopompic hallucinations, spontaneous thoughts, certain forgettings, etc., are definitely determined, *i.e.* are the results of ascertainable unconscious motives, why may he not tentatively assume that dreams too are so determined and may be interpreted by the method he applies to these other phenomena? The free association method, carefully carried out, has proved in thousands of instances that almost all dreams of adults have a latent content and are the disguised and imaginary fulfillment of repressed wishes. The fact, which has been experimentally proved, that hypnotized subjects, ordered to dream of certain matters, do so in a disguised and symbolic manner, also proves that dreams may have a latent content which can be interpreted if one has the key to the dreamer's soul.

Symbolism is a term used in psychoanalysis to express the manner of unconscious thinking in a form in which it would be unrecognized by consciousness. A dream is often symbolic so is often a nervous symptom, when it is an expression of hidden and forbidden wishes repressed in the unconscious. Nervous symptoms are masks behind which a person takes refuge. The symbol is either chosen from the mental content of the individual or it may have a racial or a social basis. In unconscious thinking, the symbols are often used to express sexual concepts which for moral or ethical purposes cannot be expressed literally. The sexual symbols of neurotic patients are therefore efforts to escape from their attachment to the more grossly sexual. Symbols are not invented, they are only discovered. The symbol is not an arbitrary choice, but has its source in the unconscious either of the individual or of the race. Hence the close resemblance between dreams and myths, since the myth is the unconscious symbolic expression of the race and the dream the unconscious symbol of the individual. Symbolism has its origin in the remotest ages of the past. The symbolism of dreams draws its material from this remote ancestry, showing how often the dream is merely a fragment of the mental life of our prehistoric ancestors.

Criticism on Psychoanalysis.—Special objections to psychoanalysis may be raised. With a certain amount of justice it may be said this branch of therapeutics has not yet earned its right to recognition. It may be said that medicinal therapeutics, surgery, all physical means of treatment act by material effects which may be seen, felt, or recognized in some other way. It may be argued that the basis of the psychoanalytic work still is insecure, while the surgeon who removes a malignant growth, opens an abscess, sews up a wound, or ties a bleeding artery is acting in accordance with the requirement of exact science; and the physician who combats an infectious disease by means of the corresponding antitoxin, who reduces fever by a withdrawal of heat, who makes use of quinine in the treatment of malaria, etc., is sustained by medical and physical laws, or, at any rate by practical

experience. It may be contended that in psychoanalysis the material, the physical basis is wanting; that it appeals essentially to the idea, to the power of imagination, to belief; that it makes use of no other method than that of declaration; that it is comprehensible how the medicaments of the physician or the knife of the surgeon produce curative physical changes, but it seems entirely incomprehensible that bodily disorders which have defied other methods of treatment can be influenced by psychoanalysis, by a simple declaration.

Psychoanalysis when employed by the incompetent becomes a curse instead of a blessing. Just as the surgeon must first learn all about the operations which he is to perform and as the physician must know the toxic action of all drugs which he employs, so must the psychoanalyst be well informed as to the numerous precautions which the practice of his branch entails. Every specialist at least must have such knowledge of his special branch as will enable him to make correct diagnoses and to institute proper treatment in extraordinary cases, and to do that with greater precision and certainty than can be expected of the general practitioner. What would be thought of a surgeon who is not thoroughly versed in topographical anatomy, or who is not master of the operative technique? What of the clinician who cannot differentiate a bronchial from a cardiac asthma? Similarly the psychoanalyst has missed his vocation if he is not the possessor, in addition to a good general medical education, of special knowledge of the psychophysiological laws, of the functions of the mind and the nervous system and their reciprocal relations under physiological as well as pathological conditions.

Special precautions are required in the use of hypnotism. Incorrect employment of it may bring about permanent harm. Through hypnotism the impressionability for suggestive influence becomes increased. The person in that state, consequently subordinates his will to that of the hypnotist more readily than during the working state. Hysterics who have been frequently hypnotized acquire an augmented suggestibility, not only in their relations to the hypnotist but to every one else, so that even in the ordinary occurrences of everyday life their thoughts, feelings, and actions may be swayed easily. Such subordination of the will must be prevented under all circumstances, for the only justifiable object of suggestion and hypnosis must be to effect a cure. Once that object is ignored all dangers incident to psychoanalysis will surely arise. The personality of the physician exerts an extraordinary influence on the efficiency of therapeutic procedures. Certain qualities must be possessed by the psychoanalyst which are not necessary for the practice of other branches of medicine. Above all, the practice of psychoanalysis requires special preparation. Absolute essentials are a theoretic knowledge of neurology and psychology, a practical knowledge of the general clinical and anatomical peculiarities, and a special knowledge of all the details of functional disorders and functional symptoms. Only the trained neurologist and the psychiatrist, therefore, are qualified to practice psychoanalysis.

In psychoanalysis everything depends on a proper understanding between physician and patient. The physician must be able to follow the train of thought and the emotions of children and adults, of the cultured and uncultured, of the rich and the poor. If their ways of thinking and feeling be strange to him, how can he gain the confidence of his patients, or elicit the frequently abstruse history of their disease or give them proper instructions? To secure the acceptance of this word, to effect receptive adoption of his suggestions by patients of the most varied degrees of education and refinement, the psychoanalyst, more than other physicians, must possess a high degree of knowledge of human character and a vast experience of life.

Nervous, excitable persons are particularly unadapted as psychoanalysts, for the ability to concentrate his thoughts is necessary not only for the patient who is to be influenced, but also for the physician who desires his suggestion to be adopted. He who wavers and doubts his own capabilities, he who does not himself believe in the effectiveness of psychic treatment will never gain the confidence of his patients. The psychoanalyst who is the fortunate possessor of natural and acquired qualifications cannot fail to cull the fruits of conscientious endeavor.

Application of Psychoanalysis.—We might begin this large group of the constitutional disturbances with that neurasthenia which develops on the basis of inherited disability. Lack of energy resulting from a feeling of tiredness, a quick exhaustion, a mood of depression, an easy irritation, even despair and self-accusation, sullenness and fits of anger, "cranky" inclinations, and useless brooding over problems, headache and insomnia characterize the picture which everyone finds more or less developed in some of his acquaintances. If we classify symptoms, we may separate from it that which we nowadays are inclined to call psychasthenia. An abnormal suggestibility for auto-suggestions stands in the foreground. Fixed ideas and fixed emotions, especially fears, trouble the patient. He may pick up his obsession by any chance experience and no good will liberates him from the intrusion perhaps for years. The patient is perfectly well aware that his ideas and his emotions are unjustified, he himself does not believe in them, and yet they come with the strength of an outer perception and with the vividness of a real attitude, and his whole mental equilibrium may be upset by the continuous fight against these involuntary influences. In the light cases, sometimes the one and sometimes the other auto-suggestions may hold the stage; in the severe cases, mental life turns more and more around certain definite fears and yet it may all still be in the limits where the daily work can go on, and the world may not know of the hidden tortures. Here belongs the fear of open places or the fear of touching certain objects, the fear of doing harm to others or the fear of deciding actions wrongly, the fear of destroying valuable things or the fear of being the center of public attention, the fear of crowds or of closed doors, of altitudes or of bridges. And in all cases emotional reaction may set in with anxieties, and bodily symptoms, such as palpitation of the heart, may result, whenever an effort is made to disregard the nervous fear. There is perhaps no group of patients who so much de-

serve the most careful efforts of the psychoanalyst. Still more than the hysterics, they suffer from the fate of seeing their ills counted as not real. For them everybody has the good advice that they ought to overcome their fancies; and yet they feel their life ruined with their endless fight against the overpowering enemy. And if anywhere, it is here that the psychoanalyst is successful. Psychasthenic fear can be removed, while the developed melancholic depression, for instance, is entirely beyond the reach of practical influence.

We have after all the same psychasthenic state before us when the obsession has impulsive character, from the mere abnormal impulse of lying, or making a noise in a quiet place, or crying in the dark, or touching certain places, to that of stealing, indecent speech, arson, and perhaps even murdered. The symptoms might easily be mistaken for those of graver diseases. Yet the fact that the patient himself really does not will the effect at which he is aiming separates, mostly without difficulty, the diagnosis of psychasthemia from that of insanity. Quite nearly related to it are the manifold variations of abnormal and perverse sexual tendencies. The psychiatrists are perhaps too much inclined to bring all these pathological impulses and desires, fear, and anxieties, into the nearest neighborhood to real insanity. The indisputable success of psychoanalysis in these spheres ought to add a warning against these expansions of the strictly psychiatric domain. The psychologist will be more inclined to emphasize their relation to simple neurasthenia which itself imperceptibly shades over into our normal life.

All neurasthenic and psychasthenic disabilities show a certain emotional continuity and uniformity. It is the emotional instability, and the quick alternation of symptoms which characterize hysteria, or rather the hysterias. It seems as if science were near to the point of explaining the hysterical disease by one common principle, but certainly the symptoms are an inexhaustible manifold. The rapid changes of the intense moods of the patient usually stand in the center. Torturing obsessions, abnormal impulses, oversuggestibility, hypochondriac depression, paralysis of arms or legs, anesthesia and paresthesia, a mental stupor and confusion, illusions, and perceptions of physiological symptoms may work together in spite of his, or rather her clear intelligence. It is probably on an hysteric basis also that somnambulic states arise during the night, and from them a straight way leads to those mental attacks after which the memory is entirely lost, or for which fundamental associative connections are cut off. And from here we come to the exceptional cases of alternating personality. The more we recognize the myriad symptoms in the hysteric patient as products of the emotional instability of autosuggestibility and of inhibition, the more we understand the almost miraculous result of psychoanalytic treatment. Autosuggestions can be fought by counter-suggestions, anesthesia and paresthesia can be removed often in an instant, dissociated personalities may be built up again through hypnotism, the most severe bodily symptoms may disappear by influences in a waking state. Hysteria alone would justify the demand that every physician in his student days pass with open eyes through the field of psychology. Quite near stand chorea and the epidemic impulses to initiative movements. And we might bring into this neighborhood also the disturbance in the equilibrium of the speech movements through all degrees of stammering and severe impairment. Up to a certain degree, though not often completely, they too yield easily to psychoanalytic influence.

We enter now that region of constitutional disturbances in which psychoanalysis is of small help. It leads from epilepsy to the periodic diseases, especially the maniacal depressive insanity, the paranoia which develops late, and finally to states of idiocy which cover the whole life. We are far from claiming that psychic influences are entirely powerless, the more as we insisted that psychoanalysis goes much beyond mere suggestions and appeals. No psychiatrist will work without psychological tools when he deals with the exultations of the maniac and the depressions of the melancholic, with the hallucinations of persecution or the erotic insanities of the paranoiac. Still more the whole register of psychology has to be used, when we are to educate the idiot and the imbecile. But the disappearance of the disease or of the chief symptoms through the mental agencies is in all these cases out of the question. Only in incipient cases, especially of melancholia and mania, the psychoanalytic work seems not entirely hopeless.

We have reviewed the whole field of psychophysical disturbances, those produced through external conditions in the normal brain and those resulting from abnormal brain constitution. We have seen that the work of the psychoanalyst is of very unequal value in different parts of the field; in some, as in neurasthenia, in psychasthenia, in hysteria and similar regions, most effective, in others, like paresis or paranoia, reduced to an almost insignificant factor. Where it can help and where not we recognize as a mere question of experience. Certainly the severity of the symptoms alone does not decide it. As the treatment is entirely empirical, no one can foresee whether or not the situation may change tomorrow. We may find psychoanalytic schemes by which maniacal depressive insanity or traumatic neuroses may become accessible. We simply do not know why we may remove stammering or synthesize a dissociated personality or overcome an inborn sexual perversity, while we are unable to remove the depression of the melancholic. Certainly the symptoms of the circulatory insanity disappear completely in the free intervals; there is no reason to give up hope that psychoanalysis might find the way to hasten the appearance of such a normal period.

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MYCOTIC OTITIS.*

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Mycotic infection of the ear, although well known, is not of very frequent occurrence. This communication has therefore not the pretension of

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adding anything new to the subject, but by a few details and considerations, may possibly be of interest to those who have not observed similar cases. The possibility of mistaking them, when accompanied by perforation of the drum, for a suppurative otitis of microbial origin, renders the study of these cases interesting and shows how useful it is to know how to detect them early for the good of the patient, their cure being obtained easily in the majority of cases and in a short time.

A young woman, 27 years old, in her seventh month of pregnancy, with cicatrized pulmonary lesions of tuberculous origin, according to her physician, consulted me, after having been treated by the latter during a few days for eczema of the right external auditory canal. She informed me that she had suffered from violent pains in the right ear a few days previously, which had diminished since, and that she still experienced a feeling of uneasiness, with tinnitus, itching, and deafness.

Inspection revealed a canal full of whitish or greyish masses, which I took for macerated epithelial débris and which I removed with the syringe. The internal aspect of the canal and the drum membrane were red, the latter perforated in its antero-inferior segment. Catheterization of the Eustachian tube blew out secretions from the middle ear, and I diagnosed the case as one of acute perforative purulent otitis media dextra which explained the previous violent pains, pains in all probability relieved by the perforation. I treated the patient during thirteen days by catheterization, syringing of the external auditory canal, and instillations of alcohol and peroxide. The perforation closed, the drum membrane and canal became normal, and the hearing returned.

Three weeks later the patient appeared again complaining of uneasiness and itching. Inspection again revealed masses of débris which I again took for desquamated and macerated epidermis. After a washing out the symptoms at once disappeared. There was no perforation. She returned again fifteen days later suffering from atrocious pains. Inspection revealed the same conditions as on the two previous occasions. After syringing, the drum membrane presented a peculiar aspect. There was no perforation, but on a very red background could be seen four little white dots as big as an ordinary pin head surrounded each by a whitish halo; the canal near the drum presented the same aspect, and on its anterior wall was a small furuncle which slight pressure with a cotton swab evacuated. In the pretympanic recess there was a slight yellowish secretion which a smear showed under the microscope to be made up of abundant polynuclears and containing diplococci. After cleaning and drying the canal and drum membrane, I insufflated a little lacteol powder and asked the patient to return the next day. The same treatment was repeated. The day after this the situation became interesting. On inspection I saw the white lacteol background besprinkled as with powdered coffee or snuff. I immediately thought of an animal or vegetable parasite, of eggs or spores.

Under the microscope this brown or black powder proved to be spores in the form of discs absolutely round with regularly crenelated edge, smaller than red blood cells. They resembled small pinion wheels. Their surfaces were excavated in the center, cup-like. These spores had therefore grown in the space of twenty-four hours. Fearing they might be impurities contained in the lacteol powder, I examined the latter product under the microscope, but did not discover therein the slightest trace of spores or mycelium. I touched the drum membrane and the whole surface of the auditory canal with alcohol, 90 per cent., and the next day the membrane and canal were found to be normal. I asked the patient to return in a few days and to resort to no treatment in the interval. As I was sure the trouble would return, I procured a few tubes of peptonated glucosated gelose of Sabouraud and, a few days later I made a culture from the patient's ear and obtained a beautiful growth of black spores resembling snuff on a greyish base constituted by the mycelium. I removed from the auditory canal a few greyish masses which I had taken previously for macerated and desquamated epithelium, crushed them between two cover glasses, and the microscope showed them to be intricate meshes of mycelium containing spores.

The cultures on Sabouraud's medium developed very rapidly. In forty-eight hours there was already a growth of mycelium surmounted by black spores.

Examination showed the growth to be typical *Aspergillus niger*, which, of all inferior moulds, is the one which develops most frequently in the external auditory canal. That rapid growth of spores is most remarkable and contrasts with the development of other black spores, which become brown or black only after a certain number of days, such as the spores of *Sporotrichum beurmanni*, which at first of coffee and milk color, become chocolate brown, and finally black. Moreover, they are ovoid or piriform, whereas the spores of *Aspergillus niger* are round and black at once. In chalarosis the colonies are at first pinkish and little by little become brownish.

An interesting point in this case is the previous pulmonary tuberculosis, now cured. We know today[2] from the researches of Rullmann, of Di Donna, of Petruschsky, of Bory and H. Roger, of Aoyama and Miyamoto, of Norris and Larkin, et al., that cases of pulmonary mycoses exist which simulate tuberculosis and that examination of the sputum shows acid-fast bacillary forms simulating the bacilli of Koch. On the other hand, the bacilli of Koch frequently take on mycotic forms, as shown by the researches of Pétrone, of Metchnikoff, of Czaplenski, of Fischel, of Coppen Jones, of Babès and Levaditti, of Fromme and of Sanfelice, and to such an extent that quite a number of authors think that the tubercle bacillus should be classed, not with the bacteria, but with the moulds. At any rate, these considerations allow me to entertain a doubt as to the tuberculous nature of the previous pulmonary affection of my patient, now cured, and this aspergillous mycosis of her ear tends to justify this doubt with the thought that the patient in question is particularly sensitive to mycotic affections.

The comparison of bacterial and mycotic affections from the double viewpoint of pathological anatomy and symptomatology is quite interesting. In the present case there were inflammation, suppuration, and destruction with the subjective symptoms of pain, tinnitus, and deafness resembling a bacterial suppurative otitis. It is therefore evident that analogous lesions due either to bacteria or moulds have very analogous consequences when they have the same localizations. This analogy has become even more interesting and evident since the discoveries of Charrin and Ostrowsky, of Roger and Concetti, of Auclair, of Ceni and Besta, of Bodin, Gautier, and Lenormand, of Gougerot and Blanchetière, have shown that moulds of different kinds (*Oidium albicans*, *Actinomyces*, *Aspergillus fumigatus* and *flavescens*, *Sporotrichum*) contain toxic substances which, when injected into animals, produce inflammatory phenomena. Plato, Mario Truffi, Bruno Bloch, Pautrier and Luthembacher, Beurmann and Gougerot obtained with them on patients local and general specific reactions, and Widal and Abrami have been able to make the serodiagnosis and the fixation reaction on patients infected with sporotrichosis.

According to Bodin[3], the lesions produced by mycoses are the following: The elements of moulds which develop in the tissues produce a mechanical alteration, a sort of dissociation of the elements of those tissues, and around the parasite a cellular reaction takes place in the form of an infiltration of various leucocytes in the derma and hypertrophy of the fixed elements, vascular dilatation and manifest endothelial alterations. All these phenomena, which are the result of a cutaneous defensive reaction in the presence of the parasites, constitute the simplest degree of mycotic lesions. With certain moulds the reaction is more intense and more acute, the reactional type is distinctly inflammatory, with abundant polynucleosis ending in the formation of purulent collections. Trichophytosis with deep dermatitis and suppurative folliculitis is one example. The case of my patient with suppuration and perforation of the drum is perhaps another one, in spite of the fact that in the pus were found a few diplococci which took the methylene-blue stain.

We are now acquainted with the cases of suppurative dacryocystitis (Nedden), of purulent conjunctivitis (Fullerton and Jones), of tonsillar abscess (Roger and Bory), caused by moulds. These pathogenic moulds, according to Bodin, therefore often deserve to be placed on the list of pyogenic germs.

As to the treatment, rectified alcohol gave in this case the marvellous result which Hassenstein and Küchenmeister obtained with it in similar cases, as reported by Politzer in his book.

It suffices to allow the alcohol to remain in the ear for fifteen minutes in order to find the next day the drum membrane and external auditory canal completely decongested and to cause the sensation of uneasiness and of itching to disappear. This treatment was repeated twice daily for a few days, and then once a month for a few months to prevent a relapse. It might be well to add to the alcohol a minute quantity of nitrate of silver, for in infinitesimal doses (1 to 1,600,000), it prevents the development of the spores of *Aspergillus niger* in the medium of Raulin, which is so favorable to the culture of the plant. Raulin has even observed that the spores do not germinate in his medium when contained in a silver vase, even though chemical analysis, however delicate, cannot reveal the slightest trace of silver in the medium (Bodin).

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Chinese Red Cross.—The Chinese Red Cross is to-day an organization with 25,000 members, whose interest in world relief work is evidenced by the entrance of the society into the League of Red Cross Societies. The Chinese have been much impressed with the work of the American Red Cross both during and after the war, and China now desires to take her place beside the other nations of the world in the work of relieving human suffering.

THE PHYSICS OF PERCUSSION.

By ALBERT ABRAMS, A.M., M.D., LL.D.,
SAN FRANCISCO, CAL.

In a recent communication, "*L'orientation des animaux et les influences magnetiques*" by Regnault before the Society of Comparative Pathology (Séance of July 8, 1919), the following observation was made: "My studies on orientation have been controlled by the observations of Abrams."

"To obtain the best results, subjects must stand on a grounded plate and colors and intense light must be avoided. Under these conditions my investigations with colleagues at Vichy, Granville, and Toulon show the following: When the heart area was defined by percussion (patient facing west) then percussed again the patient facing east, north, and south, the area of dulness was notably diminished in the latter positions. The liver border in the right parasternal line diminished 2 to 4 cm., and the upper heart border was lowered from 8 to 10 mm. when the subject was turned from the position "face to the west" to the position "face to the north." We proved Abrams' studies which show that the visceral reflexes[1] attain their maximum reaction from electronic energy[2] when the subject faces west." The writer[3] has expressed himself as follows: "Tone is an essential attribute of all living organisms and relaxation is its antithesis. The nerve centers are in a condition of tonic excitation from which impulses pass to the viscera maintaining them in a state of tonic stimulation. Every living being transforms energy from the universe. The ideal man is a perfect transformer and 'Life is a continuous adjustment to the environment' (Spencer). The attraction of man by the sun and the mechanical energy imparted to him by the sun, rotation of the earth, atmospheric pressure, and the electric potential at billions of volts all influence the microcosm by the macrocosm—the world machine."

The writer has shown that the magnetic elements influence visceral tonicity and that the output of energy varies in relation to the posture of the individual because the intake of energy is similarly influenced. The organs are in a varying state of tonicity and the tone may be normal (orthotonic), increased (hypertonic), diminished (hypotonic), or absent (atonic). *A relaxed organ will yield a smaller area of dulness than an organ which is in a state of tone.*

To reproduce accurately the area occupied by an organ it must possess tone, otherwise topographic percussion is unreliable. It is easy for the physician to show that the borders of the heart will vary according to the posture of the patient on whom percussion is executed. It will be found that the area of the heart or for that matter any viscus will be greater when the patient faces the geographic west than when he faces the other points of the compass. Note that, when the patient stands in the *magnetic meridian*, supreme tonicity is conferred on the viscera. The latter maneuver is equivalent to organismal induction from cosmic energy. The writer wishes to emphasize an important fact in the technique of sphygmomanometry (like percussion) viz., the necessity of taking pressure in a definite position.

Any physician can easily prove that variations (however slight) do occur and they are most manifest when the patient faces the geographic north when the time pressure is taken. Vital phenomena are dynamic and organismal action is a process, not a structure. All problems dealing with the physiology of man not in accord with the progress made in physical science are doomed to perish.

In the writer's book,[3] the electrophysiologic structure of man is shown with the hands and feet as polar termini. With an apparatus constructed by the writer (electroradiometer[4]) it can be definitely shown that the polarity of the hands and feet of a normal male is positive on the right and negative on the left side; this polarity is reversed in the normal female.

Let the reader forget for a moment that the latter observation is correct and try the following: Percuss the area of the heart with the patient facing the geographical west. Instruct the patient to bring both feet in apposition. (Note that the area of the heart is diminished.) Instruct the patient to approximate his finger tips in addition to his feet, and note that in many instances the area of cardiac dullness on light percussion is practically annihilated.* Note furthermore that, the moment the feet of the patient are approximated, there is a momentary inhibition of the pulse. Also observe the following: (1) Deep percussion shows cardiac dilatation; (2) Transitory mydriasis; (3) Augmented visual and auditory acuity (slight); (4) Slight collapse of small veins; (5) Heart tones less loud; (6) Increased dilatation of aneurysms. Any metal uniting the cerebral hemispheres will produce like effects.

If arms are fully extended from body and feet separated (patient facing west) greater tonicity is conferred on the viscera, viz., (1) Heart tones stronger; (2) Heart and liver borders recede (2 cm.) and the lower lung border about 3 cm.; (3) Venules enlarge. Non-recognition of the foregoing heretofore unrecognized data will greatly influence the findings of the clinician and roentgenologist.

Periodical attacks of cardiac dyspnea may be due to short-circuting.

We have ignored environmental energy in controlling the nervous system—influence of light on the retinal receptors, sound (cochlear ending), gaseous substances (olfactory cells), temperature changes, etc. In brief the human mechanism owes its maintenance to the action of many external forces. By aid of the author's apparatus (oscillophore), it can be finally and definitely shown that the energy emanating from the body is magnetic.

When the feet and hands are approximated the maneuver may be likened (in the animal machine) to a short circuit in a dynamo which discharges the current within the machine thus causing its deterioration and minimizing its energy output.

Let percussion of the heart teach us another lesson in the physics of the human organism. The "reflexes of Abrams" demonstrate that the earth is the negative terminal of nature's energy. That, when the electrical tensions between the body and earth become equalized the maximum tonicity is conferred on the viscera.

Ground each leg of patient by means of a wire to a faucet or radiator and note that the intensity of cardiac dulness is greater after than before grounding.* Note also the effect when patient approximates his feet and hands and note furthermore, that the maximum intensity of cardiac dulness is attained when the patient is grounded and stands in the magnetic meridian.

The writer has utilized therapeutically the latter data[5] for the purpose of minimizing the expenditure of nervous energy in neurasthenia.

A maximum amount of energy may be conferred on the viscera by aid of the writer's oscilloclast.[4] It will be noted by the investigator that when the fingers and feet of the patient are approximated owing to the removal of vagus tone, the lower lung border will descend several centimeters. The "lung reflex of dilatation" thus induced will render areas of lung consolidation less evident.

To aid topographic percussion, the methods of transsonance[6] and suppression of the vibrations of the sternum[6] will prove of great value.

A recent method of "threshold percussion" first utilized by the writer is of undoubted value in defining the areas of visceral dulness and the areas of diminished resonance elicited by the electronic reactions. In lieu of the conventional method of finger-finger percussion (percussion on a single finger), the index and middle fingers are crossed and percussion is executed on the terminal phalanx of either the superimposed index or middle finger. The clinician can readily convince himself of the superiority of this latter modified method of percussion.

*Those executing the "electronic reactions of Abrams" should bear the fact in mind that approximation of the feet and hands (of patient, subject, or both) will prevent the electronic reactions.

*In the writer's research laboratory, the patient stands on two plates of aluminum which are grounded.

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2135 SACRAMENTO STREET.

REMOVAL OF A VERTEBRA OF A CHICKEN FROM THE ESOPHAGUS.

BY JOSEPH EASTMAN SHEEHAN, M.D.,

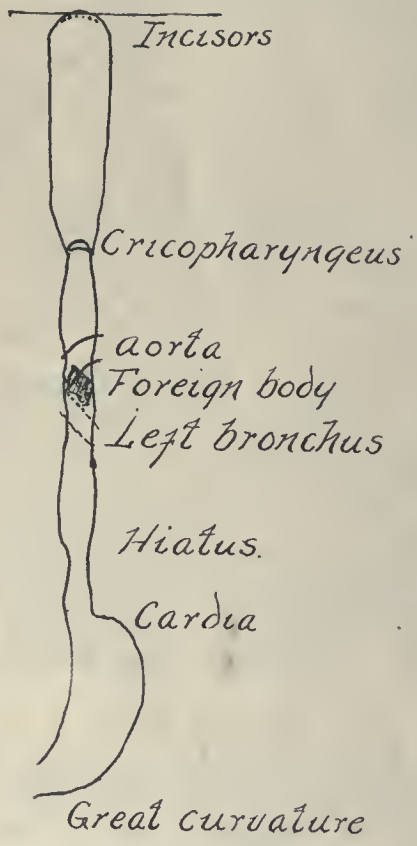
NEW YORK.

ON December 2, 1919, I examined Max L., age 64 years, at the Post-Graduate Hospital. He stated that several nights previous, while at a reception dinner given in his honor, he suddenly swallowed a large piece of the neck of a chicken. This was followed by pain and inability to swallow food or water. The pain gradually became worse and localized itself in the midsternal region. The pain and inability to swallow food or water caused great suffering.

A fluoroscopic examination was made by Dr. Meyer and an obstruction to the esophagus was noted at about the second constriction of the tube, the object being about one-half inch in diameter and almost cylindrical in shape. The nature of the foreign body was not demonstrated on the plates.

An esophagoscopy was performed by me under cocaine anesthesia. I immediately came down upon the foreign body, which was situated between the second and third constrictions of the esophagus, that is, the area where the esophagus is crossed above by the aorta and below by the left bronchus. This location is shown in the accompanying diagram, after Jackson. The esophageal wall above the obstruction was lacerated, somewhat gangrenous, and there was a foul putrefying odor present.

I grasped the foreign body and with a very gentle side movement with upward traction I finally freed it from its bed and successfully extracted it. It proved



to be a vertebra of a chicken. The area where the foreign body was imbedded was deeply ulcerated, gangrenous, and there was a nauseating odor. This area was gently probed and showed that the muscular coat of the esophageal wall had been attacked. The whole ulcerated area was freely mopped with a freshly prepared 25 per cent. argyrol solution.

In these ulcerated conditions of the esophagus I generally insert an Einhorn duodenal feeding tube and the patient is fed through it. But as a tube was not at hand, rectal feedings were started and the following preparation was given by mouth three times daily dissolved in water:

Argyrol crystals	0.6
Bismuth subnitrate	2.0
Magnesia usta	0.6

At the end of the third and sixth days esophagoscopy was again performed and the ulcerations were treated by direct applications. After ten days the patient left the hospital none the worse for his very trying experience.

The main reason for reporting this case is to show the great necessity of performing an early esophagoscopy in all cases with the history of swallowing a foreign body. The danger of complications of extensive gangrenous ulceration, resultant fibrosis, and perforation of the esophagus is thereby greatly reduced.

24 East Forty-eighth Street.

Medicolegal Notes.

Effect of Blow While Working Under Extreme Heat.—A city employee, engaged in assisting in loading with a shovel slag upon a wagon, received a slight blow in the neck in the course of his employment, from the end of a shovel handle in the hands of a teamster who was leveling the slag thrown upon the wagon, either by the employee walking against it or by the teamster pulling it back in the course of his work. It was not such a blow or contact as to cause any abrasion or make any mark or bruise upon the skin. Immediately after, however, the employee became sick; was given some assistance by his fellow workmen; was later, during the same afternoon, taken to a physician's office. On the following morning paralysis had developed so as to be, as stated by the doctor, complete. The employee claimed compensation under the Utah Workmen's Compensation Act. The question was whether the evidence supported a finding of the Industrial Commission that the injury resulted from an accident received while in the course of the employment. The conclusion of the commission was: "In view of the extreme hot weather, age of the applicant, and the obvious susceptibility of applicant to suffer a paralytic stroke at the time of the accident, the fact that no evidence of sickness or distress was apparent immediately before the blow, that a strange feeling, sickness, and a paralytic stroke developed in usual time immediately following the blow, it is reasonable to conclude that the blow from the shovel, received accidentally and arising out of and in the course of his employment by the defendant corporation, was the proximate cause of the disability suffered by applicant, and an award of compensation should be made accordingly." It was conceded that if the award could be supported such support must be found in the testimony of the attending physician, as his was the only testimony that connected the paralysis with the accident. This testimony, set out in the court's opinion, was to the effect that the applicant, from tests afterwards made, apparently had a high blood-pressure at the time of the accident, augmented by his working under a terrific heat and the injury was started by his being struck in the neck. The court sustained the award.—Murray City v. Industrial Commission, Utah Supreme Court, 183 Pac. 331.

Harrison Narcotic Act—Intent in Selling Morphine Sulphate.—Under an indictment for violation of the Harrison Narcotic Act, by selling morphine sulphate without the prescribed orders, and by buying it for illegal purposes, the defendant being a physician but not registered as a dealer in the drug and not having paid the special tax, as required by section 1 of the act, it was held by the Circuit Court of Appeals, Third Circuit, that, as he had dispensed the drug to persons without the written orders required by section 2 of the act, and had also, by means of the statutory order forms, obtained large quantities of the drug, he was guilty of the violations charged unless it appeared, in the one case, that the drug was dispensed or distributed in good faith, in the course of his legitimate professional practice, and in the other case that it was acquired for use therein. It was also held that, although the Harrison Act was passed pursuant to the taxing power of Congress and is clothed in the garb of a revenue act, the judge did not err in charging that the purpose of the act "is to restrict the distribution and use of opium and its derivatives to medicinal purposes only."—Trader v. United States, 260 Fed. 923.

Physical Examination by Physicians in Negligence Cases in New York.—The Kings County Court, New York, holds that although there may be no objection to the physician disclosing to the defendant the results of an examination made by order of the court in a personal injury action, under New York Code of Civil Procedure, § 873, the court has no power to direct him to make such report to the defendant.—Herbert v. Brooklyn Heights R. Co., 177 N. Y. Supp. 901.

The same court vacated an order granted under this section for physical examination of plaintiff before trial in a negligence action, which provided that "the report of the physician be given to counsel for the defendant."—Tutone v. New York Consol. R. Co., 107 Misc. 571, 177 N. Y. Supp. 818.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE REVERSAL OF THE HEAVY METAL-PROTEIN REACTION.

THE salts of the heavy metals are for the most part quite poisonous and this action is thought to be due to their ability to coagulate and so denature the body proteins. It has been generally believed that this reaction is irreversible and that a cell so injured cannot be restored to normal. On the basis of this belief poisoning with such salts has been treated by attempts to render the poison insoluble and thus limit its action and in addition to treat the patient symptomatically, the latter being chiefly confined to favor elimination and to combat the acidosis which frequently appears.

Kehoe, one of Fischer's pupils, has, however, been carrying out experiments which seem to indicate that this reaction between the salts of the heavy metals and the proteins is not irreversible, and thus holds out hopes that treatment may be directed to reversing this precipitation and thus restoring the normal colloidal condition of the body proteins. He has made his experiments (*Jour. Lab. & Clin. Med.*, 1920, v, 443) with a 2 per cent. "solution" of gelatin. Various salts were used to produce coagulation. These were silver nitrate, copper sulphate, ferric sulphate, lead chloride, mercuric chloride, and others. The reversing agents were found to be neutral salts of the lighter metals and the alkali hydroxides. These agents were added to the coagulated gelatin 48 hours after the heavy metal salts had been added, and their action was apparent in 24 hours. Kehoe used a large number of salts as reversing agents and in all instances obtained resolution of the heavy metal coagulum. The completeness of this action depended upon the strength of the resolving solution and the time and the temperature in which it acted. The nature of the acid radical seemed also to influence the speed of the reaction. Resolution was obtained first with hydroxide, next with sulphocyanate, and then iodide. The others were much slower, the bromides, chlorides, nitrates, citrates, and acetates arranging themselves in the order named. Similar results were obtained on a small scale, using casein in place of gelatin.

The author's theory as to the action of these solutions is that coagulation is due to the formation of particles of poorly hydrated and insoluble metal proteinates and that the replacement of the heavy metal by the light one results in a light metal proteinate which is more highly hydratable and soluble. If his conclusions are justified then we have an important application in the treatment of poisoning with the heavy metals. Even should it be shown that in the reversal of these reactions the end-product is not a normal protein, still in it the heavy metal is apparently bound in a form in which it is unable to denaturize proteins. The author feels that the long use of potassium iodide in the treatment of chronic lead poisoning is an evidence of the beneficial effect of such treatment as he thinks may be recommended. He also suggests that according to his theory it may be unwise to use potassium iodide at the same time as mercury or arsenic in the treatment of syphilis because it may hinder the action of the metal upon the causative organism. He points out that in the treatment of metallic poisoning the salts should be administered in what would be considered huge doses and that the bicarbonates would be of value both for overcoming acidosis and for reversing metal proteinates. It is an interesting presentation and should be subjected to experimental tests at an early date.

THE PROGNOSIS OF CANCER OF THE MALE BREAST.

IT is an established fact that a non-malignant tumor tends to transform malignantly and that a malignant neoplasm when left alone ends in death more or less rapidly according to its power of generalization. In the connective tissue growths the greater the proportion of embryonal tissue, the greater the malignancy; in epithelial growths, the cell masses infiltrate all the surrounding structures while the generalization is such that the case becomes quickly inoperable. Therefore, surgical interference should be resorted to without delay, but although the immediate results seem excellent, this cannot be said of the ultimate results. In the male as in the female recurrences are common. Statistics show that they can be estimated at 60 per cent. and the first recurrence does not ward off the advent of a second or a third recurrence, should the patient survive long enough. Williams, who endeavored to find the average time elapsing between the operation and the first recurrence, came to the conclusion that in the average, nine months will pass before the recurrence takes place, the maximum being hardly ever more than thirty-five months and the minimum he found was six weeks. Of twenty-four cases in the male, Jamicy found that in nine a recurrence took place in three months after the operation, in eleven from eight to fourteen months, and in two more than twenty-four months.

In the recurrences, the new growth presents the same pathological type of growth as the original neoplasm in the mapority of cases. It consequently seems logical to suppose that the recurrence is, at

least in a general way, a continuation of the initial neoplasm. Poirier did, indeed, report two cases of scirrhus cancer of the male breast which gave rise to the encephaloid form in the recurrence, but it should be remembered that it still remained an epithelial cancer and that between these two forms there exists only a quantitative difference in the masses of epithelial cells which are very few in number and very small in size in scirrhus, while in encephaloid they are present in considerable masses.

Some instances of recurrence in the opposite mammary gland have been recorded in the male, but in the majority of cases this takes place in the cicatrix of the operative wound or in the axillary lymphnodes. A recurrence in the cicatrix is rated at 15 per cent. of the cases and it is probable that on the hemostatic forceps rests the guilt of transporting the neoplastic cells which later on proliferate. The frequency of this form of recurrence has, we believe, considerably diminished in women since more care has been taken in carrying out a rational technique of cancer of the breast. As to recurrence in the lymphnodes, they are explained by the fact that the microscope has shown that often apparently normal lymphnodes are in reality infiltrated with cancer cells. Therefore, it is not permissible to give a better prognosis in the case of cancer of the male breast than in that of the female, but in the former the average survival is some eight months longer than in women, probably because in males the predominance of fibrous cancers is marked.

THE NEPHRITIS OF PNEUMONIA.

THE nephritis observed in pneumonia should be placed in the group of the infectious nephritides. As a distinctive character may be mentioned the fact that it is essentially hemorrhagic in type. It is met with in practice in two distinct forms, namely, (1) a pure nephritis without previous morbid changes in the kidney, and (2) associated with chronic renal lesions, usually of the interstitial type. The symptoms of pneumonic nephritis are due to an insufficiency of the urinary depuration; symptoms of uremia and consequently edema, dyspnea, albuminuria, delirium, or coma. The intensity and persistency of these symptoms, due to more profound morbid changes of the renal parenchyma, make the gravity of the associated nephritis. The prognosis of this nephritis is very bad. In 90 per cent. of the cases it is the cause of death in pneumonia, the gravity of which is in direct relation to the extent of the preexisting morbid changes in the kidney. Therefore, it is most essential at the onset of a pneumonia to elicit the pathological antecedents of the patient, to make a summary of his morbid history in order to form an estimate of the state of the kidneys and so to be able to formulate a prognosis. The age of the subject should enter largely as an important factor in the calculation of the probabilities.

But not infrequently the diagnosis of long-standing renal lesions is well-nigh impossible, either because the patient is not in a state to give the necessary data relating to his antecedents or to the objective and subjective symptoms which may have been present before the advent of the pneumonia, or because these symptoms may have been overlooked. Albuminuria as a diagnostic indication is most misleading, and from this fact the clinical prognosis of the pneumonia should in most cases be very guarded. Owing to the frequency of the interstitial lesions in serious cases of pneumonia and the uremic phenomena to which they give rise, and to the impossibility usually offered of making a diagnosis, the treatment to be adopted in all cases of pneumonia should be: (1) To avoid all causes which may influence the renal parenchyma in any manner; (2) To avoid those causes which might introduce a toxic principle into the organism which would become added to those already existent from the infection and the insufficiency of urinary depuration; (3) To facilitate the diuresis and the elimination of the toxic principles by all means at our disposal.

From this triple viewpoint one should therefore never resort to blisters, which irritate and cause congestion of the renal parenchyma and which decrease the daily output of urine when they do not cause anuria. Blisters can be replaced by derivatives and counterirritants quite as active and less dangerous, such as tincture of iodine or turpentine applied locally over the lung. As a general principle, all substances, the elimination of which by the kidney is difficult or which may increase the toxic principles in the organism, should be proscribed. And lastly, in serious cases in which the uremic phenomena of extreme intensity are a menace to the patient's life, blood-letting may be indicated, and with it injections of artificial serum.

ETIOLOGY OF PELLAGRA.

BABES in the *Bulletin de la Section Scientifique de l'Académie Roumaine* issued November 28, 1918, v, 6, and just received relates that in February of the same year the entire population of Bucharest was placed on a ration of bread made of maize and wheat flour. He had urgently advised that maize meal be strictly controlled but this was not heeded. Later he succeeded in getting samples of both whole maize and meal for analysis. The meal on the whole was inferior in quality, immature, and mouldy, while the grains were often in a state of germination. The meal had an unpleasant smell and bitter taste. The danger of an outbreak of pellagra was apparent to Babes and by the following May cases were in evidence. In June between the first and twenty-seventh days 34 cases of pellagra applied for treatment at the Coltza Hospital, the beginning of the affection going back to May and April. In the preceding year there had been no cases of pellagra in the city, and this is true of a number of past years. The public had not heretofore been compelled to eat maize and always preferred wheat bread when they could get it. The disease was mild in Bucharest, but in the provinces severe and fatal cases were seen, although formerly such severity was not so conspicuous. Before the present epoch the dis-

ease had appeared in Rumania only when the maize harvest was bad and much spoiled maize was eaten. The episode was instructive, Babes thought, because it seemed possible, by reason of the absence of the affection in recent years, to connect it with the spoiled maize diet and fix the period of incubation at two months. The earliest symptoms were joint pains, backache, general asthenia, heartburn, the characteristic burning and peeling erythema, and diarrhea. Treatment consisted in abolishing the maize diet and substituting one of eggs, milk, fats, cheese, meat, and vegetables.

Filtrable Virus.

To quote Laumonnier in the *Gazette des Hôpitaux* for February 10-12, 1920, xciii, 15, filtrable virus has acquired much notoriety since the influenza pandemic of 1918. We believed firmly in invisible bacteria for years before the discovery in thrush and the peripneumonia in cattle of germs so small that they passed through filters and could not be seen by the microscope. The filters referred to comprise those of Berkefeld, Chamberland, Kitasato, and others. This means that the bacteria do not measure more than 2 or 3 thousandths of a millimeter. The ultramicroscope cannot identify anything under 6 thousandths of a millimeter. Failure to recognize certain bacteria by the ordinary microscope always suggests that the right stain may not have been found. The distinction between filtrable bacteria and filtrable virus is readily made by heat, as the former succumb to a given temperature. The author enumerates nine affections of animals and twelve affections of mankind in which we may speak of filtrable virus, which for him is evidently tantamount to filtrable microorganisms, and this does not by any means exhaust the list. In some at least of these affections the filtrate of the blood of the infected subject is inoculable. In the peripneumonia of bovines positive cultural results have made the organism visible in cultures so that this organism is no longer included with the others. A point of interest is the pathogenicity of the unfiltered substance which in variola at least retains most of the virus. There are several transitions between filtrable and invisible and unfiltrable and visible bacteria—as in trench fever, hemorrhagic nephritis, and acute infectious polyneuritis, which are therefore not included in the above lists.

Can One Prepare an Alkaline Beerwort?

The Royal Society for Medical and Natural Sciences of Brussels has resumed its annual sessions and the first report has recently been published. The chief paper, by Kufferath, bears the above title, the interest being scientific rather than industrial. Beer yeast is believed to be normally acid and this acidity enables the alcoholic ferments to act in the presence of bacteria and molds. The *Saccharomyces* does not thrive in an alkaline medium, because of the rapid proliferation in such medium of other organisms. It might become possible to form alkaline yeast if the growth of these organisms could be inhibited or if some preferred culture medium could be devised. The author, whose article appears in the *Annales et Bulletin de la Société Royale des Sciences Médicales et Naturelles de Bruxelles*, 1920, No. 1, made studies of a beer which he first sterilized for 15 minutes at 120°C. Its acidity was found to be 7.6 per 100. Alkali was added in various proportions. It was found to be very difficult to obtain an alkaline yeast and impossible if the yeast was heated. In the cold and with concentrated lye a yeast profoundly modified was obtained. Neutral yeast on the other hand was practicable and the reaction did not change the characters. In order to study the effects of cultures with alkalinized yeast a hydrolyzed starch was used. After one week ordinary acid yeast produced a given amount of CO_2 from a given amount of substratum, while neutral yeast produced nearly as much, but yeast ten times alkalinized produced only a small amount and one twenty fold alkaline none at all. One yeast germ, the *Torula laurentii*, was able to proliferate in a 20-fold alkaline medium, but none of the others tested could grow at all in this concentration. The author appears to have shown that yeast can grow in alkaline media and cause normal fermentation.

Vincent's Angina Simulating Chancre of the Tonsil.

This error in diagnosis is occasionally made and Cornaz reports an example in the *Revue médicale de la Suisse romande* for December, 1919, xxxix, 12. The patient, aged 26, presented himself with the statement that he had contracted a disease from a woman. An ulcer the size of a five-franc piece was to be seen on the internal aspect of the right cheek, with an infiltrated base, sanious discharge, and swelling of the regional lymphnodes. This lesion yielded promptly to iodine tincture and hydrogen peroxide. About three weeks later the patient reappeared with a similar lesion on the right tonsil and was sent to the hospital. The simulation of tonsillar chancre was absolute, although there was but little dysphagia. The adenopathy was indolorous. The patient had been exposed to venereal contagion six weeks before as admitted when he first sought treatment. However the ultramicrosope showed no treponemata but instead the spirochetes and bacilli of Vincent's disease. The Wassermann test was negative. Salvarsan, being indicated alike in both syphilis and Vincent's disease, was injected intravenously and great improvement was evident the following day, while five days later there was no trace of the lesion. In this case the presence of the earlier lesion of the cheek would have been sufficient to throw some doubt on the diagnosis of chancre. Fournier in his great work of extragenital chancre devotes considerable space to the type which simulates Vincent's disease and lays stress on the fact that a chancre in the tonsillar region cannot be properly palpated so that the typical induration of the base can neither be affirmed nor denied. In chancre of the throat of this type there is a marked local and constitutional reaction with considerable fever, intense dysphagia, and sensitive enlarged lymph nodes. In the present case there was no fever, and but little discomfort on swallowing, while the engorged glands were but slightly sensitive.

News of the Week.

Vocational Training for Industrial Cripples.—The Senate bill providing for the vocational training of persons crippled in industry was passed by the House of Representatives and sent to the President on May 25. Under this bill the Federal Government and the States would share the cost. The State authorities would have direct charge of the work under Federal supervision.

All Passaic Children to Be Vaccinated.—Owing to the fact that the physical director of the public schools of Passaic, N. J., was recently found to have smallpox, the Board of Education has ordered the immediate vaccination of the ten thousand children in the public schools of that city. Teachers are not to be exempted. It is expected that this order will arouse a war between the parents on one side and the Board of Education, and the Department of Health on the other, as a number of parents have declared that they will refuse to obey the order.

A Town Without a Death in Fifty-seven Years.—Carnmore, Cal., boasts of being the healthiest community in the State, there having been no death in the town since 1863, when the last funeral was recorded.

New York Association for Medical Education Issues Bulletin.—This organization having for its purpose the expansion of medical education in this country and the utilization of the vast amount of clinical material afforded by the hospitals and clinics of Greater New York, has issued its first Bulletin. This consists in a report of the Subcommittee on Ophthalmology and Otolaryngology, of which Dr. James F. MacKernon is chairman, and Dr. Arnold Knapp, Dr. Cornelius G. Coakley, and Dr. Frederick Whiting are members, formulating the requirements necessary to educate and train physicians who desire to become specialists in the department of Ophthalmology, Rhinolaryngology and Otology. All the details of a standard course and of graduate courses of instruction are outlined and are now available. Those interested can obtain further information at the headquarters of the association—17 West Forty-third Street, New York.

Physicians Advance Fees.—The physicians of New Bedford, Mass., announce that they have found it necessary to advance their fees and have adopted a new scale of prices which places the maximum fee for calls at $4 for a day visit, $7 for a night visit, and $10 for a consultation. They state, however, that where it would be an injustice to charge the maximum fee, the circumstances of the patient, as heretofore, will serve as the basis.

New Diabetic Clinic for New York.—Dr. Thomas W. Edgar, who has been conducting a free clinic for diabetes patients at 766 West End Avenue, has leased the three-story dwelling at 439 West Twenty-first Street, where he will open a new clinic in September. This clinic has been endowed by W. H. Jordan, and a fund left recently by the late Henrietta D. Burrows has made possible the purchase of larger quarters.

Typhus Suspect on Liner.—The Italian steamship *Guiseppe Verdi*, arriving in New York from Naples on May 27, had among its 2000 steerage passengers a case presenting symptoms of typhus fever. The liner was held in quarantine and the occupants of the steerage were sent to Hoffman Island for observation.

New York Post-Graduate Extends Campaign.—The campaign to raise $2,000,000 for the New York Post-Graduate Medical School and Hospital will be carried on through the summer. The fund, on May 28, totaled $1,277,176.57.

Amendment to New York Labor Law.—One of the amendments to the Labor law, passed by the New York Legislature at its recent session, provides that after July 1, 1920, children between 14 and 16 years of age employed in mercantile establishments shall be subject to physical examinatinos of the same kind required in the case of children working in factories. These examinations are to be made by medical inspectors on the staff of the State Industrial Commission.

To Deport Alien Insane.—The United States Bureau of Immigration is planning to send back to Europe some 6,000 alien insane patients in the institutions of this country. Of this number there are some 800 in the New York State Hospitals who will probably be returned to their home countries. This will greatly relieve the present congestion in the New York institutions.

Dr. Julius Jerome Goldstein of this city, whose death was reported several weeks ago, is, we are most happy to state, very much alive and busily engaged in averting death from others.

Mary Putnam Jacobi Fellowship.—The Mary Putnam Jacobi Fellowship for 1920-1921 has been awarded to Dr. Sophie Getzowa, University of Berne, Berne, Switzerland.

Dr. D. Edmund Smith of Minneapolis has received his second decoration from the French Government, the Médaille de Reconnaissance Française, in recognition of services rendered at Lourdes, France, where he established a sixty-bed hospital for the care of refugees from the devastated areas, and for his services in caring for children who had lost their parents in the battle area.

Dr. John F. O'Brien of New Haven, Conn., has been appointed superintendent of the Seaside and Crescent Beach Sanatorium, a new institution for the care of children suffering with bone and glandular tuberculosis.

Gifts and Bequests.—Under the will of Henry C. Kelsey, formerly Secretary of the State of New Jersey, the Mercer Hospital, Trenton, N. J., receives a bequest of $50,000 and the McKinley and St. Francis hospitals receive $80,000 each.

The Servants for the Relief of Incurable Cancer, New York, have received a bequest of $1,000 under the will of John Joseph Scott.

Position Open for Bacteriologist and Pathologist.—The Civil Service Commission of the State of New York announces an examination on June 19, 1920, for the position of Laboratory Assistant in Bacteriology, State Department of Health, at $720 a year. Applicants must have had a college education and a complete course in bacteriology. The position is open to residents and non-residents and citizens and non-citizens.

A competitive examination for the position of Assistant in Pathology, State Institution for the Study of Malignant Disease, Buffalo, N. Y., at a salary of $1,800 is also announced for June 19, 1920. Applicants for this position must be graduates of

a Class A medical school, and it is desired to secure an appointee who has served a term as interne in a recognized hospital or who has completed post-graduate work in a pathological or bacteriological laboratory. Applications for forms must be sent to the Civil Service Commission, Albany, N. Y., before June 7. Those received after June 9 may not be accepted.

Health Organization Offers Fellowship.—The Child Health Organization of America offers a fellowship of one year in Teachers' College, Columbia University, for the study of modern health education in the elementary schools, to be awarded for the best graded plan and outline for interesting children in the establishment of health habits. Details will be furnished on application to the Child Health Organization of America, 156 Fifth Avenue, New York.

Health Department Finds Many Clinical Thermometers Inaccurate.—The Sanitary Bureau of the New York City Department of Health has made a survey of a number of clinical thermometer factories in and out of the city and has submitted a report of methods used by these concerns. To demonstrate to physicians and nurses the worthlessness of some of the thermometers upon which they have been depending, a testing outfit was obtained and competent men have tested 156 thermometers obtained from doctors and nurses. As a result of the test 84, or 54 per cent., of these thermometers were found defective, while 72, or 46 per cent., were found acceptable. As the thermometers had to be returned within a few hours repeated readings could not be taken, and all the tests to determine the accuracy of thermometers were not carried out in full. It is probable that some of the thermometers passed would prove defective were they subjected to all the tests. As a result of the knowledge obtained through this survey the Board of Health has under consideration an appropriate amendment to the Sanitary Code and regulations to govern the selling, holding, or keeping for sale of clinical thermometers in this city.

Medical Society Elections.—The Bristol South District Medical Society, at its annual meeting held in New Bedford May 6, 1920, elected the following officers for the ensuing year: *President*, Dr. E. P. Gardner; *Vice-President*, Dr. A. I. Connell; *Secretary* and *Treasurer*, Dr. A. J. Abbee.

THE FRANKLIN DISTRICT MEDICAL SOCIETY, at its annual meeting in Greenfield, Mass., May 11, elected the following officers for the ensuing year: *President*, Dr. John Mather; *Vice-President*, Dr. E. C. Thorn, Deerfield; *Secretary* and *Treasurer*, Dr. F. A. Millett.

THE NORFOLK (MASS.) DISTRICT MEDICAL SOCIETY, at its annual meeting held May 13, elected the following officers for the ensuing year: *President*, Dr. G. W. Winchester, Mattapan; *Vice-President*, Dr. C. W. Knowlton, Roxbury; *Secretary*, Dr. Bradford Kent, Dorchester; *Treasurer*, Dr. G. W. Kaan, Brookline.

THE WILLIMANTIC CITY MEDICAL SOCIETY, at its annual meeting held in Norwich, Conn., May 3, 1920, elected the following officers for the ensuing year: *President*, Dr. John Welden; *Vice-President*, Dr. William E. Hendry; *Secretary* and *Treasurer*, Dr. Michael D. Riordan.

THE KANSAS STATE MEDICAL SOCIETY, at its annual meeting held in Hutchinson May 6, elected the following officers for the ensuing year: *President*, Dr. C. Kippel, Hutchinson; *Vice-Presidents*, Dr. J. R. Scott, Ottawa; Dr. J. L. Everhardy, Leavenworth; Dr. Herbert Randels, White City; *Secretary*, F. J. Hasig, Kansas City; *Treasurer*, Dr. L. H Munn, Topeka.

THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA, at its annual meeting in Santa Barbara, May 13, 1920, elected the following officers for the ensuing year: *President*, Dr. John H. Graves, San Francisco; *First Vice-President*, Dr. William Duffield, Los Angeles; *Second Vice-President*, Dr. Joseph Catton; *Secretary and Treasurer*, Dr. Saxton Temple Pope.

THE BROCKTON (MASS.) MEDICAL SOCIETY, at its annual meeting held May 13, 1920, elected the following officers for the ensuing year: *President*, Dr. George A. Buckley, Brockton; *Vice-President*, Dr. Walter V. Vannerman, East Bridgewater; *Secretary*, Dr. P. H. Leavitt; Treasurer, Dr. J. A. Pettey, Brockton.

THE NEW HAMPSHIRE STATE MEDICAL SOCIETY, at its annual meeting held in Concord May 13, 1920, elected the following officers for the ensuing year: *President*, Dr. A. H. Harriman, Laconia; *Vice-President*, Dr. Charles S. Walker, Keene; *Secretary-Treasurer*, Dr. D. E. Sullivan, Concord.

THE SALEM (OHIO) PHYSICIANS' CLUB was organized on May 13, at which time the following officers were elected for the ensuing year: *President*, Dr. F. T. Miles; *Vice-President*, Dr. A. W. Schiller; *Secretary and Treasurer*, Dr. T. T. Church.

THE SOUTHERN OREGON MEDICAL ASSOCIATION, at its twenty-ninth annual session held in Roseburg, May 13, 1920, elected the following officers for the ensuing year: *President*, Dr. L. O. Clement, Grants Pass; *Vice-President*, Dr. E. B. Pickel, Medford; *Secretary and Treasurer*, Dr. A. C. Seely, Roseburg.

Obituary Notes.—Dr. HENRY J. ALLEN of Corinth, N. Y., a graduate of the University of Vermont College of Medicine, died suddenly at his home, on May 26, aged 71 years.

Dr. ISAAC IRWIN KALBACH of Glen Riddle, Delaware County, Pa., died at Taylor Hospital, Ridley, on March 13 of apoplexy at the age of 56 years. He was graduated from Jefferson Medical College in the class of 1893.

Dr. CARL KIRSCHNER, formerly of Philadelphia, died at Erie, Pa., on April 20 at the age of 41 years. He was graduated from the Medico-Chirurgical College in the class of 1903.

Dr. WALTER G. SPIESS died of nephritis at Philadelphia on April 23 at the age of 40 years. He was graduated from the Medico-Chirurgical College in the class of 1903. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. FERDINAND SIEGEL, a graduate of New York University Medical College, in 1890, died at his home in Brooklyn, N. Y., on April 25, aged 53 years. He was chief of the general medical staff of the Bedford Maternity Hospital and pediatrician to the Bedford Dispensary.

Dr. JOSEPH LANDER SANBORN, a graduate of the

Atlanta Medical School, in 1894, died at his home in North Amherst, Mass., on May 17, at the age of 54 years.

Dr. VALENTINE WINTERS ANDERSON, a graduate of Louisville National Medical College, in 1900, died at his home in Dayton, Ohio, May 10. He was born in 1871.

Dr. RUFUS E. DONNELL, a graduate of Dartmouth Medical College, in 1888, and for several years a member of the City Council of Augusta, Me., died at his home in that city, on May 16, aged 61 years.

Dr. HARRY A. COSLER, a graduate of the Columbus (Ohio) School of Medicine, in 1902, died at his home in Fairfield, Ohio, on May 13, at the age of 47 years.

Correspondence.

THE LATE DR. JOSEPH FRAENKEL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The character and career of the late Dr. Joseph Fraenkel deserve more than ordinary comment and appraisal. They have received little or none. Yet not long ago and for a good many years he had a commanding practice among the most intelligent and wealthy members of this New York community. His success in diagnosis and treatment, his quiet efficiency in securing results, his acuteness of observation and his complete confidence in his methods, impressed his patients and they held him in an almost God-like reverence.

For a good many years Dr. Fraenkel was an associate of mine in dispensary, hospital, and teaching work, and I held him as one of my choicest friends. His social qualities were compelling and unique. He was full of enthusiasms which he clothed with picturesque language and endowed with humor and eloquence. He loved music and literature and art, and at a dinner table was an unfailing stimulus to a joyous and esoteric conviviality.

He was a very thoroughly educated and broadly trained physician. In the early years of the Montefiore Home he gave much help to the organization and development of the neurological and general medical work.

As associate professor of Neurology at Cornell I knew he could teach and interest students better than myself and I lamented his withdrawal. He must be given merit as of the band which organized the New York Neurological Hospital.

In his later years, after he left the Neurological Hospital, he pursued an extraordinary and successful career as a neuroendocrinologist and more especially as a therapeutic individualist. What he accomplished, what he knew, how far his methods were psychical and suggestive, how far they were pharmacological, I do not know. I hope someone can tell us. He was believed to achieve dramatic and notable results by very unusual methods. Whether he did or not, his character was to me always that of a sincere, honest and lovable and loyal man. I lament his loss; and I hope there will some time be written a competent story of his life. There has been no career quite like his in the history of the New York profession of medicine.

CHARLES L. DANA.

NEW YORK.

PLASTIC CONICAL ENUCLEATION OF THE CERVIX UTERI.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In a paper entitled "The Treatment of the Infections of the Uterus and Cervix—Preliminary Report of 75 Cases" (MEDICAL RECORD, June 28, 1919), the writer, after a brief description of an operative method for removing completely the diseased cervical mucosa and relining the cervical canal with a cylindrical flap of mucosa obtained from the vaginal surface of the cervix, says: "I have named this operation 'Plastic Conical Enucleation of the Cervix.' So far as I know, this is the first clinical report covering a series of cases operated upon by this method. To Dr. Arnold Sturmdorf (Sturmdorf: Tracheloplastic Methods and Results, *Surg. Gyn. and Obst.*, Jan., 1916, pp. 93, 104; Chronic Endocervicitis, Transactions of the Soc. on Obst., Gyn. and Abd. Surg. of the A. M. A., 1917, pp. 42-53) belongs the credit of first describing the operation and of working out the pathology of cervical infections, and I wish to express my appreciation of his highly valued help and suggestions during the time that I had the pleasure of being associated with him at the Polyclinic Hospital." The writer thought that this did, and fully intended that it should give Dr. Sturmdorf full credit for inventing this operation. But it has just been called to his attention that the sentence does not convey the idea that he wishes to make plain, *i.e.* that Dr. Arnold Sturmdorf invented and first described this operation. The writer wishes therefore to alter this sentence to read: "To Dr. Arnold Sturmdorf belongs the credit of inventing and first describing the operation," etc.; and he wishes this correction to apply to any later article of his upon this subject.

FRANCIS WARD LANGSTROTH, M.D.

NEW YORK.

SOME SO-CALLED ADVANCES IN THE PRACTICE OF MEDICINE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—To not a few men to-day, who are good and busy practitioners, medical societies and associations are rapidly losing interest. By attending these meetings, often at the cost of valuable time, or when they could be taking well earned recreation, they learn practically what is of very little or no value in caring for their ill and suffering patients. Too often they listen to half-boiled researches on the part of young men who have had little real experience in taking care of patients, and what they do know is all hospital findings and doings. Their final appeal is too often to laboratory work, much of which is very new and still unsubstantiated by actually sufficient results to increase faith among their elders who have "borne the burden and heat of the day" and who really know what is useful and desirable and what is not, or in any event, what is of very doubtful value. Again, is the new, so-called advance, which we now have in our cities and in some of our best hospitals—notably the Massachusetts General Hospital of Boston, Mass., in sustaining and strongly advocating diagnostic clinics, where the difficult cases can go, be examined by different prominent specialists for a relatively small amount

of money, and later returned to their former medical advisers, probably their family physicians, with the diagnosis and maybe the treatment affirmed, or as it were, definitely established; is this really to be considered advantageous? In some cases, perhaps, it is. In many instances, assuredly it is not.

My observations would go to show that very refined diagnoses are of decidedly greater interest to the research worker than they are to the all-around practitioner or, in final outcome, to the patient.

The sooner we appreciate thoroughly that we do not, as a rule, cure disease the better. What we do is to relieve symptoms and do it, so far as possible, without doing notable harm.

To me it is lamentable and deplorable in the highest degree the way in which the old and better treatment of ordinary ailments has passed by and is now absolutely ignored or neglected. True, we have had some great and notable discoveries in the practice of medicine during the past twenty or thirty years, but they can be counted on one's fingers. And the modern way of making every man, woman, and child introspective and searching for or recognizing ailments, serves no good purpose. It lessens faith in one's sanest adviser and bandies the poor, misguided victim of so-called science from one physician's control to another's.

Thus it is that the latest outpouring of a city doctor of wide experience is that he is ashamed to take people's money for the treatment of an ordinary cold, because he knows how useless his advice is. If we simply went back to the good old days of nitre and ammonia and backed it up with a mustard foot bath and hot toddy, there would be little or no call for poisonous aspirin and still more abominable acetanilid, which has brought death to many.

BEVERLEY ROBINSON, M.D.

42 WEST THIRTY-SEVENTH STREET.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, May 7, 1920.

Midwifery Training.—It is beginning to be understood that reform in the practise of midwifery and in the training of midwives must be inaugurated at once in Great Britain. A national scheme is in process of formation. There are few people probably in this country who realize how limited the opportunities are for training in midwifery, or, as Miss Gregory, daughter of the late Dean of St. Paul's Cathedral, states, "Our standard is the lowest in Europe." Miss Gregory is somewhat of an authority on the subject, for she started the British Hospital for Mothers and Babies at Woolwich, and besides she has had a wide experience as a district midwife working in the homes of the poor. After the hospital had taken definite shape by 1915 the Charity Commissioners had approved a scheme under which the valuable site of that institution could be sold. In the interval the Council for the Promotion of the Higher Training of Midwives had kept its own aims steadily in view. One therefore became the complement of the other, and Woolwich, it may be said, offered special claims to consideration as the center of the joint work. In the first instance, it presented a large population of workers, dockyard, arsenal, and industrial, who needed a modern maternity hospital in their midst. The proximity to London was a recommendation for many obvious reasons to intending students, who recognized the fact that between the cases within the hospital wards and those attended in the mothers' own homes they would obtain the varied experience essential for complete comprehension of the subject.

The necessary land on which to build was acquired and an appeal has just been launched for one million shillings, which when contributed will render it possible to take up a work for which the need is urgent and imperative. The real crux of the problem is the difficulty of finding women qualified by knowledge and experience who are capable of imparting instruction to others. Of course, it is a field of nursing that calls for special attributes; but hitherto, a six months' course—previously it was not longer than three—has been held to be sufficient time in which to acquire the skill and scientific knowledge that should be possessed. As one authority has said: "Six months in which to teach the elements of anatomy and physiology, and many of the candidates now presenting themselves hardly know the difference between a vein and an artery, and cannot tell one bone from another; to master the intricate technique of antiseptics; the details and care of normal labor, and when by small and insidious approaches the abnormal is beginning to show itself."

The point of view taken up at the British Hospital for Women and Babies is that every school for training these women requires teachers able to impart what they have themselves learned. It further recognizes that such teachers must have had the advantages of a modern and fully supplied professional library. When such teaching has been efficient there is no question as to the results that follow. New Zealand supplies the most conspicuous object lesson. At Woolwich, if the entire scheme is realized, there will be forty-two beds for mothers. The staff will consist of forty nurses and pupils, and it is estimated that 650 women will pass through the wards during the year, while quite 1000 cases will be attended in their own homes. Accordingly the opportunities for observation and the possibilities of seeing difficult midwifery will be large. Those students who have had general training in hospital nursing will remain for a year's course if intending to take up district work, or for two years if desirous of preparing themselves as teachers of others. Proceeding along these lines it is hoped to attract a class of women better educated and with higher ambitions than that which has formerly taken up the work. The British Government has set up a standard of knowledge and those who wished to enter the calling had to pass a by no means easy examination. Having, however, obtained the certificate of the Central Midwives' Board the holder had no certainty whatever as to what her earnings might be. In country districts these were often of a pitifully low nature. It may be stated that in this latter respect there has been decided improvement in the past two years. Both in the coun-

try and in London and other large towns the certified women have been able to raise their fees and to secure a scale of remuneration more in keeping with the skill and aid that their knowledge brings to the service of their patients. Associated with the financial side of the enterprise is Lieut.-Col. Sir Richard Temple, who did so much good work for the Joint Committee of the British Red Cross and Order of St. John. He is addressing himself to the interests of men in this question, and has been pointing out to them the loss to the nation of the 40,000 women who die or are physically disabled annually through ignorant and incompetent treatment, and the 100,000 valuable infant lives thrown away for the same reasons in the first twelve months of their existence. To avert such useless waste is, he says, the tribute that every chivalrous, right feeling man owes to womankind, and he bids them remember that everyone who faces the bringing up of a new little life into the world goes figuratively over the top. Sir George Newman, the chief medical adviser to the Ministry of Health, in the work, "The Outlines of Preventive Medicine," lays great stress on the need for thorough and immediate reforms in the practice of midwifery and in the training of medical students and midwives in that branch of medicine and surgery. The British Hospital for Women and Babies is a step forward and one which should be imitated in every part of the country.

New Institute of Physics.—As the *Times* of May 5 points out, the need has long been felt for a corporate body analogous to the Institute of Chemistry, which would represent the profession and strengthen the position of workers engaged in physics, and which would also form a bond between the various societies interested. At present the physicist is hardly recognized as a member of one of the professions, but the vital importance of many developments of physics during the war and the certainty of its growing importance both in science and industry are bringing about a change in this respect. It will be one of the aims of the new Institute of Physics to secure recognition of the position and value of the physicist and it is felt that such recognition can only be obtained by the cooperative action of all the physicists in the country. The institute has been founded, in the first instance, by the cooperation of the Faraday Society, the Optical Society and the Physical Society of London, and the first board is constituted from representatives appointed by the councils of these societies. It is hoped that in the course of time other societies will associate themselves with the institute. Members of the institute who are also members of more than one of the cooperating societies will obtain a reduction in the subscription to those societies. There will be three classes of members: ordinary members, associates, and fellows Only the two latter classes, membership of which will require full professional qualifications, will be corporate members.

The institute has already received promises of support from leading physicists and the initial expenses are covered by a guarantee fund amounting to over £1,200. The first president of the institute is Sir Richard Glazebrooke, F.R.S.; Sir Robert Hadfield, F.R.S., is treasurer, and Professor A. W. Porter, F.R.S., honorary secretary.

A Nerve Ridden Queen.—Long-held views are being constantly overthrown and the other day several conventional ideas with regard to Queen Elizabeth were disturbed by Dr. Frederick Chamberlin, F.R.H.S., the American historian, who lectured on Queen Bess at the Royal Institution on May 1. In this and in a second lecture Dr. Chamberlin is endeavoring to summarize the results of years of research, and at the outset he noted the astonishing fact that only one really full life has been written of the Queen, who, as he stated, "founded Great Britain, and was its last and its greatest monarch." Dr. Chamberlin said that when he undertook his research he held the ordinary conventional ideas of Elizabeth and believed that she had been too intimate with those whom we dubbed her "favorites," for such substantially was the opinion of the average man and of all women. Such, too, was the teaching of all historians. The lecturer quoted the description given of Elizabeth in the "Dictionary of National Biography," and stated he believed it to be demonstrable that the true description would have been in the following paraphrase: "In person Elizabeth could never have been a beautiful young woman. She was emphatically her father's child. From him she derived her great lack of physical vigor, her sickly constitution, a frame incapable of bearing fatigue, and a nervous system that rendered her extremely sensitive to fear or pain. Her life was the life of a woman, not of a man. She could never hunt, dance, or do anything calling for physical exercise without collapsing as a consequence, and she always seemed to suffer from the tension at which she lived. She never enjoyed good health after she reached her fourteenth year." Dr. Chamberlin based these statements on written opinions of eminent medical experts, including the late Sir Wm. Osler, Sir Clifford Allbutt, and Professors Keith and Doran. He had submitted to them a statement of the records of the illness of Elizabeth for her entire life, and they had unanimously agreed that she was never physically strong after the age of fourteen. For a whole decade before she came to the throne she was afflicted by continuous attacks of some disease from which she never seemed to have recovered. She suffered from frequent nervous attacks, or fits, with habitual melancholia, and periodical attacks of unconsciousness which lasted for many hours. She was always very thin, except when attacked by dropsy, from which she was sometimes so swollen as to be unrecognizable. She had the instincts neither of a sweetheart nor of a mother, which would have been impossible in a frame such as hers. Her condition was really sexless. "She toyed with young men, but one cannot conceive more than that," said the lecturer. "Her condition freed her from the bonds which bind most women, but in exchange she had to bear other bonds, the misery of disturbed health and ill-being. If a study of Elizabeth's health and illnesses can throw a light on her character, and through her on the history of her period, it will be found in the disordered condition of her

sexless system. It is this frail anemic, weak, sexless woman, with no capacity for feeling natural sex desires, with no yearning for motherhood, to which study will be directed in the next lecture. Her memory, her fame, her pride, her right, and her helplessness against the innuendoes of the jealous, the disappointed, the idle, and the gossip, demand an unbiased test of all the evidence which is now available for the first time. Elizabeth could and would demand no more." Although Dr. Chamberlin does not refer to it in his first lecture, it may well have been the syphilitic condition of Henry the Eighth that was mainly responsible for his daughter's ill health. It seems to be generally accepted as an historical fact that Henry VIII was diseased with syphilis, and if this were so it would account to a great extent for the state of health of his daughter Elizabeth.

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 20. 1920, clxxxii, 21.

1. Doctors in Uniform. Harold W. Dana.
2. The Product of Urological Clinic. W. C. Quimby.
3. Fat Transplantation After Excision of Cicatricial Contraction of Lower Jaw, with Report of a Case. William Ried Morrison.
4. A Case Showing Apparent Paradoxical Respiratory Arrhythmia of the Heart. Paul D. White.

4. A Case Showing Apparent Paradoxical Respiratory Arrhythmia of the Heart.—Paul D. White cites the case of a young man, twenty-three years of age, whose auricular and ventricular rates were from 40 to 43 when he was quiet in bed. During deep inspiration the auricular rate increased to 70 and the ventricular rate fell to 35. During deep expiration the auricular and ventricular rates were both 41. Immediately after moderate exertion the auricular rate was 72 and the ventricular rate 36. Ordinarily one finds an increase in heart rate with inspiration and exercise; in this instance there was a decrease. This paradoxical condition is due to the occurrence of two to one heart block when the auricular rate rises above a certain point. It seems evident that the auriculo-ventricular tissue is depressed, probably by disease in early childhood, so that beyond a certain point it fails to transmit every other auricular impulse. Atropine produced a ventricular slowing in this case.

New York Medical Journal.

May 22, 1920, cxi, 21.

1. The Theory of the Pneuma in Homer. Jonathan Wright.
2. The Reeducation of Hemiplegics and Their Physiotherapeutic Treatment. Pierre Kouindjy.
3. Osler: Comments and Cullings. Howard S. Anders.
4. The Etiology of Neurotic Symptoms in a Child of Eight. Adolph Stern.
5. Stammering. Ernest Tompkins.
6. The Venereal Problem in the Navy. John A. McGlinn.
7. Group Study from the View-point of the Internist. Orrin S. Wightman.
8. The Unity of Action of Nerves, Circulation and Respiration. P. A. Kane.

2. The Reeducation of Hemiplegics and Their Physiotherapeutic Treatment.—Pierre Kouindjy gives statistics gathered at Saltpêtrière during the past five years showing the results of methodical massage and motor reeducation in hemiplegics. In three per cent. of the cases complete cures were obtained; in 17.7 per cent. great benefit was derived; in 64.7 per cent. a notable benefit, and in 17 per cent. the result was doubtful. The treatment should be begun early and only hypotonic muscles massaged. When these muscles are capable of standing more vigorous treatment, mechanical percussions and other measures are added, consisting in a series of simple appliances. In explaining the action of motor reeducation the writer states that if the exercises do not succeed in restoring the cerebral centers they may have the effect of supplanting them. In residual hemiplegia it is almost certain that motor reeducation creates supplementary centers and these may have the effect of supplanting the original centers of coordination. Heliotherapy, thermotherapy, and balneotherapy are useful adjuvants.

4. The Etiology of Neurotic Symptoms in a Child of Eight.—Adolph Stern reports this case because he finds wishes, some conscious, others not, which are identical with or very similar to those which we find in the unconscious of the adult. The findings in this child furnish added proof, if any is still needed, to demonstrate the accuracy of the deductions made by psychoanalysis as to the causal relation between unconscious mental processes and neurotic symptoms, and also that what we call the unconscious in the adult had its origin in the child, and is in the child quite conscious before the period of repression sets in. The case also furnishes points of interest in regard to the relative value of heredity and environment in the causation of symptoms in the neurotic constitution. The writer shows how the neurotic constitution may be formed so early in the life of the individual, owing to the fact that parents or those in the immediate environment, show neurotic manifestations, that one may be led astray and ascribe it to an hereditary origin. What are inherited, so far as the emotions are concerned, are the primary emotions that accompany the instincts. The neurotic constitution may perhaps be viewed as a secondary characteristic, and as such generally recognized as an environmental attribute rather than an hereditary one. In this sense all individuals are neurotically inclined. The early environment has much to do in deciding the manner of reaction of the individual to these primary emotions, and what enters into this decision one may view as factors forming a neurotic constitution in case these factors tend in that direction. This the writer considers an important field, which will yield much information that can be used from a therapeutic point of view with great benefit.

7. Group Study from the Viewpoint of the Internist.—Orrin S. Wightman. (See page 972.)

Journal of the American Medical Association.

May 22, 1920, lxxiv, 21.

1. The Future of Otolaryngology. Joseph C. Beck.
2. Some Fallacies Regarding Narcotic Drug Addiction. S. Dana Hubbard.
3. Anthrax: Comparison of Surgical and Nonsurgical Methods of Treatment. A Review of 51 Cases Treated at the Massachusetts General Hospital from 1888 to 1918. Albert J. Scholl, Jr.
4. Successful Treatment of Giardiasis in Man with Neo-Arsphenamin. E. I. Carr and W. L. Chandler.
5. Incidence of Tuberculosis in Husband and Wife. Arnold Minnig.
6. Calculi in Salivary Ducts: Report of Five Cases. Seward Erdman.
7. Rhinophyma: A Cure by a Plastic Operation with a Good Cosmetic Result. James Francis Grattan.
8. Hypertrichosis: Report of a Case. Andrew J. Gilmour.

3. Anthrax: Comparison of Surgical and Nonsurgical Methods of Treatment.—Albert J. Scholl reviews 51 cases of anthrax treated at the Massachusetts General Hospital between 1888 and 1918, of which seven died, a mortality of 17.7 per cent. The early diagnosis was made bacteriologically by the demonstration of the anthrax bacilli in the wound in 81.2 per cent. of the cases. Four of nine patients, or 44 per cent., treated surgically died; only 3, or 7 per cent., treated nonsurgically died. Forty-two patients had lesions on the face and neck. Cervical infections are especially dangerous, two of the patients treated nonsurgically died from respiratory difficulty resulting from the associated edema. The patients treated nonsurgically were confined to bed. Their lesions were left absolutely alone and exposed to the air; no special general measures were carried out. In several surgical cases a rapid increase in the edema, a steady decline in the patient's general condition, and death several hours later pointed to the operation as the causative factor.

5. Incidence of Tuberculosis in Husband and Wife.—Arnold Minnig has investigated 1,000 successive dispensary cases, being careful to classify none as tuberculous which were in the least doubtful. In this series 502 patients were married, and there was active tuberculosis in husband and wife in 44 cases, or 8.7 per cent. When a consort died, the mate was infected in 50 per cent. of the cases. He concludes that there is

such a thing as adult infection and that the physician should constantly bear this in mind in his advice to laymen. It is evident that when there is a continued massive infection over a period of years, and especially when the consort dies, since in these last years the patient is especially careless and slovenly, there is not only a possibility of contagion, but in one out of every two cases active tuberculosis supervenes. The writer's investigation covered only dispensary cases. In private practice the incidence of marital infection is smaller, proving that intelligent prophylaxis is worth while.

6. Calculi in the Salivary Ducts.—Seward Erdman points out that unless the possibility of this condition is borne in mind, and a careful diagnosis made, there will be numerous instances in which a totally unnecessary operation will be performed without relief of the symptoms. In some of these cases an alveolar abscess may be suspected, while the acute cases are likely to be diagnosed as cases of suppurative lymphadenitis, and treated by external incision. In the cases of chronic enlargement of the gland malignancy may be suggested. Examination of the floor of the mouth or cheek will usually show some change at the exit of the duct, a purulent discharge or swelling and redness. In the writer's experience with Wharton's duct, the stone is likely to be found rather far back, about opposite the last molar tooth. The treatment consists of one of two methods: After the application of local anesthesia in the vicinity of the duct, a probe is inserted and the duct split back as far as may be necessary to deliver the calculus, which may require a spoon curet, or a direct incision may be made through the mucous membrane and into the duct at the site of the previously located stone, or into the distended duct behind the stone. External incisions are seldom if ever indicated.

The Lancet.

May 1, 1920, excviii, 5044.

1. Milroy Lectures. Higher Fungi in Relation to Human Pathology. Lecture III. Aldo Castellani.
2. The Pellagra Outbreak in Egypt. 1. Pellagra Among Ottoman Prisoners of War. A. Douglas Bigland.
3. Intracardiac Pressure as a Standard in Cardiotherapy. I. Harris.
4. Two Cases of Intramedullary Tumor of the Spinal Cord with Operation. Anthony Feiling.
5. Novocaine Anesthesia. Some Disadvantages from the Surgical Standpoint. G. H. C. St. George Griffiths.
6. The Chinese Hospital in France. C. Frederick Strange.

2. The Pellagra Outbreak in Egypt. 1. Pellegra Among the Ottoman Prisoners of War.—A. Douglas Bigland describes the characteristics of the disease as it manifested itself during this outbreak. In addition to the skin and gastrointestinal troubles there were great weakness and emaciation, together with nervous symptoms. An acute type of the disease is recognized to which the term typhoid pellagra is applied. The writer mentions one condition to which only one reference could be found in the literature, and that was that in eight cases of the 64 cases studied there was noted a seborrheic condition, chiefly around the alae nasi, sometimes scattered over the whole face. This condition was not found among non-pellagrous Turks. Autopsy was performed on 24 of 26 cases that died. The intestines showed the usual changes associated with bacillary dysentery, while the other organs appeared for the most part normal. Microscopic sections of all organs except the brain and spinal cord were examined. The writer holds that pellagra is not necessarily a clinical entity. It may be rather of the nature of a syndrome, for which more than one factor may be responsible. There is also extreme variability in the severity of the disease. Three grades are recognized: Grade I is exemplified by a small Egyptian gardener boy who developed pellagra and was cured almost immediately by adding one egg per diem to his diet. Grade II is present when the pellagrin can be saved only by relentless feeding. Grade III is the stage in which the balance is lost entirely and nothing can reestablish it, as in the young diabetic. There is evidence that pellagra is a syndrome which occurs most often in the underfed, using that expression in its scientific sense, though it may occur in the well fed. In the latter class of cases it is suggested that a toxin is present which acts upon the intestines and the contents thereof in such a way that protein is not assimilated as it should be. The writer discusses the nature of this hypothetical toxic substance.

3. Intracardiac Pressure as a Standard in Cardiotherapy.—I. Harris has attempted to develop a standard by which the degree of abnormality in the cardiac mechanism can be gauged, and to prove that the intracardiac pressure supplies such a standard, not only for diagnostic, but for therapeutic purposes. He proposes the estimation of intracardiac pressure by ascertaining the duration of the diastole in relation to the systole by means of the electrocardiogram, and thinks we may safely assume, everything being equal, that the strain which the heart muscle has to bear during its systole will be proportionate to the length of the diastole. It is possible to some extent to supplement the data derived from the duration of the diastole in regard to the intracardiac pressure by measuring the pulse pressure. Two factors are concerned in the production of heart failure: the condition of the heart muscle, and the intracardiac pressure. A moderate intracardiac pressure acting on a damaged heart might suffice to produce heart failure. An abnormally high intracardiac pressure acting on a healthy muscle should, theoretically, at any rate, also be able to induce heart failure. Two types of heart failure are described, the most striking feature of one type being the normal condition of the arteries and peripheral circulatory apparatus in general, while the second type is associated with arteriosclerosis and the clinical features are totally different from the foregoing one. Digitalis is clearly indicated in the first type of heart failure and the exact dosage can be regulated by taking as guide the state of intracardiac pressure. In cases showing the second type of heart failure digitalis is not indicated. Any drug which would increase the intracardiac pressure would only aggravate matters. The ideal treatment in such cases would be the one which would lower the intracardiac pressure and at the same time leave the arterial pressure unaltered. The prolonged use of nitrites is contraindicated in such cases because they lower the arterial pressure. Caffeine seems to have all the properties for the treatment of such cases. It is sometimes a good plan to treat the patient alternately with caffeine and atropine. As soon as the pulse rate is considerably increased the intracardiac pressure falls proportionately. Small doses of digitalis are then useful, and may be continued until there is evidence of a considerable rise in intracardiac pressure. The treatment of edema by digitalis in these cases is contraindicated, while adrenalin has been found most useful for this purpose.

British Medical Journal.

May 1, 1920, 3096.

1. Lecture on Bronchiectasis. A. J. Jex-Blake.
2. The Epidemiology of Phthisis. William Gordon.
3. Further Work on Antimony Intravenously in Filariasis. Sir Leonard Rogers.
4. Cycloplegia in Routine Refraction Work. N. Bishop Harman.
5. The Treatment of Malaria. W. S. Dawson.
6. A Case of Tuberculous Meningitis with Complete Recovery. Hugh Barber.

1. Lecture on Bronchiectasis.—A. J. Jex-Blake bases this lecture on the clinical notes and post-mortem records of over 100 cases of bronchiectasis at Brompton and St. George's hospitals, excluding all instances in which the condition was due to chronic pulmonary tuberculosis. During the last twenty-nine years 29,700 patients have been admitted to the Brompton Hospital, 567, or 1.9 per cent., with the diagnosis of bronchiectasis. Of these, 59 per cent. were males, 41 per cent. females. Among the 112 cases examined after death, 80 per cent. were males. Among 108 cases in this series the bronchiectasis was bilateral in 47, unilateral in 61. In 18 cases all five lobes of the two lungs were bronchiectatic. Amyloid disease was recorded in six of 108 post mortems. Bronchiectasis is always secondary to some other condition; in this series the primary conditions were: chronic bronchitis 41, pleurisy with pneumonia 27, bronchial obstruction from various causes, new growth, foreign body, aortic aneurysm and syphilitic stenosis 37 cases. The most interesting complication of the bronchiectasis noted in this series was intracranial abscess in 15 of the 108 fatal cases. The common com-

plications of bronchiectasis are inhalation or aspiration bronchopneumonia, empyema, gangrene, and abscess of the lung. The course and duration of the bronchiectasis were very variable, depending upon the severity of the bacterial infection present in the dilated tubes. The principal causes of death in 110 cases were: bronchopneumonia in 34, exhaustion in 34, exhaustion and asphyxia in 8, intracranial abscess in 15, hemoptysis in 5, and a number of other causes in the remaining cases of the series. In all cases inversion of the patient, or letting him cough with his head and chest hanging downward so as to facilitate the emptying of his bronchiectatic cavities, was a serviceable practice, best carried out on waking. Medical treatment aims to combat the infection in the bronchial tubes by antiseptics, the most widely used of which is creosote. Surgical treatment is applicable only to unilateral cases, preferably those in which the lower lobe of the lung is involved.

4. Cycloplegia in Routine Refraction Work.—N. Bishop Harman recommends the use of atropine in the form of an ointment where the routine examination of a large number of children must be made, as in the outpatient department of a hospital or a school clinic. At the Belgrave Hospital printed directions for the use of the ointment are given to the parent by the surgeon in charge. They read as follows: "Put a small piece of the ointment (the size of a match head) inside the lower lid of each eye three times every day, after breakfast, dinner, and tea, until you come next time. Use a wax match with the head cut off for the ointment. The child may not be able to read, but may go to school. The ointment will be stopped when the doctor examines the eyes and orders the glasses. Do not forget to use the ointment, or your visit will be wasted. Be careful with it, for it is very costly. Do not let any one else use it." This routine practice is unsatisfactory for children with blepharitis or eyes scarred from relapsing phlyctenular ulcers.

Journal de Médecine et de Chirurgie Pratiques.

March 10, 1920, xci, 5.

Hemorrhage and Stricture of the Urethra.—Pasteau states that hemorrhagic strictures are more apt to be due to the treatment than to the disease per se. There are, however, exceptional cases of spontaneous hemorrhage which appear to be an essential part of the disease—not including bleeders. These the author terms cases of hematuric stricture. The condition is rare. On the other hand, it is possible to cure stricture without provoking hemorrhage at all. In the rare spontaneous case the blood will usually stain only the last drops of urine voided, but instead it may be the first drops to emerge from the meatus which are blood-tinged. In bleeding at the end of micturition the blood implies the existence of cystitis secondary to stricture. In the opposed case the stream of urine impinges on some point in the urethra which is disposed to bleed.

The Enterorenal Syndrome.—Achard refers to the coexistence of some enteric affection with a secondary nephritis, so that two kinds of symptoms unite to give rise to a characteristic composite disease picture. Several types have been isolated, of which the first is a colibacillary affection of the intestine which is responsible for the development of suppurative nephritis. Heitz-Boyer has notes of 50 such cases, and these present subtypes as the renal, vesical, and septic. In certain cases we see only a colibacilluria without lesions of the kidneys or bladder. In a third major type we do not see suppurative but chronic sclerotic nephritis. Pyelitis of colibacillary origin does not seem to be included in the enterorenal syndrome of Heitz-Boyer.

Le Bulletin Médical de Quebec.

March, 1920, xxi, 7.

Encephalitis Lethargica.—Dr. Sirois reports a case of this malady treated by him at St. Ferdinand d'Halifax last January. During October, 1918, over sixty cases, with 38 per cent. mortality, were treated in the Winnipeg General Hospital. No other Canadian cases are mentioned by the writer. The patient was an unusually well developed and robust boy of 18 years developed chills and fever, headache and prostration. October. He was laid up about three days and recovered promptly and thoroughly. He was occupied with farming until the season closed and then went into mining. Here he worked alternate weekly day and night shifts and overstrained himself, besides getting his stomach upset as a result of unsatisfactory commissary. On January 22 he began to feel ill and developed chills and fever, headache and proctration. He was at once ordered home by a medical man and was treated by his parents with purgation and sweating with the amateur diagnosis of an attack of grippe. On the third day, confined to bed, he complained of a heavy weight on the eyelids and had slept for several days before the author saw him. He seemed in the midst of a normal sleep and replied to questions without any attempt to rouse himself. The speech was low and scanning, but distinct. The temperature was 103° and pulse full and strong at 96. The pillow was drenched with saliva. Headache was still present, but without any suggestion of meningeal involvement, and while the eyes were reddened there was no evidence of ocular pareses save ptosis, which was complete. From the beginning, transpiration had alternated with gooseskin. He ate everything offered him with apparent relish. For two days he remained in the same condition, but became delirious and comatose afterward, dying on the eight day of the disease.

Il Policlinico.

February 1, 1920, xxvii, 2.

Etiology and Pathogenesis of Influenza.—Professor Micheli goes thoroughly and scientifically into the possible etiological rôle of Pfeiffer's bacillus and on no less than seven counts positively excludes it as the cause of the pendemic of 1918. The intense diffusibility and contagion of the pandemic and the impotence of prophylaxis are incompatible with the doctrine that a bacillus like Pfeiffer's could be responsible, for this we have always with us. Bubonic lung plague is due to such a bacillus and we can contend against it fairly well. Pfeiffer's bacillus was assuredly absent from the secretions of the nose and throat in the early days of the infection, despite the fact that it is a domesticated germ liable to be found at almost any time and place. It often appeared in the course of the infection and may have then been a secondary factor, but this is rather evidence against than for it, as the first cause of the malady. The same is true of the common occurrence of the germ in the postpandemic waves which recur in the winters. The germ may be present in the nasopharynx, etc., in healthy subjects when no influence of any type exists. In the pandemic it has never under any circumstances been recovered from the blood. It cannot be made to give the disease to animals or mankind. In like manner every other accused organism can be acquitted of being the first cause of the pandemic, although several are clearly responsible for the severity and fatality of the same. But streptococci and pneumococci cannot have been the first causes of the pandemic any more than Pfeiffer's bacillus. In mild and medium cases these organisms have not been cultivated from the blood. What, then, is the protovirus of the disease? For if we know this we can automatically rule out all other alleged causes. The existence of a very volatile and filtrable virus, should one be proved to exist, will not entirely solve the problem. For example, it cannot explain why one wave may be so mild as to have no mortality when another—perhaps also a first wave—may be so deadly. To account for the latter a true symbiosis may be necessary.

Meningeal Hemorrhage in Lethargic Encephalitis.—Despite the apparent immunity of the meninges in this affection, exceptions have been recorded. Thus Rathery and Bonnard have described a case complicated with hemorrhagic meningitis. After an ordinary début with fever and somnolence the patient developed a meningeal syndrome—positive Kernig and rigidity of the neck. The syndrome persisted a fortnight. The cerebrospinal fluid was frankly hemorrhagic and under high pressure. —*La Presse Médicale.*

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held March 2, 1920.

THE PRESIDENT, DR. CHARLES H. CHETWOOD, IN THE CHAIR.

EXECUTIVE SESSION.

Resolutions Favoring Universal Military Training.—Dr. GEORGE E. BREWER introduced resolutions to the effect that the Medical Society of the County of New York heartily approved of the plan for universal military service formulated by the Military Camps Association and embodied in Bill No. 3792 now before Congress, inasmuch as this plan not only provided man power for national protection in the event of war, but because, in virtue of its value from the standpoint of intensive physical training and moral discipline of our young men, it would be one of the greatest measures for public health ever enacted by State or Federal authorities.

Dr. BREWER, Dr. CHARLES H. PECK, Dr. GEORGE DRAPER and Dr. FREDERICK T. VAN BEUREN spoke of the advantages of universal military training from the standpoint of physical fitness, the development of moral responsibility, and the fostering of patriotism. It was pointed out that under the plan proposed no great hardship would be imposed on any one, as a young man would be required to spend only three months in training the first year and then from two to three weeks each year for four years. There was some slight opposition to the adoption of the resolution on the ground that the measure was a political one and one with which a medical organization was not concerned. This objection was overruled and the resolutions adopted.

Dr. JOHN P. DAVIN introduced resolutions endorsing the action of the Otsego County Medical Society at its annual meeting in December, 1919, in its condemnation of the Antinarcotic Drug Law and urging efforts to bring about the repeal of this law. These resolutions were referred to the Comitia Minora.

SCIENTIFIC SESSION.

Some Remarks on Group Study in the Surgery of the Head.—Dr. SEYMOUR OPPENHEIMER read this paper, in which he said that the great scope of modern medicine precluded maximum efficiency on the part of one person in all branches. Group study and practice presented the means for providing the needed efficiency for universal enjoyment. In head and neck surgery the ophthalmologist, otolaryngologist, cranial surgeon, neurologist, pathologist, and bacteriologist covered fields the work of which must be combined for completely satisfactory results. The ophthalmologist dealt, for example, with so closely circumscribed a field and one which reflected so many possible systemic or focal conditions that the assistance of the consultants was essential in differential diagnosis. Frequently the most careful group study was necessary in differentiating a sinusitis from an intracranial lesion, though either might be made manifest through headache and eye changes alone. So, too, with each of the specialties mentioned, problems arose which could be solved correctly only by summoning the other members in consultation. Especially well demonstrated had been the value of the otologist to the neurologist in localizing a lesion as between the cerebellum and the labyrinth by means of the more recently adopted ear tests. There were undoubtedly conditions in which these extensive studies were not indicated, but many more occurred in which the brief review of the case by the balance of the group would reveal important conditions which would otherwise be overlooked to the detriment of the patient. The dentist was to-day assuming, and should assume, a much more important function than that of extracting or filling teeth, as these very practices had so much bearing on the welfare of the patient. The skilled Roentgenologist was an ever more important member of the group, as his field developed newer and better methods of head work and their interpretation. The laboratory worker with all the methods at his command was increasingly well recognized as a necessity in really complete, satisfactory, exhaustive study. It was then evident that by combining the results of laboratory tests and close clinical observation, and corroborating them under the guidance of the group, we could hope to elucidate a complex and often obscure symptomatology and secure results to which our patients were justly entitled. Nowhere was this revolution in the practice of medicine more needed than in head and neck surgery.

Group Study from the Viewpoint of the Internist.—Dr. ORRIN S. WIGHTMAN said that Dr. Oppenheimer had given a complete and very careful study of the correlation of symptoms and the valuable assistance which might be secured from group study as related to his own particular specialty. Before discussing the viewpoint of the internist, Dr. Wightman defined group study as a careful and intensive study of the same patient by a number of qualified specialists, who, under favorable surroundings, rendered combined expert opinion. The intent of this opinion was to get a correct and scientific picture of the patient's symptoms and to discover such abnormalities as were present. From the viewpoint of the specialist it was assumed that this system was feasible and that, under group practice, the specialist would be favorably located where he would see a large number of cases daily and where he would be part of a working system which kept careful and scientific data relative to the patient. This would naturally involve properly made out blanks and literature for permanent filing. The specialist in time saw so many cases that were similar that it became routine, and unless he struck a case that was abnormal his interest was apt to wane. He thought that they would all agree that monotony dulled the edge of the physician's enthusiasm. A constant repetition of the same thing tended to make the average individual careless, he lost interest, his work assumed the character of dispensary practice, and he began to go down hill. On the other hand, could the members of any group system, after the day's work, assemble in general consultation, taking their cases seriatim, going through them with a fine tooth comb, and having their results properly tabulated and outlined for the direction of the individual case great good might result. The general practitioner of the present day who was abreast of the times had developed his own system of group study, had a man to look after his surgery, his gynecology, his nose and throat work, etc. He referred his cases to these men promptly and as often as was necessary. The general practitioner was the clearing house where cases coming for his advice and medical counsel received careful consideration. He was in the best position to know the peculiarities of his patients, to save them from shock, from unnecessary annoyances of disagreeable facts which under his guidance could be carefully told and the patient prepared accordingly. He was the man in whom his patients believed and his counsel was necessary for things which were not pathological but had a distinct bearing on the patient's health and well being. Many of the abnormalities which a general practitioner found never gave rise to symptoms and the patient was better off in ignorance of them. Occasionally the unexpected was observed, but the proportion of cases in which this happened did not warrant the extra expenditure on the part of the patient. When the subject was reviewed from the standpoint of the patient, it was found from the examination of men who had applied for service in both the army and navy and from the statistics of life insurance companies that the absolutely normal individual was practically unknown. Sometimes valuable information was secured, although minor ailments as interpreted by the specialist occasionally gave cause for unnecessary alarm. It must be remembered that the average sick person got well without medical service, and that many of his smaller ills never proved a source of annoyance. The patient passing from one physician to another often became confused, as to both his ailment and what he was expected to do in the line of treatment. It must be remembered that patients were human beings who came to the physician sick and unable to help themselves; they needed the clear vision of a disinterested person who could average up their physical woes and guide them accordingly. There must be one man in charge, otherwise the multiplicity

of opinions would nullify all the good that was supposed to accrue to the patient. Looking at it commercially, under a group system the fee to the specialist must necessarily be considerably below what he was in the habit of receiving, or else group study lost its economic value. Reduced to the final dimension, to work most successfully it must mean large business with small profits. Inasmuch as people had always resented being treated as a commodity, would they take kindly to any system that treated them as a commodity, no matter how expert that attention might be? Would the physician lose interest when his patient became institutional instead of individual? When his patients were reduced to case numbers instead of names? There was another phase that might be a temptation to many physicians, namely, to feed the clinic instead of curing the patient. It was questionable whether any good man could give his full interest and enthusiasm to a case for a minimum fee. Corporate medicine which was an extension of group medicine had found its way into public life, but up to the present, aside from the few well known names which were kept for advertising purposes, the rank and file of these medical bodies were composed of young men, recent graduates who had no way of getting started and were glad to obtain the experience with a reasonable stipend, and to hold these positions just long enough to build up a practice. This type of practice might well suit insurance companies and people who had to guarantee the health of their employees, but could hardly meet the requirements of the people as a whole. Group medicine was an excellent way to commercialize a dignified profession when it was linked with the advertiser's art. The attitude of the State toward group medicine was entirely economical. The legislatures had welcomed anything that would take care of the sick irrespective of the fundamental facts. "Keep the people well at so much per capita" had been the slogan for a number of years. The intelligent physician did not need the State law to tell him when he had reached the limit of his skill. As a natural evolution physicians in various parts of the country had worked out centers of international reputation where an intensive study and diagnosis might be made, such as the Mayo Clinic and Johns Hopkins, but these centers had endeavored to lead the way in medical thought and were not meant, with their elaborate methods, to meet the physician's daily needs; they were schools of study and experiment, the results of which were gladly given to the profession. Finally, did the people want group medicine? Time alone would solve this. The essayist did not agree with his predecessor that if the physician did not recognize this need the State would. Group medicine, except in closely populated districts, could not meet the need of the people. People would not want to be handled like a commodity; they demanded to be treated as individuals; they wanted somebody with the human touch who could feel with them, sympathize with them, and help them, and they rightly felt that they were insulted when their ailments were handled like machinery. When the patient lost the type of family physician who had brought him into the world, advised and counselled, controlled and censored him, he had lost a friend who could not be replaced by any State law or legislation.

Dr. Robert T. Morris said it seemed to him these two papers might well be placed side by side in parallel columns as setting forth both sides of the question. Dr. Wightman had expressed the ideals embodied in the old time physician, who was guide, confessor, and friend, a combination of qualities one rarely found in the physician of today. The extreme reaction from this picture lay in group diagnosis. We were between these two positions today. The solution of the whole question, he felt, lay in the enlargement of hospital facilities, so that every physician might have the advantage offered by a group of specialists with hospital facilities and at the same time might carry out the ideals of the last speaker.

Dr. Eden V. Delphey said that he quite agreed with the remark of the last speaker that the two papers of the evening should be placed in parallel columns, as they were to a large extent opposed to each other. Moreover, his own remarks would be somewhat in opposition to those of the last speaker. To paraphrase the words of Mr. Henry Watterson, of Kentucky, who said, "There is no bad whiskey; there are only different grades of good whiskey"—of course this was said before the ratification of the eighteenth amendment—there were no poor doctors; there were only different grades of good doctors. For the last thirty years the medical colleges had been turning out graduates who were well qualified and equipped to practice medicine, although some were better qualified and equipped than others. The only poor doctors were the ones who entered the practice of medicine long before that time, and they are now all dead. Some of these graduates took up the study of a specialty, made rapid progress, and became very proficient in their especial lines, whether they did it for the benefit of humanity or for the money there was in it for themselves. The general practitioner was one who in addition to his knowledge of the science and art of internal medicine had a considerable knowledge of all the various specialties, knew his own abilities and limitations, knew when to treat the patients himself and when to send them to a real specialist—not to one who became a specialist over night—and in that way practiced 'group medicine.' He always sent his own patients to the specialist in whom he had the most confidence, and he had never done so without the specialist's being willing to treat the patient for a fee commensurate with the patient's ability to pay, or even for nothing when the patient could not pay even a small fee. By charging the wealthier patients what the services were worth he was able to do this. He felt that under the care of a good general practitioner the patient had all the advantages to be gained from group medicine as well as those to be derived from the supervision of the family physician.

Dr. Morris Stark said that the diagnostic clinic was not of sudden growth; it had had its inception among the physicians of the hospital staff. When a physician wanted the opinion of a specialist he usually called in some one on the staff of the hospital with which he was connected, and thus the hospital staff came to form a clinical group. Group medicine had its limitations and its advantages. In the first place it should be standardized. Not all groups had standards like those of the Mayo Clinic or the Johns Hopkins Clinic. All the eighty groups in Chicago, referred to by one of the speakers, were not up to the same level. In fact, many of these groups were in reality organized sanatoria for the treatment of cases, and that was a disadvantage. Reference was made to the fact that with group medicine special advice would be made available at a cheaper rate than at present; that was a tacit acknowledgment that the up-to-date specialist was charging too much. Another weak point in group medicine was that a member of a group must accept the services of others in the group instead of being a free lance and sending the patient where he thought best. There were cases in which he wanted the opinion not of one specialist but of several, and it was conceivable that one might want the advice not of one group of clinics but of several. He could not agree with the statement that if they would not accept group medicine they would have to accept State medicine. Before that could happen the medical profession would have to be consulted. In any application of group medicine there would have to be some one to take the supervision of the case, and there should be a standardization of group medicine.

Dr. L. W. Zwisohn said the passing of the family physician was a calamity. Even though special advice was needed, there was still a large field for the family physician; he was a man whose services could not be dispensed with.

Dr. Oppenheimer, in closing, said that owing to the short time allotted for reading his paper, he had not read that portion referring to the internist. He had, however, written that the internist might well be regarded as the keystone of any diagnostic group; that was primarily of the greatest importance. Without the internist no group could succeed. He had not attempted to exploit the advantages of the diagnostic clinic from the commercial standpoint, but simply tried to show the tendency of the times from the scientific side. He thought it was remarkable that a city like New York, which should be a medical center, was

lacking in this advanced movement. In his paper he had simply wished to show that there was a certain group of diseases in which it was very essential, starting with the internist as the keystone, to have the co-operation of specialists in certain other lines of work. He needed in head surgery the internist, the laboratory, the dentist, the *x*-ray man and the neurologist.

Group Study in Urological and Gynecological Surgery.—Dr. DOUGAL BISSELL discussed this phase of the subject, first defining his position with respect to the gynecologist's sphere of work, and what he considered his legitimate field of surgery. He said he was not in sympathy with the popularly accepted definition of the term gynecology as a branch of medical science which related only to the diseases of the organs peculiar to women. He thought it should be more comprehensive and include not only the peculiarities of the female constitution as compared to man, but the diseases of the female urogenital system and their directly dependent complications. The genital and urinary organs were so closely related embryologically and morphologically that a comprehensive idea of one could not be acquired without a study of the other. At maturity their functions and diseases were so intimately associated that no treatise on one subject was complete without the inclusion of the other. After pointing out some of the differences in the anatomical relationships of the bladder and urethra between the male and female, stated that there should be two great divisions made of the study of the urogenital system; one being that of the genital and urinary organs of the male, the other the genital and urinary organs of the female. The study of the genital and urinary organs of the female should again be divided into (1) diseases and injuries which are independent of pregnancy, also those dependent upon remote labor, and (2) those which were incident to or depending upon existing pregnancy, also those which were the immediate result of labor. The first they popularly designated as gynecology, the second as obstetrics. These closely allied subjects frequently met and overlapped; a knowledge of one was essential to a knowledge of the other, and it might be said that a thorough knowledge of either could be obtained only by a comprehensive knowledge of pathology and urology. Dr. Bissell then discussed kidney pathology somewhat in detail, bringing out the point that any displacement of the kidney was conducive to improper urethral drainage, that a ptosed kidney was more predisposed to calculus than a normally posed kidney; the prolapsed kidney was also more prone to tuberculosis. Statistics of the Woman's Hospital corroborated the well known fact that in women the right kidney prolapsed more frequently than the left, and as one would expect there was a predominance of disease on the right side. Fibromyoma of the uterus was among the very common diseases of women that were not infrequently associated with symptoms referable to the urinary organs. When they were removed it was to be expected that the symptoms would disappear, but occasionally disappointment was met with and further search might reveal an associated kidney lesion of equal importance. Cases illustrating this point were cited. Attention was called to the dystopic kidney, which by its presence was a menace to normal delivery. When the pelvic kidney was recognized as complicating pregnancy to the extent of endangering mother or child, cesarean section was usually resorted to. In the writer's opinion surgical effort to readjust the pelvic kidney and free the birth canal of obstruction was as justifiable as to remove a fibroid or an ovarian tumor with the same purpose in view. Dr. Bissell said he had entered somewhat in detail in discussing these conditions to show that the obstetrician and gynecologist needed the help of the urologist, and as for himself, he frequently called the urologist into consultation.

Group Study in Urological and Gynecological Surgery; the Urological Aspect.—Dr. H. G. BUGBEE presented this contribution to the discussion, in which he stated that the pathology, symptomatology, and diagnostic technique which laid the foundation for accurate surgery had, through necessity, become divided among those specially trained and equipped for this work, and this had led to what might be termed the group study of cases. The intimate knowledge which was recognized in consulting those specially informed and equipped (when such special accomplishment was backed by a general surgical experience) should lead to a further division of surgery; and a following through of the case to the end must be most advantageous to the patient. The first-hand knowledge gained by the intimate study of the cases lead to the same attention to details before, during, and after operation, which, in turn, meant better results. These remarks, the writer stated, were especially applicable in the field of urology, and while more particularly applicable to urological surgery in the male, they might often be applied to the female. The association between urology and gynecology was most intimate, and could best be illustrated by the growth of the urological department of the Woman's Hospital. This growth had been due to the recognition of the value and necessity of special investigation of cases presenting urinary symptoms or physical signs pointing to the urinary organs. The writer referred to a paper he had presented before the Urological Section of the American Medical Association in 1915 in which he presented a report on 1,000 urological cases in women in which frequent urination was the predominant symptom, and the cause of this symptom traced in each case. Renal foci with descending infection, or urethral foci with ascending infection, were the conditions present in the vast majority of cases. Subsequent observations in several thousand cases had verified these findings, with the constant increase on the side of renal infection as the primary urinary focus. Trigonitis and urethritis was the picture most often presented. Local treatment often gave relief, but it was often found that measures directed to cutting off the infection at its source must be instituted; this meant, first, the treatment of the patient, and, secondly, the treatment of the urinary tract. To further carry out the team work in the observation and treatment of these cases, a gastroenterological department had been established at the Woman's Hospital. It was surprising the number of cases of urinary tuberculosis that had been discovered after the patients had undergone long periods of local treatment elsewhere; calculi in the kidney or ureter unrecognized and treated symptomatically, the patients often being sent to the hospital for a concomitant or supposed gynecological lesion. The writer pointed out the close relationship between renal infections and gastrointestinal pathology and focal infections and called attention to the possibility of renal anomalies which must always be borne in mind in eliminating an abdominal or pelvic tumor. The discovery of these anomalies had been due to team work at the hospital. Polycystic kidneys, which were of frequent occurrence, were often found in the course of a complete urological examination when not even suspected previously. The writer mentioned a few of the many coexisting urological and gynecological lesions and showed that in order to clarify these cases the cooperation of gynecologist and urologist was necessary in order to pave the way for a relief of symptoms and cure of the lesions. The services of the urologist in this class of patients was not only necessary from the standpoint of diagnosis, but from that of treatment as well. The treatment of bladder growth, lithopaxy, intraureteral manipulations in cases of ureteral calculi, and pelvic lavage in renal infections were especially important. The urologist who, step by step, had marked out the details in the study of the urological phase of the condition was often in a position to operate more intelligently, should surgery be required, and to follow up a case more carefully than a second surgeon to whom data might be given, yet the important aspect of group study lay in cooperation to the benefit of the patient. In closing, Dr. Bugbee emphasized that we must not lose sight of the fact that we were dealing with a human being, not with material to be handed about from man to man, to be manipulated *ad infinitum*. A good history and physical examination were of as much value to-day as ever, and special examinations should be carried out by those whose experience was such that the general clinical picture could be borne in mind. The resultant cooperation would be the treatment of the patient, not a lesion.

Dr. CHETWOOD said that long ago the doctor was supposed to know everything, and consequently was

expected to treat everything from a gunshot wound to measles. Then came specialism, which developed a kind of specialist who saw every ailment from the limited range of vision of his specialty. To-day there was a broadening, and the specialist, in order to make a scientific diagnosis, must have a broad vision. They needed not only group study, but collective study of those departments that touched each other as, for instance, the kidney and the field of the urologist.

AMERICAN MEDICAL ASSOCIATION.

Seventy-first Annual Session, Held in New Orleans, April 26-30, 1920.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 939.*)

SECTION ON SURGERY.

Third Day—Friday, April 30.

Importance of "Vital Capacity" in Thoracic Surgery. (Lantern Demonstration.)—Dr. EVARTS A. GRAHAM of St. Louis, Mo., made this presentation, defining the term, discussing the method of its determination, considering its relation to tidal air, and giving observations on vital capacity in various conditions. Vital capacity represented the maximum respiratory compensation possible in conditions likely to induce asphysia. The average in a normal man of average height had been found to be forty-eight hundred cubic centimeters; it might reach as high as seven thousand and over. A knowledge of the vital capacity made it possible to determine approximately the maximum opening in the chest wall which was compatible with life. In other words, the determination of the vital capacity in a given case would show the individual's ability to compensate for interference with the breathing surface. Mutilating thoracoplastic operations greatly reduced vital capacity, apparently permanently, and such operations, therefore, should be performed only as a last resort.

Prevention and Treatment of Pleurisy.—Dr. JOHN L. YATES of Milwaukee, Wis., reviewed briefly the landmarks in the history of the treatment of empyema. Hippocrates had introduced open drainage in this condition, but until the time of Bowditch little progress had been made. Bowditch had attempted to prevent and to cure empyema by aspiration without producing an open pyothorax. The ideal treatment of empyema involved the cure of serofibrinous pleurisy, and this was best accomplished by means of air-tight one-way drainage, instituted early. This called for early diagnosis. Early diagnosis, the prompt institution of air-tight one-way drainage, and the control of technical details simplified by the use of the fluoroscope to eliminate danger and to minimize failure, were the main points emphasized. The mortality rate and serious complications were much smaller when this method was employed than when open drainage was instituted.

Observations on the Relative Value of the Various Operative Procedures Employed in Acute Empyema.—Dr. CARL EGGERS of New York prefaced his consideration of the subject with the statement that while much had been written regarding acute empyema, nothing had appeared that had radically modified the conception of the pathogenesis or the best routine treatment of the disease. One was impressed by the fact that in most of the papers comparisons were made on the basis of treatment and mortality only. The incidence of the disease, the type of organism, and climatic conditions should be given consideration, as well as the sporadic and epidemic occurrence, and the difference in the disease in different cases. The ordinary conception of empyema was that it was an accumulation of pus in the pleural cavity, more or less encapsulated, following pneumonia. If that had been the only type encountered in the army there would have been little discussion, but it was found following measles, and when the high mortality rate was published, various men tried various methods for the reduction of this high mortality rate. One group of operators considered only the type of infection and thought its removal of primary importance; another group delayed operations until the pneumonia had subsided and then operated. It was necessary to consider what had gone before in order to determine which was the best method of dealing with the given case. If, in addition to studying the clinical features, one would investigate the pathological findings, valuable information would be gained. Pneumococcus infections and streptococcus and staphylococcus infections gave different findings. The methods of operation in use were (1) aspiration; (2) open methods; (3) closed methods. Aspiration did not mean that this should be employed until the case was cured, but only until it was felt that the pneumonia had subsided, when operation should be performed. The open methods, by intercostal drainage and drainage by rib resection, gave good drainage, were easy to perform, and required simple after treatment. In the majority of cases simple drainage, or this supplemented by the Dakin treatment, would bring about good results. The closed methods called for intermittent and continuous closed drainage. Although these methods had been used for years they had never been adopted as universal procedures because they gave inadequate drainage and required cumbersome apparatus. Some of the closed methods of drainage were associated with the injection of formalin-glycerin solution, which was supposed to sterilize the cavity. In some cases it accomplished this, but produced an enormously thickened pleura, and a cast of the cavity was formed by the formalin. No treatment would always give uniform results. Individualization was the keynote of the successful treatment of empyema. The essayist advocated the open method of treatment as a routine procedure. Empyema should be treated by the oldest rule in surgery—when pus is present, give it free exit.

Dr. ALEXANDER LAMBERT, in opening the discussion on the papers of Dr. Graham, Dr. Yates, and Dr. Eggers, emphasized the point that the physician, on seeing empyema in a medical ward, should report the case to the visiting surgeon and not to the house staff. Empyema, as a rule, was not a sequela of pneumonia, it was a complication of pneumonia, appearing generally in the fourth or fifth day. This had been stated years ago by Delafield, and still held true. Pneumonia itself caused more deaths in the early stages of empyema because it prevented the possibility of interference with good surgery. The standpoint of the surgeon, that the pneumonia must subside before operation, seemed to be correct. Whether the pus was "laudable or damnable" made no difference. In many cases there was as much danger from minute abscesses of the lungs as from the empyema. He had had many cases with multiple abscesses scattered all over the surfaces of both lungs. The practice of inserting a trocar into the pleura in pneumonia was to be deprecated. The medical man should be taught to consult the surgeon in the early stages of pneumonia, and that empyema should be treated surgically as early as possible.

Dr. MARTIN B. TINKER of Ithaca, N. Y., said it had been abundantly demonstrated to men in the service that early operation in empyema and pleural effusions caused a large number of deaths. Aspiration and canula treatment was not always successful; it would cure a considerable number, but in many others it was necessary to resect a rib and drain. He emphasized the importance, in using the Carrel-Dakin method, of following the procedure as employed in the War Demonstration Hospital, and not as it was carried out by many others. By the former technique the percentage of cures was very high. If cure did not follow, if relapse and reaccumulation of fluid occurred, rib resection must be resorted to, the resection of one rib and the thorough sterilization of the cavity usually leading to recovery without further operation. Extensive thoracoplastic operations were unnecessary in most cases.

Dr. ARVINE E. MOZINGO of Indianapolis, Ind., described the method which he had employed with success at Walter Reed General Hospital, which consisted in the introduction of a small rubber tube by means of a straight trocar cannula and the removal of the fluid. The tube was fitted into the chest wall and the fluid was withdrawn from one to six times daily. Formalin-

glycerin solution was injected after the withdrawal of the fluid. In a series of 138 cases, 45 of which were acute and the rest chronic, treated by this method there were only two deaths. The amount and the appearance of the secretion and the general condition of the cavity and of the patient were indicative of the time for the removal of the tube. The formalin-glycerine solution should not be used in too large quantity or too long. He had never seen a case of empyema too serious to be treated by the closed method. While delay was advisable in the open operation, it was not necessary in the closed method. There was nothing cumbersome about the apparatus which he employed—it consisted of a two-inch dressing put on by means of four strips of adhesive, holding a medicine dropper.

Dr. JAMES F. MITCHELL of Washington, D. C., thought there should be no controversy regarding the open and closed methods of dealing with empyema, since each in its place was useful. One should not think of empyema as a single condition and center attention upon this, but should consider it only as a part of a more general condition. The treatment could then be selected according to the stage of the disease. Statistics taught very little, but the study of autopsies had brought out some very important points, chief of which was that the empyema attack could be divided into two periods, first, up to three weeks, and second, after three weeks. Autopsy up to the first three weeks showed that several conditions might be present, any one of which endangered the life of the patient. After three weeks the empyema was the chief factor. One must select the time for operation and fit the operation to the time. The three important points were to save life, to reduce convalescence, and to minimize disability.

Dr. MOSES BEHREND of Philadelphia considered the bacteriological control of empyema most important. Treatment could be determined by the bacteriological control. In streptococcus hemolyticus infection no operation should be performed until the symptoms had subsided; in all other cases when pus had formed the sooner it was evacuated the better. Rib resection was the best operation for the purpose. A great deal of harm had been done by other operations, such as thoracotomy and the introduction of drainage tubes. The only way to get rid of pus in any portion of the body was by drainage, and the best way to accomplish this in empyema was by means of rib resection.

Dr. LOCKWOOD of Pasadena, Calif., had had no experience along the line of the experimental researches of Dr. Graham, but he had had considerable practical experience in the front lines. He had seldom caused asphyxia upon opening the chest. It was possible to take up the lungs and to remove fragments of bone or other foreign bodies, and even to remove sections of lobes. He had not done this frequently, but his experience was that asphyxia was slight, especially if the operation was done under local anesthesia. In the treatment of empyema following pneumonia he had had good results from the injection of a two per cent. solution of formalin in glycerin. Judgments as to treatment could not be formed from one epidemic or series of cases. He advocated the routine use of *x*-rays in the treatment of infections of the chest cavity. Bacteriological control in these cases was important.

Dr. CUBBINS of Chicago thought with Dr. Mozingo's method there was danger of making too much negative pressure and thereby injuring the lung. Where aspiration was carried out with lavage the solution would dissolve out the heavy fibrinous clots, but staphylococcus infection in the pleural cavity would not yield to this form of treatment. Streptococcus and pneumococcus infections would. He suggested the angulation of the drainage tube so that the patient would be comfortable while lying in bed.

Dr. GEORGE J. HEUER of Baltimore, Md., said his experience abroad in treating wounds of the thorax was that when the chest was opened widely, sufficiently to exteriorize the lung completely, there was no respiratory upset. He did not question Dr. Graham's experimental work, but wished he would explain more specifically what he meant by too large an opening. He was convinced that, regardless of intrathoracic pressure relationship, if a man had one lung, whether that lung be collapsed or not, respiration would be sufficient for the period of the operation, an hour or an hour and a half. The subject of empyema was a very large one. The whole effort, made possible by the Dakin solution, was to prevent chronic empyema. When chronic empyema had developed, the important point was to sterilize the cavity, leaving it then to take care of itself. In twenty-four cases of chronic empyema, with three exceptions, he had succeeded in sterilizing the cavity. These three were cases of tuberculous empyema, with active pulmonary tuberculosis. In the majority of the cases the *x*-ray showed that the cavity was obliterated. The cavity was obliterated, as shown by *x*-ray study, in from three to eight months. The thickened pleura spontaneously disappeared.

Dr. THOMAS of Philadelphia advocated making the opening for drainage in the eleventh interspace instead of the eighth.

Dr. HEDBLOM of Rochester, Minn., emphasized the point that in empyema, acute or chronic, the treatment should be adapted to the patient, regardless of the particular method favored by the surgeon. In a series of 150 cases of chronic empyema treated at the Mayo Clinic during the past two years 51 were practically cured by using Dakin's solution. Some of these had virtually complete collapse of the lung. There remained a group in which neither rib resection nor Dakin's solution sufficed. These cases had lasted ten, fifteen, and one even thirty years. In such cases it was impossible to hope for complete expansion of the lung. After sterilization decortication of the lung was practised in thirty cases. In twenty-seven cases it was necessary to do a plastic operation. There were four operative deaths in the series. Mutilating radical operation was called for only when conservative measures had failed.

Dr. RICHTER of Chicago thought Dr. Graham had been in error in comparing the fundamental respiratory movement of the dog with that of the human being. The transverse diameter of the chest of the human being was twice that of the anterior-posterior. In the dog it was half. The area was tremendously different. The lateral movement of the medium septum in the human chest was trifling in comparison with the lateral movement of the medican septum of the dog's chest. When one opened the dog's chest on one side one diminished the vital capacity to a slight degree, in the human being, to an important degree. One had been so long taught to adequately drain when one found pus that one was apt to forget that the pleural cavity was but a trifling cavity, holding only a centimeter of fluid. In empyema that trifling space was converted into a large space, and one was tempted to make a large incision and drain. The logical procedure, conditions permitting, was to carry out such method of treatment as would quickly bring together the two layers of pleura.

Dr. ROSALIE SLAUGHTER MORTON of New York City had been interested, on the Salonika front, in the difference in the effect of gas gangrene in pleural and pulmonary wounds as compared with muscular wounds. The difference was attributable to the element of pressure. Chest wounds were more open, hence there was not so much pressure, and these patients recovered more quickly than when gas gangrene involved muscular wounds.

Dr. HARBERLIN of Chicago said when one found an empyema patient in extremis the object was to drain the chest cavity or pleural cavity with a minimum amount of shock or reaction to the patient. Many of these patients should have been operated upon weeks before they reached the surgeon. Local anesthesia and rib resection were advocated, removing the pus without undue manipulation, and covering the chest with a layer of sterile guttapercha instead of rubber, gauze or other foreign substance in the pleural cavity.

Dr. GRAHAM, in closing the discussion, said he did not consider it essential to employ a positive pressure apparatus in intrathoracic operations, for definite physical and physiological reasons. The shape of the chest counted for nothing, but the flexibility of the mediastinum was most important. He considered the pressure results in the dog strictly applicable to the human being.

Dr. YATES, in closing the discussion, quoted the statement that the way to cure chronic empyema was

to prevent it. All empyema started as acute pleurisy and not as empyema. The visceral and parietal pleuræ would adhere so long as no microorganisms got between. The ability to make antibodies for microorganisms and to know how many organisms were left behind were important points. Empyema must be looked upon as a therapeutic failure. The early recognition of pleural exudation and the introduction of intermittent or continuous or the air-tight one-way drainage were necessary preventive measures. He had seen between thirty and fifty cases at La Panne treated largely by the Duval method, and later he had had the opportunity of seeing ninety men treated in the same way except that positive-pressure analgesia was used, as introduced by Gwathmey. Positive-pressure analgesia as developed by Gwathmey plus primary pleural drainage would do more to make thoracotomy a safe and feasible operation than anything that had come out of the war.

Dr. EGGERS, in closing the discussion, reiterated that there was no one way that was always best in the treatment of empyema; the method employed must be adapted to the case. He did not agree that empyema started as pleurisy; he believed it started as empyema. The aspiration of clear fluid showing streptococci indicated empyema from the very start. It was difficult to decide which was the more important factor, aspiration after the pneumonia had subsided, or some form of drainage. The method employed by Dr. Mozingo was useful for some cases but not for all. He would not consider an empyema patient cured until all fluid was out, until the two pleural layers were adherent, and until the patient presented no symptoms.

Fracture of the Femur: A Plea for a Better American Standard.—Dr. KELLOGG SPEED of Chicago sent this communication which, in his absence, was read in abstract by Dr. Dean D. Lewis: "Brief enumeration of the various methods reported in American literature. Lack of uniformity in case histories, examinaton, description of bone lesion and records of results. Remedies: Hospitalization of every case possible, country-wide use of American Surgical Association fracture history sheet in hospitals. Treatment: 1. For neck of femur, fresh cases, abduction of Whitman; old cases, three main types of procedure (a) freshening or introduction of bone peg, (b) head excision and bony union to pelvis, (c) Brackett's head transplantation to trochanter. 2. For shaft of femur, fresh cases, traction and counter traction in suspension systematically applied and watched, applying either Thomas or Hodgen splint or nail extension; old cases, including nonunion or failure of functional result, intramedullary bone transplants or bone plates; compound or open fractures, debridement and extension. For all cases early movement of joints, massage and electricity. Compilation of results, spread of information, standardization of splints and frames and better American average results."

Dr. JOHN B. WALKER of New York City thought it unfortunate that Dr. Speed had been prevented from reading the paper, for if the war had brought forward one thing more prominently than anything else it was the treatment of fractures. He quoted official statistics with reference to mortality, function, length of hospitalization, and disability to show that our results had been disappointing. For example, from an analysis of about two thousand cases that went through the Surgeon General's Office it was anticipated that about sixty per cent. would be returned to duty and that about forty per cent. would be unable to return to duty. Instead of sixty per cent., it was found that only fifteen per cent. were returned to duty. About fifty per cent. of the cases required hospitalization of between two hundred and four hundred days; the other fifty per cent. between four hundred and eight hundred hospital days. It had been estimated from this series of two thousand cases that there would be perhaps ten per cent. without any shortening, another with three-quarters of an inch, and still another with an inch of shortening. When these were checked up it was found that these percentages were practically doubled. As soon as the standard forms were used it was found that much more careful attention was given to measurements of atrophy, of the shortening, and of the limitation of motion. When the standards forms were introduced records were made. The standard forms adopted by the American Medical Association and the American Surgical Association, and previously by the British Medical Association, should be adopted by all hospitals.

The Use of Bone and Fascia Grafts in the Reconstruction of Bones and Joints. (Lantern Demonstration.)—Dr. ADDISON G. BRENIZER of Charlotte, N. C., presented pictures of three cases of defects in the skull in which autogenous transplants from the tibia were used. Defects in the skull showed little spontaneous tendency to become filled with bone, differing in this respect from long bones, which were filled very rapidly. Autogenous transplants from the tibia became smooth and firmly united in the skull within six weeks, and sealed the opening permanently. Where the breech in any one bone was of long standing, the graft must be autogenous or possibly homogenous, if taken from an individual of the same blood group. Heterogenous tissues, dead after sterilization, might be used, but only as temporary internal splints which were finally absorbed. Fourteen cases illustrated this. Fascia was an excellent material for transplantation because it healed without reaction, both in cases where it was at rest and where severe functional demands were made on it. This applied even where aseptic conditions were not favorable. This was illustrated by nine cases.

Mechanical Stability of Fractures Following Operation.—Dr. PAUL B. MAGNUSON of Chicago based this presentation on one hundred consecutive cases of fractures. The fact that there had been so many forms of apparatus suggested and employed for the treatment of fractures showed that the majority were unsatisfactory in the majority of cases. He had taken as a type fracture of the femur, because this was the hardest to hold. If a mechanical apparatus would hold fracture of the femur it would hold almost any fracture in any other part of the body. The development of the subject involved the consideration of (1) the ivory or key bone versus extracortical plates in transverse fractures, and the mechanics of each; (2) the ivory or bone screw versus metal bands or plates, the relative ease of application and the resultant trauma; and (3) the overlay bone graft and combination intramedullary and inlay graft retained by kangaroo tendon. The Lane plate had been used not because it gave a good form of mechanical union or had given satisfactory results, but because it was easy to apply and required very few instruments. Steel had always been a poorly received guest of the tissues; it acted as a foreign body, and when closely applied in the form of screws placed in contact with bone, pressure necrosis took place and the bone fragments were allowed to move. Ivory, beef bone and bone grafts had been used. Autogenous bone graft was preferable of course. In the operative treatment of fractures traumatism could be reduced to a minimum by the application of simple mechanics. A simple mechanical apparatus which would hold against the pull of the muscles was the thing to use. The principle of the key in the key-way applied to the bone graft involved a simple principle of mechanics and furnished the strongest and simplest form of union for transverse fractures. Ivory could be used. It had the advantage over steel that it did not irritate the tissues and did not give rise to callus which it was necessary to remove. For oblique fractures nothing compared with the ivory or bone machine-thread screw.

Dr. SHERMAN of San Francisco, Calif., said bone would atrophy under pressure from one substance just as from another. The ivory peg would cause this just as would the steel screw. Steel screws did not hold more than a few days. His own opinion was that a plaster cast made to fit the individual was more competent than any internal pressure apparatus. Fractures of the shaft of the femur had yielded very good results from the use of the Lane plate, despite the fact that it was metal, was intended to stay, and did not stay. One source of error in the Lane plate was that it was always plated with silver or nickel, which was always infracted, erosion and absorption of bone following much more rapidly than was the case with a single metal.

Dr. RYERSON of Chicago thought Dr. Magnuson's

method of using key very useful in fracture in a single bone. Intramedullary grafts had been supposed to hinder union by interference with the circulation, but that had not been his experience. In old non-united fractures plates could not be used because of the osteoporosis, nor would screws hold. Autogenous grafts should be used in these cases. Bone should never be denuded more than was absolutely necessary. The key or intramedullary graft possessed an advantage in this regard.

Dr. MARTIN of New Orleans, La., made a plea for the Balkan frame, which could be applied so easily that any student could be taught its application, and which gave excellent results. As to mechanical appliances, no law could be laid down. It took a very good mechanic to put up a fracture with a mechanical apparatus. Steel screws had threads too fine and the least movement of the fracture pulled them out.

Dr. THOMAS of Philadelphia emphasized the point that one should not be satisfied with any form of noncperaitve treatment until the *x*-ray had proved it efficient.

Dr. PAUL A. MCINHENNY of New Orleans, La., emphasized the importance of *x*-ray examination. Immediately upon the arrival of a patient in the hospital or as early as possible he applied extension under a general anesthetic. Sufficient extension could be applied to a recent fracture of the femur to absolutely reduce the overlapping, and if good apposition of the fragments was secured its maintenance by extension would not be necessary. An adequately and properly applied plaster cast was all that was necessary, there would then be absolutely no displacement of the fragments, and atrophy would not be sufficient to allow freedom of movement in the cast before union had taken place. A plaster cast properly applied would not give rise to pressure sores. Assistants with no experience should not be allowed to apply traction or plaster casts. More attention should be given to the immediate reduction, under an anesthetic, especially in fracture of the femur, the application of a thin plaster cast, and the immediate *x*-ray examination of the reduced fracture.

Dr. BRENIZER, in closing the discussion, advocated the use of traction in recent fractures and autogenous grafts in cases of long standing. He had had only unfortunate results with metal splints.

Dr. MAGNUSON, in closing reiterated the importance of putting in a graft that would stay if this method were to be used at all. The key graft, with a screw in each end, would hold. It was then not necessary to keep the patient immobilized and there would not be the tremendous disability of the joint that followed mechanical fixation. He did not advocate operating on any fracture whatever. He had been using ivory since 1908, and he had never had to take a piece out, nor had he heard of anyone else who had. Ivory could not be found in the *x*-ray picture. He had had no untoward results from its use.

(*To be concluded.*)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NEBRASKA STATE BOARD OF MEDICAL EXAMINERS.

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(*Continued from page* 898.)

BACTERIOLOGY.

1. Name five culture media.
2. Differentiate a coccus from a bacillus and give example of each.
3. Describe the organism which is the cause of influenza.
4. Describe a tubercle bacillus.
5. How would you examine a specimen of sputum for tubercle bacilli?
6. Name the portals of infection in (a) tuberculosis, (b) gonorrhea, and (c) anthrax.
7. Tell in detail how to examine a suspected urethral discharge for gonococci.
8. Give in detail your method of detecting malarial organism in the blood.
9. Describe the Klebs-Loeffler bacillus and how do you stain for it?
10. Give a general description of the action of agglutinins and give in detail the serum test for typhoid fever, known as the Widal reaction.

MEDICINE.

1. What are the common means of transmission of pathological bacteria? (b) Through what avenues do they enter the body of the human individual?
2. Discuss the history and symptoms of chronic duodenal ulcer.
3. Discuss the treatment of lobar pneumonia.
4. Discuss the causes of chronic constipation.
5. Discuss the treatment of acute gonorrhea in the male, including instructions to patients.
6. Discuss the early symptoms and early physical findings in a case of acute anterior poliomyelitis.
7. Locate the different lesions that may intercept the arc of the patellar reflex, and name the diseases in which the patellar reflex is commonly lost.
8. Compare the temperature and pulse curves in typhoid with those in lobar pneumonia.
9. Discuss the symptoms and physical findings in acute appendicitis.
10. Name all the conditions that may cause pain in the upper right quadrant of the abdomen.

OBSTETRICS.

1. Name the accidents which may occur to the mother and to the child during labor.
2. What are the complications in obstetrics that would justify an abdominal section?
3. How is a retained placenta to be delivered?
4. What are the uses and dangers of pituitrin? When and how would you use it?
5. What are the dangers to the mother during the second stage of labor?
6. Describe your management and treatment of eclampsia.
7. What abnormal conditions in pregnant women are prejudicial to the life of the mother and child?
8. What are the functions of the placenta?
9. What are the indications for the use of forceps in labor? How are they applied and what are the dangers attending their use?
10. Define ectopic pregnancy. Give the symptoms of rupture of an ectopic pregnancy, and how would you treat the condition?

ANSWERS.

BACTERIOLOGY.

1. *Five culture media:* Beef infusion, agar-agar, gelatin, blood serum, and potato.

2. The *coccus* is spherical; the *bacillus* is rod shaped.
Example of coccus: Streptococcus pyogenes.
Example of bacillus: Bacillus tetani.

3. *The bacillus of influenza* is a very small bacillus. about 1 mikron in length by ¼ of a mikron in breadth; it is aerobic and facultative anaerobic, non-motile, does not form spores, has no capsule, stains slightly with the ordinary anilin dyes and stains well with Loeffler's methylene blue, is Gram-negative, is cultivated best on culture media which contain hemoglobin.

4. *The tubercle bacillus* is rod shaped, is from 1½ to 3½ mikrons in length and about 1/3 to ½ a mikron in breadth, is a strict parasite, is not motile, and has no flagella. It is slightly curved, does not form spores, is not liquefying, and nonchromogenic; is aerobic; it resists acids; it grows well on blood serum; stains well by Ehrlich's, Ziehl-Nielsen's, or Gabbett's method; it is Gram-positive.

5. To demonstrate the existence of *tubercle bacilli* in the sputum: The sputum must be recent, free from particles of food or other foreign matter; select a cheesy-looking nodule and smear it on a slide, making the smear as thin as possible. Then cover it with some carbolfuchsin, and let it steam over a small flame for about two minutes, care being taken that it does not boil. Wash it thoroughly in water and then decolorize

by immersing it in a solution of any dilute mineral acid for about a minute. Then make a contrast stain with solution of Loeffler's methylene blue for about a minute; wash it again and examine with oil immersion lens. The tubercle bacilli will appear as thin red rods while all other bacteria will appear blue.

6. PORTALS OF INFECTION. *In tuberculosis:* The respiratory tract, the digestive tract, through wounds in the skin. *For gonorrhea:* Urethra, bladder, vagina, conjunctiva. *For anthrax:* The skin, the intestines, the lungs.

7. To demonstrate the *gonococcus:* On a cover-glass make a smear with the discharge as thin as possible and let it dry in the air; cover it with a freshly made solution of anilin-oil-gentian-violet for one or two minutes; wash it in distilled water; leave it in Gram's solution for two minutes; wash it in 95 per cent. alcohol until decolorized; wash it in distilled water; counterstain with a dilute carbolfuchsin without heat, or with a saturated aqueous solution of Bismarck Brown; wash in distilled water, dry with filter paper, mount, and examine with an oil-immersion lens. The gonococci will appear as *diplococci within the leucocytes,* which have been *decolorized by Gram's stain,* and have taken the counterstain.

8. *In examining for malaria:* "Prepare some perfectly clean and very thin cover slips, and remove all traces of grease. Cleanse the skin of the finger-tip or ear with soap and water, and then with alcohol and ether. Make a *small prick* in the skin. Wipe away the first drop of blood, leaving a perfectly dry surface, so that subsequent drops will not run. Squeeze out a tiny drop about the size of a large pin's head. Touch the apex of this drop with the center of a cover glass, and immediately drop it, face downward, on a perfectly clean slide. Make several such preparations, and reject all those in which rouleaux are present. It is absolutely essential that the red corpuscles should lie flat. Examine with a 1/12 immersion lens and rather feeble illumination. Look in the red corpuscles for the presence of small black specks, often rod-like and showing slow movements of translation. These are surrounded by clear areas. One may also see in the center of some of the red cells clear ameboid areas which show no pigment. Rosette forms may also be visible. These forms of the parasite are always present in cases of malaria which have not had quinine. Other varities are only met with in some chronic cases. Of these there are two chief forms: (1) The crescentic, (2) the flagellated. These are easily recognized. The crescentic bodies are highly refractile, rather longer than a red blood corpuscle, and about 2μ in diameter. Particles of pigment may be recognized in the parasite and also in some of the ordinary leucocytes."—(Hutchinson and Rainy.)

9. The *characteristics of the Klebs-Loeffler bacillus (of diphtheria):* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are non-motile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene blue.

A sterile swab is rubbed over any visible membrane on the tonsils or throat, and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appear as short, thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts.

10. *Agglutination.*—"In the blood serum of persons suffering from certain infectious diseases there exist soluble bodies, called agglutinins, which have the property of rendering nonmotile and clumping the specific microorganism of the disease, and have little or no influence upon other bacteria. This 'agglutination' takes place even when the blood is greatly diluted. Undiluted normal blood can agglutinate most bacteria, but loses this power when diluted to any considerable degree. These facts are taken advantage of in the diagnosis of several diseases."—(Todd's *Clinical Diagnosis.*)

The Widal reaction: "Three drops of blood are taken from the well-washed aseptic finger tip or lobe of the ear, and each lies by itself on a sterile slide, passed through a flame and cooled just before use; this slide may be wrapped in cotton and transported for examination at the laboratory. Here one drop is mixed with a large drop of sterile water, to redissolve it. A drop from the summit of this is then mixed with six drops of fresh broth culture of the bacillus (not over twenty-four hours old) on a sterile slide. From this a small drop of mingled culture and blood is placed in the middle of a sterile cover-glass, and this is inverted over a sterile hollow-ground slide and examined. . . . A positive reaction is obtained when all the bacilli present gather in one or two masses of clumps, and cease their rapid movement inside of twenty minutes."—(From Thayer's *Pathology.*)

MEDICINE.

1. *Common means of transmission of pathological bacteria:* By the air, by water, by food, by fomites, by contact with infected persons, by "carriers," by domestic animals, mosquitos, flies, fleas, bedbugs, ticks, rats.

Avenues by which they enter the body: Skin, especially through abrasions and wounds; respiratory tract; digestive tract; urogenital tract; conjunctiva, and directly into the blood, as by bites of insects.

2. "*Ulcers of the duodenum* are very similar in nature and origin to those of the stomach, to which they may be secondary. They occur most frequently in men thirty to forty years of age, and often without any obvious cause. Oral sepsis is not uncommonly present, as also hyperchlorhydria; in some cases chronic nephritis or arteriosclerosis has existed, and in others the lesion follows some operation. The first part of the duodenum is that usually affected, and the anterior rather than the posterior wall.

"*The symptoms* are tolerably characteristic, even apart from the dangerous complications, hemorrhage, perforation, and stenosis. The patient, who may appear to be fairly well nourished, complains of pain coming on after meals, not immediately, but after an interval of two or three hours, and often relieved by taking more food. Beginning with a sense of fulness and heat in the epigastrium, it develops into acute pain located in the right hypochondrium and shooting through to the back. On examination of the abdomen a tender spot is usually to be detected a little above and to the right of the umbilicus. The patient complains much of acid eructations, but vomiting is not a very frequent symptom; when present, it may relieve the pain. The ejecta may contain a certain proportion of bile. The patient is constipated and loses weight during an attack. Frequently he has intervals of complete freedom from pain, in which he can digest anything and enjoy life. In a considerable percentage of cases, moreover, the condition is absolutely latent and free from symptoms until acute manifestations of perforation or hemorrhage supervene."—(Rose and Carless' *Surgery.*)

3. The *treatment of pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent?

"In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset.

"In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset, and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to. Many prescribe it from the outset.

"The diet should consist of milk, beef-tea, or broths, white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential.

"Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated, are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided.

"The results of *serum treatment* are not unequivocally encouraging, but vaccine treatment would seem to be of better promise. Where possible, an autogenous vaccine should be used."—(Wheeler and Jack's *Handbook of Medicine.*)

4. *Constipation* "may be caused: (a) *By the character of the food taken,* being more common in those taking an exclusive meat diet than in vegetarians. (b) *Disturbances of innervation,* more frequently than from any other cause. It is seen in hysterical neurasthenia, brain injuries, simple neglect or lack of proper habit, injuries and disease processes affecting the peritoneum, lead poisoning, nervous dyspepsia, hyperchlorhydria, etc., etc. (c) *Mechanical causes,* among which are weak abdominal musculature, strictures, growths, and the recumbent posture. (d) *Reflex causes* and direct irritation as in fissure of the anus, hemorrhoids, rectal ulcer, prostatitis, and displacement of the uterus or ovaries. (e) *Fever* and other conditions associated with profound toxemia, diminished secretion or excessive abstraction of fluids. (f) *Chronic disease of the stomach, colon or small intestine.*"—(Greene's *Medical Diagnosis.*)

5. "The *treatment of acute gonorrhea* is greatly facilitated by keeping the patient as quiet as possible, and in severe cases by rest in bed. The bowels should move regularly and large quantities of water be taken. The diet should be plain and unstimulating; alcohol, coffee, tea, and condiments being especially interdicted. The patient should wear a suspensory, and some form of gonorrhea bag to catch the discharge; a piece of cotton held in place by pulling down the foreskin over it, is useful for the latter purpose. Sexual excitement of all forms must be prohibited, and the penis cleansed twice a day by soaking in warm salt solution. A hot hip bath once or twice a day is beneficial. The patient should be warned of the contagiousness of the discharge, and particularly of the danger of gonorrheal ophthalmia; the hands should be kept clean, and all towels used by the patient kept apart from those used by others. The so-called *abortive treatment,* in which strong antiseptic solutions are injected into the urethra, is dangerous. *Internal treatment* usually consists in the administration of urinary antiseptics, *e.g.* hexamethylenamine (grains 5 t.i.d.), salol in the same dose, or methylene blue (grains 2 t.i.d.); alkalies, particularly when ardor urinæ is marked, *e.g.* carbonate of soda, or potassium citrate or acetate; and balsamics, *e.g.* oleoresin of copaiba, oleoresin of cubebs, and oil of sandalwood, each of which may be given in from 5 to 10 minim doses t.i.d. in capsules. Bromide of potassium, 20 to 40 grains, on retiring, is the most effective remedy for chordee; the painful erection itself may be relieved with ice water. Injections may be antiseptic or astringent; the former may be used from the beginning, the latter in the declining stages. Any injection which causes much pain is too strong and must be diluted or discarded. The syringe should be blunt pointed and hold about three or four drams. The injection should be given after each urination, and the fluid held in the urethra for three minutes by compressing the meatus. Of the antiseptic injections may be mentioned argyrol, 1 to 5 per cent., protargol, ¼ to 1 per cent., and potassium permanganate from 1 to 10,000 to 1 to 1000. The following are astringent injections; zinc sulphate, grains 10, bismuth subnitrate, powdered acacia, each 1 dram, and water 3 ounces."—(From Stewart's *Manual of Surgery.*)

6. *Early symptoms and physical findings in acute anterior poliomyelitis:* "The onset is marked by moderate fever (101°-103° F.), restlessness, headache, pain in the back and limbs, and muscular soreness. Less frequently there is vomiting or diarrhea, and occasionally convulsions occur. The mind is usually clear. In the course of a day or two a flaccid paralysis makes its appearance, all four extremities and the trunk, the lower extremities, one limb, or, perhaps, only a group of muscles being involved. The legs are especially prone to suffer. The paralysis reaches its maximum in a few hours or days, and then begins to improve, in many cases only a small amount remaining at the end of a few weeks or months. Complete recovery is sometimes observed. The constitutional symptoms soon pass off; sensation remains intact; the sphincters are not disturbed, and there is no tendency to bedsores. The muscles showing decided paralysis lose their tendon reflexes, rapidly waste, and soon yield the reaction of degeneration."—(Stevens' *Practice of Medicine.*)

The virus is found in the brain, cord, tonsils, nasopharynx, lymphatic and salivary glands, and elsewhere. The nasopharynx is probably the site of entry and of egress of the disease.

7. *The patellar reflex* consists of a contraction of the extensor muscles of the leg and a movement of the foot forward when the ligamentum patellæ is struck; the quadriceps extensor must first be slightly stretched by putting one knee over the other. Its integrity depends upon a healthy condition of the entire refler arc, consisting of tendon, afferent or sensory nerve, posterior roots, and anterior horn of the spinal cord, the efferent or motor nerve, and the muscle itself.

A lesion, intercepting the arc of the patellar reflex, may occur in any part of the arc, as above indicated.

Diseases in which the patellar reflex is commonly lost: Locomotor ataxia, poliomyelitis, neuritis, diabetes, general paresis, progressive muscular atrophy, spinal meningitis, cerebrospinal meningitis, Landry's paralysis, syringomyelia, and other diseases.

8. *In typhoid fever:* "In the typical case the *temperature* rises gradually during the first week, reaching 104° to 105°, with morning remissions of 1 to 1½°. During the second week it remains high, with slight remissions; so also during the third week, except that the remittent character is more marked. During the fourth week, or at the end of the third week, the morning record approaches or becomes normal, while the evening temperatures, which are from 1° to 4° higher than those of the morning, persist, but with gradually decreasing height, until by the end of the fourth week the record is 98.6°. The *pulse* is rapid, but the pulse rate is often lower than would be expected in comparison with the temperature (*e.g.*, pulse rate 90, temperature 104°). It is often dicrotic, even in the early stage of the disease. As the disease progresses it becomes weak and rapid, or in grave cases, running and thready.

In lobar pneumonia: "In a typical case the onset is abrupt, with a severe and often prolonged chill, followed by a rapid rise of temperature to 104° or 105°. The pulse is rapid (100 to 120), full, and bounding, and the normal pulse-respiration ratio of 1 to 4 becomes 1 to 3, 1 to 2, or even 1 to 1. . . . The fever having risen to its maximum, usually within the first twenty-four hours, continues high, with remissions, until the fifth to the tenth day, when in typical cases

it falls in a few hours (5 to 12) by crisis to normal or below, with a corresponding drop in the pulse."—(From Butler's *Diagnostics of Internal Medicine.*)

9. *Acute appendicitis* is generally of sudden onset; pain is severe and is located in the right iliac fossa, and is frequently referred to McBurney's point; it is colicky in character, may radiate to lumbar region or to bladder, and is made worse by movement of the right thigh; tenderness and muscular rigidity are present in the region of the appendix; nausea and vomiting may be present; moderate fever (101° to 103°), rapid pulse, and a polynuclear leucocytosis of about 12,000 to 25,000 are usually observed; constipation is common. Many other conditions may simulate the disease.

10. *Conditions that may cause pain in the right upper quadrant of the abdomen:* Cancer, cirrhosis, abscess, or inflammation of the liver; cholelithiasis. cholecystitis; subphrenic abscess; aneurysm of abdominal aorta, or of mesenteric artery; renal colic, pyelitis, movable kidney; ulcer or cancer of duodenum or pylorus.

OBSTETRICS.

1. *Accidents which may occur to the mother during labor:* Lacerations of vulva, perineum, cervix; rupture of the uterus; hematoma of vulva or vagina; inversion of the uterus; formation of fistula between bladder and vagina, or rectum and vagina; rupture of pelvic joints; hemorrhage; syncope; infection; sudden death.

Accidents which may occur to child during labor: Asphyxia; cephalhematoma; fractures; hemorrhages; paralysis; rupture of muscles; infection, including ophthalmia; rupture and prolapse of the cord.

2. *Cesarean section.—"Indications:* The cases in which it is performed are: (1) Extreme deformity of the pelvis, in which delivery by forceps and version is excluded, and in which craniotomy is either impossible or would be more dangerous to the mother than cutting into the abdomen and uterus; and in which there is not room for a successful symphyseotomy. Such cases present the *'positive'* indication for cesarean section; there is nothing else to be done. Flat pelves having a conjugata vera of 2¼ inches or less, and justo-minor pelves with a conjugata vera of 2½ inches or less, present this positive indication; (2) cases of more moderate pelvic contraction in which craniotomy is possible; but cesarean section is agreed upon to *save the life of the child;* (3) mechanical obstruction in the pelvis from fibroid, cancerous, bony, or other tumors which cannot be pushed up out of the way or be safely removed; (4) irreducible impaction of a *living* child in transverse presentations; (5) in women dying near the end of pregnancy the child, if alive, is rapidly delivered by *post-mortem* cesarean section; (6) various other obstructions from inflammatory adhesions, atresia, constrictions, etc., of the vagina, and uterine displacements, may rarely require the operation; (7) recently the operation has been done in eclampsia cases, where more conservative methods of rapid delivery were impracticable; and (8) in placenta prævia, chiefly with a view to lessen the infant mortality attending the usual treatment of this complication."—(King's *Obstetrics.*)

In addition, abdominal section may be required for abdominal tumors, for suppurative peritonitis, for ectopic pregnancy, and in puerperal sepsis.

3. In *retained placenta,* "all that is necessary to secure its delivery is the proper application of the Credé method. Occasionally it is held in place by atmospheric pressure, and the Credé method fails to dislodge it. In such cases the finger may be hooked over the edge of the placenta, and the air let in behind it, when its expulsion will be easily secured. A retained placenta is not attended with bleeding, while an adherent placenta usually bleeds profusely. It should be a rule not to repeat the dose of ergot until the placenta is delivered. If the placenta is adherent. as is usually shown by the bleeding, the large size of the uterus and the complete failure of the Credé method, it must he extracted manually. Unless the bleeding justifies it, manual extraction should not be considered until after one hour after delivery. After careful cleansing not only of the hand, protected by a rubber glove, but of the vulva and vagina, the whole hand is inserted in the vagina, following the cord up into the uterus. The fingers are inserted under the edge of the placenta, and it is gradually and gently peeled off the uterine wall. If any adhesions, too dense to be separated in this manner are felt, they may be pinched through with the thumb and forefinger. The loosening of the placenta is materially aided by compression by the free hand upon the fundus, through the abdominal wall. When the placenta is entirely detached no effort is made to extract it, but the uterus is stimulated to contract by kneading it with the free hand on the abdomen, and is made to expel the hand and placenta together."—(Hirst's *Obstetrics.*)

4. *Pituitrin* "is given intramuscularly and not subcutaneously, in doses of one-half to one mil. It is a powerful stimulant to all unstripped muscle, and if used recklessly is a most dangerous drug. Its action on the uterine muscle is of greatest intensity when the patient is already in labor; it is not so intense when used to induce labor; and as an abortifacient it is entirely unreliable. If used according to the following directions, its use should be followed by gratifying success: (1) It should be given in primiparæ only when the head has passed through the cervix. (2) It should be given in multiparæ only when the cervix is thoroughly effaced, fairly dilated and easily dilatable. (3) It should never be given to any patient, if there is any obstacle to an easy delivery. (4) One-half mil. doses are as effective as one mil. and safer. (5) It should be given deeply intramuscularly, preferably in the deltoid, and not subcutaneously, and, above all, *not intravenously.* (6) Overdose is liable to be followed by relaxation of the uterus and postpartum hemorrhage. More than two mils. as a total amount should not be used in any labor. (7) In syphilitic patients, the danger of rupture of the uterus is greatly increased, and pituitrin should not be used at all. (8) Stronger solutions are on the market, for use after surgical operations. This "surgical" pituitrin should be avoided in obstetrical work. (9) If inertia occurs early in the first stage of labor, before the os is well dilated, three doses of three minims each, an hour apart, often act very well. *Accidents from its use* have been: Rupture of the uterus; fetal asphyxia from violent uterine contraction; post-partum hemorrhage; premature separation of the placenta; extensive laceration from precipitate delivery."—(J. C. Hirst's *Manual of Obstetrics.*)

5. *Dangers to the mother during the second stage of labor:* Laceration of perineum or cervix; rupture of uterus; inversion of uterus; hemorrhage.

6. ECLAMPSIA.—*Prophylactic treatment* consists in the proper care and examination of the woman during pregnancy; metabolism must be kept as perfect as possible; the eliminative organs must be working; constant examination of the urine for nitrogen output and presence of albumin) must be made; the diet must be regulated; headache, disturbed vision, nausea, edema must be investigated.

Active treatment consists in reducing the blood pressure; administration of purgatives, diuretics, and diaphoretics; administration of chloral, veratrum, or chloroform; and sometimes it is necessary to empty the uterus.

7. *Abnormal conditions in the pregnant woman which are prejudicial to the life of mother or child:* Misplacements of the uterus; toxemia; nephritis; endocarditis; pernicious anemia; tuberculosis; syphilis; poisoning by lead, tobacco, or mercury; eclampsia; ectopic gestation; asthma; pneumonia; variola; scarlet fever; erysipelas; traumatisms; diseases of the genital tract.

8. The *functions of the placenta* may be summed up as follows: (1) It is nutritive, allowing of the passage of nutritive material to the fetus. (2) It is respiratory. Oxygen passes to, and carbon dioxide from, the fetus. (3) It is excretory, allowing the escape of urea and other products of fetal metabolism. (4) It has a glycogenic function. Glycogen is stored in its cells for the future use of the fetus. (5) It is iron storing, by which iron in organic combination is passed from the maternal circulation into the fetal circulation to be stored in the liver cells of the fetus, in order to aid in the formation of new colored blood corpuscles.—(Lyle's *Physiology.*)

9. *Indications for the use of forceps are:* "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 2. *Passenger at fault:* A. Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute).

Accidental complications: Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother and child, or both."—(From Jewett's *Practice of Obstetrics.*)

Manner of using forceps: "They should not be used when the os is undilated, when the head is not engaged, except in placenta prævia, when the membranes are unruptured, when the disproportion between the child's head and the parturient canal is too great, or in impossible positions and presentations. Before applying the instruments they should be sterilized, preferably by boiling; and the patient anesthetized and placed in the lithotomy position. Two fingers of the right hand are introduced into the vagina; the left blade of the forceps is then held almost perpendicularly by the left hand, with the tip of the blade opposite the vulva; the tip is introduced into the vagina, and passed along the floor toward the sacrum. The blade is rotated outward in its long axis in order to escape the promontory of the sacrum. The right blade is introduced in a similar manner. To facilitate locking, one of the blades must be rotated forward. If the head occupies the right oblique diameter, as in L. O. A. and R. O. P. positions, the right blade must be rotated; if it occupies the left oblique diameter, the left blade must be rotated. Traction is made in the direction of the pelvic axis until the perineum is well distended. The perineum is then protected by one hand, while the face is swept over it by an upward movement of the forceps. In posterior positions it is necessary to remove the instruments after the head is drawn down to the pelvic floor; after anterior rotation is secured they may be reapplied. If the occiput rotates into the hollow of the sacrum the hands should be depressed as the face is swept out under the symphysis pubis."—(*Pocket Cyclopedia.*)

The *dangers in the use of forceps* are: Sepsis, injuries to the soft parts or to the child, and hemorrhage. All antiseptic and aseptic precautions should be observed, extraction should not be made too rapidly, the utmost care must be employed, compression on the fetus (particularly on the skull) must not be too prolonged, the mother's bladder must be emptied, and traction should be exerted only during the pains.

10. *Ectopic pregnancy* is a pregnancy in which the fetus is developed in some place other than the cavity of the uterus. *The symptoms* for the first few weeks are exactly similar to those of normal pregnancy. Later, sharp, cramp-like, periodic pain occurs and is reflected down one thigh. About the third month menstruation returns. The bleeding is profuse and attended by some pain. Flesh-like masses (decidua) are discharged. Nearly all the signs of normal pregnancy are present. Physical examination will reveal a softened cevix, an enlarged and displaced uterus, and the presence of a small cystic tumor, sensitive and adherent, on one side of the uterus. *Rupture* is attended by great pain and syncope. If the hemorrhage is intraperitoneal and extensive death results in a few hours, attended by symptoms of profound shock; rapid, weak pulse; blanched, cold skin; sighing respiration, and fall of temperature. If the hemorrhage is extraperitoneal, it will be limited and the symptoms of shock and bleeding will be slight. Before rupture the diagnosis is difficult, but afterward the history of early pregnancy, intense pain, syncope, and collapse will distinguish this condition. The *treatment after rupture* is—laparotomy. "After thorough cleansing and sterilization of the abdomen and pubes, as well as of the instruments and hands of the operator and assistants, the bladder is emptied and the patient anesthetized. An incision 3 inches long is then made in the median line above the pubes down to the peritoneum, any bleeding vessels being twisted before opening the peritoneal cavity. The peritoneum is then incised; the intestine kept back by pads of cotton or gauze wrung out of sterilized water; the operator's fingers bring out the distended tube and ovary at the incision after having freed them from any existing adhesions; the pedicle is then transfixed by a double ligature of sterilized silk, and each half of it tied securely according to surgical rule. The pedicle is cut, and the entire mass—the Fallopian tube, with the cyst, fetus, ovary, and effused blood, removed, extra care being taken, in the ruptured cases, to quickly secure the bleeding vessels of the ruptured tube from further hemorrhage. The pads are then withdrawn and the abdominal incision closed and dressed in the usual manner. In case of threatened collapse from hemorrhage during the operation, the peritoneal cavity may be flooded with a 1 per cent. sterilized solution of common salt at a temperature of 100° F., a quart of this solution having been previously prepared. It is rapidly absorbed by the peritoneum, and acts as a restorative—like transfusion."—(King's *Obstetrics.*)

(*To be concluded.*)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery...July 13
Arizona*	A. Martin, 207 Goodrich Building, Phoenix.	Phoenix.....July 6
Arkansas	T. J. Stout, Brinkley	Little Rock....Nov. 10
California	C. B. Pinkham, Sacramento	San Francisco..June 28
Colorado	David A. Strickler, Empire Building, Denver	Denver..... July 6
Connecticut*	R. L. Rowley, Hartford	Hartford..... July 6
Delaware		Wilmington....June 15
Dist. of Col'ba.	E. P. Copeland, Washington	Washington....July 13
Florida*	W. M. Rowlett, Tampa	Jacksonville....June 14
Georgia	C. T. Nolan, Marietta	Atlanta.....June 9 Augusta.....
Idaho*	Robt. O. Jones, Boise	Boise.....Oct. 5
Illinois	F. C. Dodds, Springfield	Chicago.....June 14
Indiana	W. T. Gott, Crawfordsville	Indianapolis...
Iowa	G. H. Sumner, Des Moines	Iowa City.....June 16
Kansas	H. A. Dykea, Lebanon	Topeka.....Oct. 12
Kentucky	J. N. McCormack, Bowling Green.	Louisville.....
Louisiana	E. W. Mahler, New Orleans	New Orleans...June 10
Maine	F. W. Searle, Portland	Portland.....July 6
Maryland	J. McP. Scott, Hagerstown	Baltimore.....June 8
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston.....
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor.....June 8
Minnesota	T. McDavitt, St. Paul	Minneapolis...
Mississippi	J. D. Gilleylen, Jackson	Jackson.....
Missouri	G. H. Jones, Jefferson City	St. Louis.....June 14
Montana*	S. A. Cooney, Helena	Helena.....Oct. 5
Nebraska	H. H. Antles, Lincoln	Lincoln.....June
Nevada	S. L. Lee, Carson City	Carson City....Nov. 1
N. Hampshire	C. Duncan, Concord	Concord.....Sept. 9
New Jersey	A. MacAlister, Trenton	Trenton.....June 15
New Mexico	R. K. McClanahan, E. Las Vegas.	Santa Fe.....
New York	G. M. Wiley, Univ. of State of New York, Albany	New York.... Albany.....June 29 Syracuse..... Buffalo.....
No. Carolina	H. A. Royster, Raleigh	Raleigh.....June 21
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks...July 6
Ohio	H. M. Platter, Columbus	Columbus.....June
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City.July 13
Oregon	B. E. Miller, Portland	Portland.....July 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia...July Pittsburgh....
Rhode Island	B. U. Richards, Providence	Providence....July 1
So. Carolina	A. E. Boozer, Columbia	Columbia.....June 8
So. Dakota	P. B. Jenkins, Wanbay	Deadwood.....July 13
Tennessee	A. B. DeLoach, Memphis	Memphis..... Nashville.....June Knoxville.....
Texas	T. J. Crowe, Dallas	Galveston.....June 22
Utah	G. F. Harding, Salt Lake City	Salt Lake City.July 5
Vermont	W. Scott Nay, Underhill	Burlington.....June 29
Virginia	J. W. Preston, Roanoke	Richmond.....June 22
Washington*	C. N. Suttner, Spokane	Spokane.....July 6
W. Virginia	S. L. Jepson, Charleston	Charleston.....July 13
Wisconsin	J. M. Dodd, Ashland	Milwaukee.....June 29
Wyoming	J. D. Shingle, Cheyenne	Cheyenne.....June
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	

*No reciprocity recognized by these States.
†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Histological Differentiation of Lethargic Encephalitis and Infantile Paralysis.—It has been said that these two affections exhibit marked similarities to the microscope, but Levaditi and Harvier state that polynucleosis and neuronophagia are seen only in the latter malady. In regard to the relation between encephalitis and influenza it may be the case that abortive cases of the former have simulated the latter, which fact would throw light on the apparent coincidence of the two maladies.—*Le Bulletin Médical.*

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Original Articles.

ON RETROGRADE STRETCHING IN THE TREATMENT OF IMPERMEABLE CARDIOSPASM.*

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A FEW years ago I described two cases[1, 2] of impermeable cardiospasm successfully treated by retrograde stretching by means of the pyloric dilator. Inasmuch as these cases are not very common and present rather considerable difficulty in their treatment I thought it of interest to report a few cases and discuss their management.

As regards the term "impermeable cardiospasm", it signifies, as is well known, failure of food to enter the stomach in the normal way, absence of organic stricture, and impossibility of reaching the stomach by the usual gastric tube or a bougie.

FIG. 1.—Roentgenogram of the esophagus of B.R.P. after the injection of bismuth; the esophagus shows diffuse dilatation and the cardiac opening lies away from the center.

Experience teaches that two groups of impermeable cardiospasm may be discerned:

1. The bougie nearing the cardia engages in the sacculated wall of the esophagus, and here meets with a slight resistance. If one tries to push the bougie farther in, one has the sensation as if one pushed the thin elastic wall further down. This may be done gently without much force, when one distinctly feels the esophageal wall being pushed down and coming up again following the olive end of the bougie.

FIG. 2.—Roentgenogram of B.R.P. with the duodenal tube in place. There is some barium in the stomach; the tube end lies in the beginning of the small intestine.

2. The bougie strikes the cardia but fails to enter it. Here again two varieties are encountered: (*a*) The bougie meets with a distinct resistance and cannot be pushed any further (spasm and fixation of cardia); (*b*) The bougie meets with a resistance at the cardia, failing to pass it; it can, however, be pushed further down for two or three inches, moving the closed cardia for that distance into the stomach, without entering the lumen (movable cardia).

An illustration of group 1 is given by the following case which I observed very recently:

CASE I.—November, 1919. B. R. P., 40 years old, had grippe about 10 months ago. Thereupon the patient began to suffer from distress in his epigastrium pretty soon after eating. Patient noticed difficulty in swallowing liquid and solid foods. He felt as if the food collected at the pit of the stomach; and he was unable to force it down without water and without much straining at that. Then after such effort, he would feel the food suddenly drop down into the stomach.

For the last four months vomiting occurred almost every day, large quantities being brought up at once

*Read before the Assoc. of American Physicians at Atlantic City, N. J., on May 5, 1920.

without much effort. Occasionally the patient wakes up at night with constriction in the chest and vomiting. For the last three months he has noticed that he could not partake of ordinary food without the help of water. He experiences difficulty in eating and pains

FIG. 3.—Roentgenogram of B.R.P., showing the pyloric dilator; the inflated balloon is just in front of the cardia in the stomach.

in the scrobiculum. For the last six weeks no food whatever has agreed with the patient, almost everything being vomited during the day or night. He has lost 20 pounds during his sickness, especially during the last four months. He feels extremely feeble and can hardly walk. Examination of the patient fasting—showed that the esophagus contained 300 to 400 c.c. of undigested food, which appeared through the stomach tube lodged in the esophagus and through vomiting. A bougie (No. 43) entered 17 or 18 inches and struck

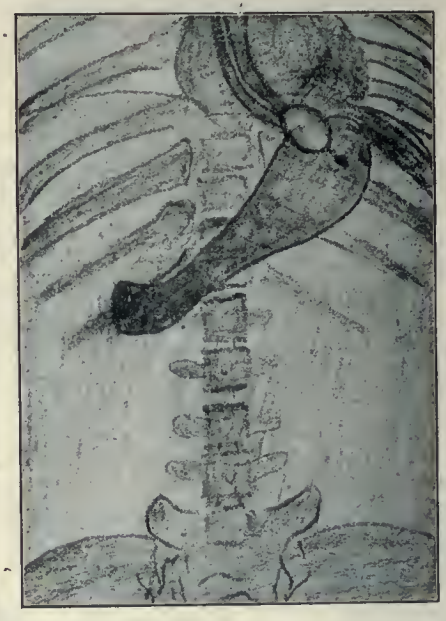

FIG. 4.—The same as Fig. 3; the dilator has been pulled up about two inches or more without passing through the cardia, the latter being simply lifted and invaginated into the esophagus.

the esophageal wall, as evidenced by a feeling of elasticity of the wall upon pushing the bougie gently further in, but did not pass the cardia. Swallowing sound was absent.

Based upon these findings the diagnosis of a dilated esophagus and impermeable cardiospasm was made and patient was referred for further observation to the Lenox Hill Hospital. The duodenal bucket passed the cardia and entered the duodenum in 24 hours. The string showed bile below 24 inches and a blood stain at 17 inches. The test apparently showed the presence

FIG. 5.—The same case as shown in Fig. 4; the balloon of the dilator has passed the cardia and is within the esophagus.

of an ulcer of the stomach near the cardia, which was probably the cause of the cardiospasm.

An *x*-ray picture of the esophagus taken by Dr. Thomas Scholz corroborated the diagnosis of dilatation of the esophagus, due to cardiospasm.

In order to cure the ulcer and to afford relief to the dilated esophagus it appeared best to keep the patient on duodenal alimentation. The tube was introduced in the afternoon of October 20, 1919, and the following day feeding by the tube through the duodenum was commenced. The patient felt much relieved and strengthened within a few days. There was no vomiting and he slept well. After eight days of duodenal feeding the tube was removed. October 28, 1919, the pyloric dilator was introduced. On the following morning the balloon of the instrument was found to be in the duodenum. Stretching of the pylorus and then of the cardia (up to 60 F.) was then easily performed.

During the month of November, 1919, stretching of the cardia was undertaken every other day, a ballooon of 70 F. passing through without much difficulty. Patient could eat quite well and did not vomit. He gained considerably in weight.

Figures 1-5 show the dilated esophagus of the pa-

FIG. 6.—The inflatable dilating bougie.

tient P., with the cardiac opening lying to the side, away from the center, and the different steps of the method of retrograde stretching by the pyloric dilator.

It was soon discovered that after a few stretchings with the pyloric dilator, bougies could now be introduced and reach and pass the cardia.

The usual metal cardiodilator was then introduced for further treatment, and the cardia was stretched twice up to 80 Fr. and ultimately to 110 Fr. The patient could now eat like any ordinary individual without experiencing the slightest inconvenience.

Group II, subdivision a, may be represented by the following case:

CASE II.—March 17, 1919. Mrs. A. R., about 40 years old, has suffered from dfficulty in eating, choking and vomiting for the last twelve years. Frequently she would have to leave the table in the middle of a meal in order to eject the food, on account of a feeling of suffocation she experienced. She never could eat with ease like other people. She was forced to gulp down a quantity of water, in order to make the food go down. I saw the patient first during the spring of 1917.

The findings were as follows: Swallowing sound absent; bougie with olive No. 43 meets resistance, which is impassable, at 16 inches from the lips. This spot of resistance is stationary and cannot be pushed down, or made to move even a little bit. Olive No. 48 shows exactly the same condition.

During March, 1919, a chance for the reexamination of patient presented itself. Again the findings were exactly the same: Swallowing sound absent; bougies with olives Nos. 38, 43, and 54 meet with an absolute impassable resistance at 16 inches distance from the lips. The stomach tube introduced 16 inches into the esophagus in the fasting condition of the patient brings up 150 c.c. of food from the day before with the following characteristics: Reaction acid; No HCl present; rennet absent; lactic acid present.

The patient then entered the Lenox Hill Hospital for observation and treatment. The duodenal bucket entered the duodenum and showed on the string a blood stain from 22½ to 23 inches from the lips; from 24 to the end it was stained a golden yellow.

A diagnosis of severe impermeable cardiospasm complicated by duodenal ulcer was made. The patient was kept on duodenal alimentation for two weeks. This afforded perfect rest to the dilated esophagus, stomach, and the upper part of the duodenum.

After removal of the tube, the pyloric dilator was introduced, and after a night's sojourn, it entered the duodenum. The pylorus, and then the cardia were stretched retrogradely. This procedure was kept up for two weeks, both pylorus and cardia being stretched about twice a week. Thereafter stretching of the cardia alone was employed, first twice weekly, and later once a week. The patient made a rapid recovery, gaining in weight steadily and being able to eat almost all kinds of food like ordinary people.

Group 2, subdivision *b*, is well represented by the following case:

CASE III.—December 10, 1919. Mrs. F. F., 25 years old, married, no children, menses normal. She had scarlet fever as a child—good recovery; operated upon for goiter at the age of 9.

The present history dates back to four years ago, when the patient was suddenly frightened and fainted. After this for about some time she had a fear of people. This lasted about one year and cleared up. This was followed by pain in left iliac fossa, at first, and then by pains all over the body. The patient was unable to eat, and had great difficulty in swallowing. She had a choking sensation in her throat continuously—whether she ate or not. Two years ago vomiting began. The patient would vomit during meals and between meals. The vomitus at times contained undigested food and at other times consisted only of mucus—never any blood.

When the patient would eat, she would feel as though the food was going to choke her. At times the food would go into the stomach and again it would not go beyond the mouth. But the patient would vomit even though no food entered the stomach. The bowels were constipated.

For the past four months two to three days would elapse during which the patient could not eat; even water was swallowed with difficulty. The bowels were constipated during the past 3 or 4 months for a week at a time, unless she took an enema. The pain was very severe in the epigastrium for the past few months. The patient slept well during the entire period of her illness. She last 36 pounds in the past 4 years, most of which was lost in the past six months, though just how much the patient does not know.

The physical findings were as follows: Swallowing sound absent. Bougies 38 and 43 meet with a resistance at 16½ inches from the teeth. Upon pushing the bougie further down, the resistance (cardia) can be moved for fully 2½ to 3 inches downward, the bougie failing to pass through the cardia. A stomach tube, introduced 15 inches from the teeth, into the esophagus of the fasting patient brings forth about 120 c.c. of food residue, showing the following: HCl absent, lactic acid present, rennet absent.

The diagnosis of movable cardia and impermeable cardiospasm was made, and the patient was referred to the Lenox Hill Hospital for further examination and treatment.

The duodenal bucket was introduced, atropine being given, and entered the duodenum over night. The string showed bile beyond 24 inches and a blood stain at about 18 inches. The patient was then given the duodenal tube with atropine medication. The next day the tube entered the duodenum. She was then treated by duodenal alimentation for two weeks. She felt well, vomited very little during the entire period of treatment, and picked up in strength.

After the withdrawal of the tube, the pyloric dilator was introduced and with it liquid food by the mouth and atropine were given. The next day the pyloric dilator was found to be still in the esophagus above the cardia. It was left in the digestive tract for another period of 24 hours. When examined 48 hours after its introduction the dilator was found to be in the duodenum. Stretching first of the pylorus and then of the cardia was now easily accomplished. While, however, we could pull through the pylorus a balloon corresponding to No. 65 Fr., the cardia did not at first permit a larger balloon than No. 50 Fr. A few days later, however, we succeeded in pulling through a No. 60 Fr.

After these retrograde stretchings the patient could eat with greater ease and vomited but seldom. Her esophagus was washed out every other night. At first 100 c.c. of food residue would be found; later on the amount was 50, and ultimately 40 c.c.

A new attempt was then made to pass a bougie through the cardia, for it was believed that the spasm was much diminished. This proved correct. At first we succeeded in passing bougie No. 48 through cardia after pushing it down 18½ inches. A few days later bougie No. 54 passed the cardia in the same manner as No. 48 and entered the stomach.

Later on we made use for the retrograde stretching in this particular case of a new instrument which resembles the aspirating bougie, namely, the "inflatable dilating bougie."

The patient has gained 12 pounds in weight since we succeeded in stretching her cardia and eats fairly well.

I herewith give a drawing of this cardiodilator, the construction of which is apparent and needs no description. The advantage of the inflatable dilating bougie is that it can be introduced at once into the stomach, without a period of waiting which is necessary with the pyloric dilator, and the stretching performed immediately after inflating the baloon. (See Figure 6).

I have observed a few more cases belonging to the two groups just described. I shall refrain, however, from recording them as they would be almost a repetition of the cases above detailed.

Altogether I have had ten benign cases of impermeable cardiospasm. Two (about eight or ten years ago) had been operated upon by Dr. Willy Meyer; in one, Mrs. P., an esophagoplication was made with great benefit to the patient for about six months, when later she succumbed to an empyema. The second patient, a Mr. D., was in such extremis when first seen by me, that a gastric fis-

tula was the only feasible procedure to begin with. He died as a result of perforation of the esophagus occurring a few days after the establishment of the fistula.

The other eight had all been treated by retrograde stretching of the cardia, some after a previous course of duodenal alimentation. All of these patients benefited greatly by retrograde stretching. They could eat with greater ease and did not vomit as much. In some of them after a few stretchings the cardia became accessible to direct treatment (*i. e.* the impermeable cardiospasm was converted into a simple permeable cardiospasm).

There are a few points concerning impermeable cardiospasm I would like to broach.

1. As regards the etiology of impermeable cardiospasm, as well as of plain permeable cardiospasm, gastric ulcer, especially if situated near the cardia, seems to play a dominant part. In the new cases here described as well as in a great number of others, observed in my practice, I have found the association of the two conditions present. What is more natural than to assume that the ulcer is the original cause of the persistent spasm? In this connection I would like to mention another point which relates to the connection of peptic ulcer and cardiospasm.

In cardiospasm the swallowing sound at the cardia is always absent. In a number of patients with ulcers near or within the cardia I have found the swallowing sound absent, and this even in cases in which there was apparently no delay in the entrance of food from the esophagus into the stomach. Moreover, I know of two patients who had cardiac ulcers years ago, which have healed perfectly, who have ever since shown an absence of the cardiac swallowing sounds. It seems as if the ulcer near the cardia by its presence, and later by its healing, interfered with the normal function of the cardia. While the food may pass through this opening in due time, still the normally heard sounds are no longer present, probably because of some alteration in the structure of the cardia.

The absence of the swallowing sounds in some cases of ulcer near the cardia again show the intimate connection between gastric ulcer and interference with the normal work of the cardia.

2. The diagnosis of benign impermeable cardiospasm is usually quite easy to establish. In group 1, that of sacculation of the esophagus with the opening lying somewhat away from the center, the bougie strikes the esophageal wall at the bottom. This can be pushed down a little, giving the sensation of a thin elastic pliable membrane. Extreme caution is required in the performance of this test, as forcible pushing of the bougie might penetrate or injure the esophageal wall.

In group 2, subdivision (*a*), there is often the thought of a neoplasm presenting itself. For the bougie meets with an impassable resistance at about 16 inches which at first sight simulates a growth. There are, however, the following features which will help to establish the diagnosis: In benign cardiospasm there is usually a long history of trouble, two to ten years or more. There are besides frequent intermissions during which patient partakes of food pretty easily. In a real neoplasm there is a comparatively short history of a steadily progressing trouble, without any periods of freedom. The duodenal bucket and frequently the pyloric dilator enter the stomach after a night's sojourn in the digestive tract. Usually it is possible to pull from the stomach through the cardia a balloon measuring in size 55 to 60 m.m. in circumference, if not more. In cancer these attempts will remain unsuccessful. The *x*-rays will frequently likewise, help to establish a correct diagnosis, with some exceptions.

3. As regards treatment retrograde stretching with the pyloric dilator appears to be preferable to passing bougies over a previously swallowed string. It sometimes happens that even a flexible instrument can not follow the string, if there is present too great a bend in the sacculation or an unyielding spasm at the cardia.

In cases in which an ulcer in the stomach is suspected or really discovered, it is advisable first to accord the esophagus and stomach a period of rest (by duodenal alimentation) before instituting the stretching treatment. The latter is best done first by the pyloric dilator, every other day or twice a week, the dilator being introduced before retiring supplemented by a dose of atropine, and the stretching done the following morning. After a few stretchings the dilator enters the stomach in a much shorter time. It can then be passed early in the morning, with atropine, and stretching performed one or two hours later, as soon as the balloon has reached the stomach. This can be easily ascertained either by the *x*-rays or by inflating the balloon, and then pulling it upward. In case the balloon is in the stomach a resistance is felt as soon as the instrument reaches the cardia. If no resistance is encountered, the balloon is deflated the patient given some water or tea to drink, and after waiting one-half hour or so, the experiment is repeated. The entrance of the balloon into the stomach must be patiently watched and tested, and when found in the latter retrograde stretching can be undertaken.

Stretching in situ can also be done by the double balloon pyloric dilator. This is more effective but the instrument is somewhat coarse and harder for the patient to manage.

In some of the cases treated after a few retrograde stretchings the cardia becomes accessible to direct instrumentation. In these instances the usual method of stretching can be carried out by the common instruments in use for the dilatation of the cardia.

In some cases of marked cardiospasm with considerable dilatation of the esophagus, besides the stretching, the esophagus was washed out every night or every other night. This gives much relief to the patient and is also of value with regard to gauging the improvement. As soon as there is a real change for the better, the amount of residue in the esophagus becomes less and ultimately disappears.

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2. Max Einhorn: Diseases of the Stomach, 6th edition, p. 496.

20 EAST SIXTY-THIRD STREET.

THE ANESTHESIA PROBLEM IN LUNG SURGERY.*

By JAMES TAYLOE GWATHMEY, M.D.,

NEW YORK.

THIS paper is based upon between eighty and one hundred animal experiments conducted in the Central Medical Department Laboratories, A. E. F., Dijon, France, and a large clinical experience with surgical teams working in the advanced zone of the American Army and confining themselves almost exclusively to chest surgery.

Both the anesthetic agent and the method to be employed were thoroughly tried out, and were finally decided upon sometime before entering upon the surgical duties at the front.

The Agent.—Patients who require thoracic surgery usually have other injuries and are more or less shocked, suffering, among other things, from lowered blood pressure. Inasmuch as one of the clinical features of chloroform anesthesia is lowered blood pressure, and for other reasons, chloroform was not considered. In the writer's opinion it should not be used at all in war surgery, except, possibly, in a 50 per cent. solution with ether, and then only as a preliminary to ether, or for very short operations, and never as a terminal anesthetic. The final choice lay between ether and nitrous oxide and oxygen. Both these agents were used in our animal experiments.

Anesthetic of Choice.—Other things being equal, the agent selected should sustain the blood at the highest possible level consistent with good surgical anesthesia during the operation and with a minimum of reaction after operation. In general narcosis with ether or nitrous oxide and oxygen the blood pressure depends more upon the depth of anesthesia than upon the agent, and if the same technique is used it is sustained as well with the one as with the other. Crile,[1] unfortunately, published a misleading chart that seems to show that "an animal under nitrous oxide anesthesia endured shock-producing trauma better than an animal under ether anesthesia," using the irregular and unscientific drop method of ether for the comparison of the two agents. (See chart.) Every surgeon knows that the blood pressure does not fall in this way under ether during operations requiring extensive trauma.

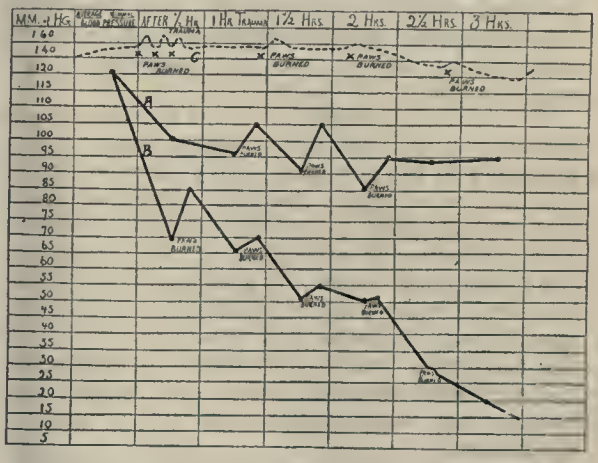
Dr. Carl Connell and the writer[2] paralleled the experiments of Crile, following his technique absolutely, traumatizing the animal and continuing the experiment for the same length of time, but giving the ether by the vapor method pharyngeally, so that the quantity of ether and the volume of air were so regulated that an even anesthesia was maintained at all times.

The chart made from these experiments seemed to prove that animals under ether, properly given, stand shock as well as those under nitrous oxide anesthesia. But neither Crile nor Connell and the writer carried observations beyond the immediate experiment.

Marshall[3] of the British Army verified the work of Connell and myself, and disproved the work of Crile, by showing clinically that the blood pressure is sustained equally well under ether vapor and with nitrous oxide and oxygen, the ether in Marshall's cases being given in probably the safest and best possible way, that is, warmed and oxygenated and by the vapor method. He carried his investigations further, however, and, following his patients through the shock ward, found that in a few hours a lowered blood pressure succeeded the ether administration that did not obtain when nitrous oxide and oxygen were administered.

Cannon[4] states that it was found that ether caused in a shocked animal a fall of blood pressure which might be as great as 30 or 40 mm. of mercury, even though only a sufficient degree of anesthesia was induced to barely abolish simple reflexes. He holds that if the same degree of anesthesia be maintained with nitrous oxide and oxygen, the reflexes could be abolished with no fall of blood pressure whatever. Since Cannon does not use heat and oxygen with the ether, but uses air at room temperature, the comparison, in my opinion, is not a fair one.

Marshall's work and charts, in connection with



Composite tracings (Crile): A, Nitrous oxide (plus oxygen); B, ether (by the open drop method) Connell and Gwathmey; C, ether by the endopharyngeal method.

collateral data, caused us to decide upon using *nitrous oxide and oxygen.*

The Method.—The endotracheal and endopharyngeal methods are used successfully in lung surgery, as far as the immediate operation is concerned. Each method requires an initiatory anesthesia so deep as to abolish all reflexes before the insertion of the tubes. This initiatory anesthetic favors lowered blood pressure and lowered temperature, and would be a serious handicap to a patient previously exsanguinated or in a state of shock from other causes, and might possibly prove fatal. The endotracheal method is an operation in itself, requiring additional time, and accidents occasionally occur. For these reasons both methods were discarded for a safer and simpler one.

Positive-pressure, Face-mask Method.—The method finally selected, by process of elimination, calls for the use of an air-tight face mask, with a rubber-bag reservoir for the gases close to the mask. A pressure of from 5 to 12 mm. of mercury had already been decided upon as a result of the animal experiments. This pressure was first de-

*Presented by invitation before the Providence Medical Association, Providence, R. I., December 1, 1919. Approved for publication by the Board of Publications, office of the Surgeon General of the U. S. Army.

termined by means of a mercurial manometer placed in the circuit, but this was discarded as unnecessary when it was found that the required pressure could be estimated easily by the following observation: When the rubber bag is slightly overdistended with the gases, to such an extent that upon full inspiration the seams of the bag are still slightly distended, there is a pressure of from 5 to 7 mm. of mercury.

The positive-pressure method used involves: (1) A constant supply of fresh gases; (2) A constant escape of some of the gas; (3) a slight amount of rebreathing.

The escape of the gases may be through an expiratory valve, although a valve is not absolutely essential, since the mask may be held in such a way that a constant leakage occurs. No air can possibly enter the apparatus at any time when positive pressure is sustained. A slight positive pressure in addition to the gases is unquestionably an important factor in maintaining anesthesia.

The value of positive pressure as a factor in mantaining anesthesia was recognized by the earliest observers. Paul Bert was fully convinced that anesthesia with nitrous oxide could not be maintained without positive pressure, and he had constructed for this purpose an apparatus weighing many hundreds of pounds.

In addition to being an aid in maintaining anesthesia, positive pressure in lung surgery is a very great aid to the surgeon. Willy Meyer was among the first to recognize the great advantage of positive pressure, and he had constructed an apparatus costing thousands of dollars for the regulation of the pressure as needed. Yates[5] holds that "Positive pressure control made examination of the lung and operation much easier and eliminated the necessity for dangerous traction. It offered a simple test of the air tightness of the closure and of satisfactory hemostasis; the necessity for undue haste was eliminated."

Apparatus.—The army apparatus for administering nitrous oxide and oxygen is so simplified and so inexpensive (the whole apparatus weighs not over five pounds) that it may be universally used, not only for lung surgery but for other operations as well.

Oxygen Percentage Used.—This positive-pressure method, in addition to enabling the surgeon to accomplish the best work in lung surgery, allows the anesthetist to give a higher percentage of oxygen, while still maintaining the same degree of anesthesia. With positive pressure we never give less than one part of oxygen to three of nitrous oxide.

Experiments by Cannon and Cattell with the army apparatus show that when three holes of nitrous oxide and one of oxygen is given, both anesthesia and blood pressure are fully maintained; but when the proportion is four to one, the blood pressure gradually falls. This simply means that it is important to give the maximum amount of oxygen at all times with any apparatus that may be used. Usually two holes of oxygen and six of nitrous oxide is the minimum amount, the percentage of oxygen being rapidly increased, as circumstances allow. Both percentage and quantity are important. For the best results it is also important to have the largest sized cylinders, 3,500 gallon nitrous oxide and 1,200 gallon oxygen containers. This relieves the anesthetist of all worry with regard to the supply of gases and the ability to use them unstintingly as needed.

Depth of Anesthesia.—In the laboratory one or two dogs were lost from maintaining too deep an anesthesia. Full surgical anesthesia that is safe without preliminary medication was found to be unsafe with this medication. For these reasons our technique gradually evolved from deep to light anesthesia, and finally to analgesia with unconsciousness. This evolution depended in a very large measure upon the observations and the work of Captain Middleton as medical consultant and pathologist, and upon his observations in the shock ward, upon the radiographic work of Dr. Drane, and most especially upon the experiments of Lieut.-Colonel Cannon. As the morphine was gradually increased, it was found that more oxygen could be given and that the patients were more comfortable and quiet after the operation than when inhalation anesthesia alone was depended upon. The high percentage of oxygen used, in connection with other obvious symptoms would seem to prove that analgesia and not anesthesia is present.* In the system outlined in this paper from 15 to 35 per cent. of oxygen is used.

It happened occasionally in our earlier work that when too much oxygen was given all physiological requirements were met and breathing ceased temporarily, for a half or three-quarters of a minute, the pulse continuing as before and the patient having a pink color. This temporary cessation can be obviated by (1) decreasing the positive pressure momentarily, (2) allowing air to enter the mask, or (3) slightly increasing the amount of nitrous oxide. By using any one of these methods the breathing may be caused to continue normally.

Technique. — Preliminary Medication. — In all chest cases the patient is given one-quarter, three-eighths or one-half grain of morphine, usually three-eighths, hypodermatically, forty to sixty minutes before operation. Rapid or labored breathing, sometimes an important harmful factor in thoracic surgery, is eliminated by giving morphine, and the patient comes to the table in the best possible condition. In only the very young soldier was the respiration so reduced as to be noticeable, but even in his case it was not dangerous. Age seemed to be a more important factor in this particular than the seriousness of the wound. "Lieut. Cattell investigated the influence of morphine in shocked animals and found that it decreased the degree of acidosis which otherwise developed, or prevented its onset, an effect probably due to the influence of morphine in reducing tissue activity." My own views concerning preliminary medication have been clearly outlined.

Narcosis.—The narcosis is started with an amount just sufficient to maintain anesthesia with the Army apparatus, two holes of oxygen and six of nitrous oxide. The mask is held tightly on the face, and the first three or four exhalations are

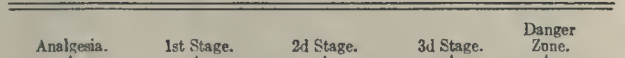
*It may be stated in this connection that Hewitt proved, very conclusively, that from 5 to 7 per cent. of oxygen with nitrous oxide is sufficient to maintain surgical narcosis. This is the amount now universally used.

allowed to escape through the expiratory valve, after which the expiratory valve is turned off, and part of each exhalation is allowed to escape between face mask and face. The rubber bag is filled to plus pressure, as already described. When the skin incision is made, if there is no movement or indication of pain, the oxygen is increased to three holes, the nitrous oxide remaining the same.

The patient has a pink color, the lid reflex is active, the eye rolling, yet the muscles are well relaxed. From this on any further increase in oxygen is determined by the condition of the patient. If the patient has been gassed, or is still bleeding, equal proportions of the gases may be used, or, in some instances, 75 per cent. oxygen and 25 per cent. nitrous oxide, positive pressure being maintained in all instances. In every case full oxygen is given as the last stitches are put in. The patient now has a very pink color, with pulse and respiration so nearly normal that his true condition may be almost entirely masked. *He should be treated in every instance as a shocked patient.*

Analgesia.—During the operation the patient is in a state of analgesia induced by the morphine, and in *first stage anesthesia* from the nitrous oxide and oxygen. He is safer than if full surgical narcosis were maintained with gases alone, or if a state of analgesia were maintained with morphine alone. Either agent used alone would result in cyanosis, slowed pulse and respiration, and lowered blood pressure.

Analgesia or first-stage anesthesia (with morphine, nitrous oxide and oxygen) may be graphically expressed as follows:



A = Commencement of anesthesia.
A B = Analgesia.
B C = First or excitement stage.
C D = Second stage.
D E = Third or surgical stage—the usual stage in which operations are performed with inhalation anesthesia.
E F = Danger zone.
F = Respiratory arrest.
G = Death.

The safest and best narcosis available to-day for lung surgery is obtained by the combination of the highest possible safe physiological dose of morphine—in our experience three-eighths of a grain, given one-quarter grain forty minutes before operation and one-eighth grain ten minutes later—reinforced by nitrous oxide given with the highest possible percentage of oxygen—fifteen to thirty-five per cent., with positive pressure—given in the easiest and simplest way.

It is *safest* because it is separated from the danger zone by the second and third stages of anesthesia (C to E). The anesthetist, therefore, has twice the leeway or double the time in which to correct or modify the anesthesia if untoward events suddenly occur. In gassed cases, oxygen, 75 per cent., and nitrous oxide, 25 per cent., with positive pressure (5 to 10 mm. of mercury), with morphine as indicated, will induce and maintain satisfactory analgesia in a badly wounded soldier. It is *best* because the blood pressure is maintained at the highest level possible with the given patient.

In no instance were our patients strapped to the table or held by orderlies, the preliminary medication rendering this unnecessary. Only once in thirteen instances was it necessary to give a small amount of ether (1 to 4 drams), two drams usually being sufficient for the entire operation. We never hesitated to give ether when indicated. Since surgical anesthesia with positive pressure is easily maintained with nitrous oxide and oxygen, plus one or two drams of ether, if as much as two ounces of ether per hour is used the anesthesia becomes an ether anesthesia, the nitrous oxide being wasted.

Possible Danger in Method.—If the same degree of nitrous oxide and oxygen anesthesia is maintained when morphine is given as is usual without it (*i.e.* third stage or full surgical anesthesia), shock with labored breathing results. When the proper amount of morphine is given (one-quarter, three-eighths, or one-half grain), and when nitrous oxide and oxygen are used, the morphine eliminates the stage of excitement and analgesia and first-stage anesthesia become synonymous terms.* When given as a preliminary to any method of anesthesia, *the light anesthesia produced by morphine must not be ignored.* In other words, both the amount and the depth of the inhalation anesthesia must be lessened. If the same depth of anesthesia is maintained *with* morphine as would obtain without it, this depth of superimposed anesthesia in itself will produce shock. This constitutes the only danger of the method advocated in this paper.

When three-eighths of a grain of morphine is given hypodermatically the patient's lid reflex under gas and oxygen should be quite active, the breathing quiet and natural, the pulse about normal. Stertor, abolition of lid reflexes, or cyanosis should not be permitted at any time. At the conclusion of an anesthesia conducted along the lines suggested, the patient comes out from the influence of the gases almost as soon as the mask is removed, the analgesia from the morphine continuing for quite a while. The patient can answer questions intelligently, but should be allowed to remain quietly dozing as long as possible.†

Variations in Technique.—The face-mask method with positive pressure may be used without preliminary medication. Inasmuch as with preliminary medication the narcosis comes on sooner and with less forcing of the inhalation anesthetic, and, furthermore, as the margin between complete anesthesia and respiratory failure is lengthened, thus making it a safer procedure, some form of preliminary medication should be used whenever practicable.

The next most powerful analgesic to morphine is ether, drams four, liquid paraffin, drams six, mixed and given by mouth with salt, pepper and lime juice on the bottom of the wine glass and also on top of the mixture. This should be given thirty

*Marshall (*loc. cit.*) states that "shocked patients do not bear morphine well." This conclusion was unquestionably the result of observing men come to the Casualty Clearing Station already heavily morphinized and receiving an additional hypodermic at the station.

†It is customary in certain clinics to give nitrous oxide and oxygen for painful dressings, but the gases are given in such small quantities that the patient groans and complains throughout, the anesthetist assuring him the while that he is not suffering. When the mask is removed the patient remembers nothing that has occurred. This is amnesia, and is not the analgesia referred to in this paper.

minutes before the operation, and may be repeated in ten minutes, if necessary.

The other preliminaries that have a powerful synergistic effect with nitrous oxide or ether are bromide of potash and paraldehyde, two drams of each, given in four ounces of water at about 115° F., by rectum.

It sometimes happens that, through untoward circumstances, one must resort to ether by the drop or some other method for lung surgery. When this occurs the same general principles apply, *i.e.* the use of morphine *as indicated* as a preliminary, and the maintenance of a very light (first stage) anesthesia, just beyond the grunting stage. When narcosis is thus maintained, the patient's lungs are inflated to a greater extent, the patient responding in a measure to the stimulus of the operation and breathing deeply, and the blood pressure is higher than when third degree or full surgical anesthesia obtains. The respirations are always deeper and more regular with a light anesthesia, especially when morphine is used.

The consensus of opinion among surgeons who have used both methods, *i.e.* with and without positive pressure, is against the drop method or any other in which the anesthetist has not complete control of the lungs, inflating or collapsing them as required by the surgeon. Artificial respiration, when necessary, is more easily maintained with the face-mask method than with endotracheal or endopharyngeal anesthesia.

The writer wishes it explicitly understood that he does not consider the technique here outlined to be the best for *all patients* and *all operations*. Nitrous oxide and oxygen, given by an open method (*i.e.* with an extra large face mask), and with one-half to two ounces of ether per hour, is a decidedly better method for abdominal cases where full surgical relaxation is demanded.

Summary of Technique.—1. Hypodermic of morphine sulphate, one-quarter, three-eighths, or one-half grain, with three-eighths as the average dose, forty to sixty minutes before operation.

2. The face-mask method of anesthesia with, preferably, (1) nitrous oxide and oxygen, or (2) ether, air and oxygen.

3. Positive pressure, slight at first, but from commencement of anesthesia, increasing to from five to ten mm. of mercury during operation; then gradual withdrawal as operation is completed.

4. The highest percentage and largest amount of oxygen permissible with regular breathing.

5. First-stage anesthesia, with morphine analgesia throughout.

6. Constant increase of oxygen as operation proceeds (but never to the point of fulfilling all physiological needs, and so temporarily arresting respiration).

Clinical Conclusions.—The value of the method herein detailed has been summarized, from the clinical point of view, by Cannon[4] as follows:

1. Three months' active experience in the clinical application of these experimental data proved specifically, reduction of the incidence, degree and extent of pleurisy.

2. Prevention of contralateral collapse.

3. Practical elimination of pneumonia as a complicating factor.

4. Operations performed under analgesia rather than anesthesia, permitting successful surgical intervention in otherwise hopeless chest wounds, and eliminating to a large degree the anesthetic factor in shock.

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A CASE OF MIXED NEUROSIS WITH SOME PARAPHRENIC FEATURES.

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THE history of this case, only a part of which is here reported, is rich in psychic mechanisms now fairly well understood, but in order not to interrupt the continuity of the patient's disclosures, I shall postpone discussion of them until the latter half of the paper.

The patient, married, aged 30, a violinist and musical composer by occupation, was of Russian Jewish parentage and the eighth of ten children. He complained that he could not live at home with his wife, because he was afraid he would harm his small son and only child, aged fifteen months. He said the baby's crying nearly drove him crazy, although it was a very good and healthy child, and cried no more than other children. On the other hand, when it was quiet, he was worried, for fear something ailed it. He would then pinch and poke it to see if it would cry, and when the normal response was made, he was beside himself. He *knew* the child was all right, and yet he could not control these feelings. This was the trouble which drove him to consult a physician, but he suffered from other conflicts, all of which he thought would be injurious to the child.

He said his real trouble began when he lost himself in Paris while studying music there when he was seventeen. This loss of self happened one afternoon as he entered his gloomy room after a walk. The walls were so dull, like a prison. He looked at himself in the mirror and got a view of the right side of his face, which looked drawn and pale, saggy, worried, and lonesome. He didn't feel right and was homesick. There was something different about him, it was not clear to him what. This happened about ten months after he arrived in Paris. The feeling kept up for about a year, and has lasted more or less ever since. When playing in company, it used to come over him that he was not himself, that he was falling to pieces and could not hold himself together.

Going further back in his history, he told of falling off a bicycle about a month before he left for Paris. He fell on the right side of his face, was dazed from the fright, and stayed in bed a week or two. He did not feel quite right after that and his whole life in Paris was a disappointment.

Before he went abroad he met the girl who later became his wife. It was a case of love at first sight. She was a fine pianist and played accompaniments for him. When his family found out that he intended to marry her, they interfered. When he reached Paris, they worried him into such a state that he became indifferent to his sweetheart and quarreled with his mother. His father wrote him letters about money troubles and hinted that he should put a wife off his mind. Even his cousins wrote him not to correspond with his sweetheart.

During that time he was torn by many indecisions as to whether he should (1) follow the advice of his relatives or carry out his own plans with regard to marriage; (2) go home or stay abroad and spend the money which his family could ill afford; (3) follow advice to go with women of questionable character or stay away from them; (4) yield to adolescent masturbatic fantasies and indulgences or try to control himself absolutely. Controlling these practices resulted in seminal losses during sleep which frightened him dreadfully, as he thought that such losses would be the cause of some sort of injury to his children.

At the same time he was in a very depressed physical and mental state resulting from hunger, cold, and lack of sleep. He had no comforts and his esthetic sensibility was constantly hurt. He was very lonesome and did not make friends, because he was too poor to go with those he liked. He played around at restaurants and hotels, and once after playing at a ball in very cold weather he was found freezing in the street. At this period of his life, walking was his only recreation. While taking long walks, he made many resolutions about changes in his life, and one afternoon he decided to give up his sweetheart as his family demanded, save every penny except for bare necessities, and control all sex thoughts and desires. It was after one of these afternoon walks, that he entered his room, gloomy and empty, looked in the mirror and saw himself so strange and different. Life and its cruel hardships seemed hopeless.

Coming back to the time of the first consultation, he said that he had recently had a bad quarrel with his wife, the girl about whom he had had so many conflicts and to whom he had been married three years. As she took entire care of the baby herself and had many household duties, it was almost impossible for her to see him every day promptly at the time he set. "It was raining and she could have come to see me earlier," he said. "Instead, she came later. Before she explained, I got angry. We are such unlucky people. We create our own trouble. She is very slow about telling things. There is a great misunderstanding between us. I can't understand why she came late. I imagine she is not interested. I'm very quick. I walk fast and talk fast and think fast and don't get exhausted quickly. But there is always a cloud on my system. The baby is always on my mind. It sounds in my heart. Rain has always depressed me, but since the baby came, it is worse. These things are awful. Sometimes I have a peculiar day-dream. I get away millions of miles. It is so nice, so fine at that moment, but I cannot recall it. It is nothing of this earth. It is a constant sub-conscious hearing of scores. My hearing is for absolute pitch. I can tell any note. My ears and eyes are perfect."

During one visit he played selections from his new overture which he had brought with him. They were very beautiful, suggestive both of Chopin and Grieg, but distinctly not an imitation. He was not pleased when I told him this. He said he did not admire Chopin's music. It was sickly and effeminate. He preferred something masculine, virile, strong, massive, heavy, and substantial, like the music of Bach, Wagner, and some of Beethoven.

"I hear everything within me," he said. "My inner hearing is always ringing. When my baby cries, I get rigid in the back and under the ears. When I began to annoy the baby, I lost my mind. Something was coming over me that was not natural. At the time the baby was born, I was playing four times a day and worked with a personality I did not like. This Ruffini wanted to mislead me, to boss. As soon as I met him, I felt sick. I dreaded and disliked him. I always felt a load on my spine when with him. He affected my whole mind. We used to have quarrels. I once played a little something. He said, 'Don't play with so much feeling. It isn't necessary.' That man is all for business. Gambling and stocks are his mania. He used to criticise me about my quietude. But when he was pleasant, I felt worse. No matter how friendly he should be to me, I couldn't stand him. Very masculine and aggressive. I hate that type. There is something horrible and psychic about him. It was just my playing he cared for. He does not care for anybody. He has a dominating spirit. He says he has been in many fights and shows his muscle. He likes to torture people."

"If men were of my tastes, I would like men better, but I enjoy myself more with women, because they understand me better. My wife and I are not attracted sexually. It is more of a friendship. Her love is not of the physical kind. It made me very happy before marriage to think she was so spiritual, but she did not understand me at all. She gave me a nervous fear. I wanted my wife to understand me. I would get absent-minded from emotion. When a person gets emotional, he wants to express himself. But he is free from passion. Such emotions are fine, ecstacy. Marriage should bring passion and emotion together, but it does not . . . . . Sometimes my wife aggravates me. She has the worst temper I ever experienced. If people are continually getting into quarrels, they would better be separated. My wife comes to see me every day. She could come earlier. She never explains. If I ask her why she is late, she always answers 'It was the baby.' I'm very punctual myself. I like things to be exact. If my wife would come earlier an hour or so, I would feel better. Doctor, why *doesn't* my wife come earlier?"

I have not indicated the number of times the patient complained about his wife coming to see him late. He would twist around in his chair impatiently, get excited, and ask me over and over, "*Why* doesn't my wife come early? Why is she so slow? Why doesn't she try to explain before I ask her? Why is she so indifferent?" He was quite unaware of how these worries occupied him as much as did those about Ruffini and the baby.

As a matter of fact, his wife was very eager to do everything she could to help him and ease his mind. She was not always late, and when she was, it was on account of unavoidable delays at home. There was no special reason from a superficial point of view why she should come to see him at one time more than another. But this anxiety on his part had a deeper determinant. It was disclosed finally that he was not really worrying about the promptness with which she met the daily appointment, but about something else, the existence of which both were aware, although not understanding its relation to their unhappiness. He suffered from *ejaculatio praecox*, and his wife was frigid. His wife had told him that he was too impetuous, but neither had spoken to the other about the matter, because they never discussed such things, and did not think they made any difference. They accepted such maladjustments as belonging to the ordinary and irremediable episodes of human life and dismissed them from conscious thought. He had displaced the anxiety arising from only partially satisfied libido upon an incident of quite innocent appearance having a similar disturbance of time relationship and mutual adaptation. There were still other determinants for the selection of this particular object of displaced anxiety, which I shall mention later.

The day after this discovery, he brought his wife with him. It seemed quite wonderful to her that something had been found which had always bothered her considerably, but which she thought was wrong to speak or even think about. When they adjusted this matter, his pathological anxiety about his wife's punctuality ceased. I did not explain to him the relation between the displaced anxiety and its original source, because after the adjustment was made, no more discussion was necessary. He simply needed some medical instruction about sex functioning,—a matter upon which he had never properly been informed. He did not again complain of his wife being slow or indifferent, and several weeks afterward, when I asked him if she was still coming late, he answered, "Oh! I never worry about such things. Such trifles never worry me," and was quite unconscious of how he had been fussing about the matter.

With this worry eliminated, he was able to talk more freely about his obsession in regard to his child. During the adolescent period when away from home and forlorn in Paris, he was blocked in the quest of his real love object by a respectful attention to parental authority, and as a substitute for his deprivation, he had reverted to fantasy which led to masturbatic practices. As we have seen, he had long been afraid that there would be something the matter with any child of his on account of his adolescent indulgences. Controlling these had caused seminal emissions during sleep which frightened him. He thought that such losses meant injury to his offspring. He worried later because he was unable to relate the child to himself. It looked like the other personality which he had lost in Paris. He could not connect his present self with the child.

In addition there was a peculiar relation between himself and parents which he could not understand, something within him in regard to this that frightened him. When he lost his personality, he thought about his parents. There was no complete understanding between them and him. When he thought of his mother whom he resembled he always envisaged the shape of her face. There was great trouble between him and his parents from the time he knew his wife. They had nothing against her, but thought he ought to marry a rich woman. He hated his father, brutal, indigent, lazy, and selfish. All the older children had been put to work as soon as they were able in order to furnish support for the family, while the father sat idly at home and did nothing. He hated his father, but had never been able to effect an emotional independence of him, for he still retained an infantile fear of him. In fantasy, he castrated him.

The analysis showed that the patient was making a phallic symbol of his small son who represented a castrated organ or lost virility. The pinching and poking were tests, and when the child cried, *i. e.* showed virility, it reminded him of adolescent seminal emissions, concerning the meaning of which he had been ignorant and anxious with a sense of guilt. When the child was not crying, he feared that it was deficient, impotent. He had to test it in order to assure himself of his own potency. The compulsive tests were also modified expressions of repressed cruelty, developed from unabreacted hatred against father, first violin teacher, and Ruffini. His relation to his first teacher of violin will be explained later.

The fact that the child stood in his mind for his lost, not his real, manhood explains why he could never effect a satisfactory relationship between it and himself. His anger at his wife's answer, "It was the baby" when she came late, is now explicable when we consider the symbolism attached to his baby. And his wife's slowness in comparison to his quickness touches the same complex at another angle, for his extraordinary quickness of reaction was only a symptom of an underlying inability to postpone and integrate temporary and partial pleasure reactions into more mature experiences.

The right side of his face had been cleverly selected as a defense wherein to hide the feeling of reproach generated from his unsatisfied libido. The excuse for his selection was the fall from the bicycle and an injury to the right side of the face. It was also fitting, because of its connection with a fall. Preceding, during and after the illness resulting from the fall there had been the same moral sense of fall pursuing him right up to marriage, emerging soon afterward, and returning with greater force after birth of his child. When the libido became more properly occupied both through adjustment with his wife and comfortable, normal fixation upon his child, the anxiety and reproach cleared up, except that part which belonged to the troublesome homosexual component and its sublimations, to be discussed later.

The way his face appeared to him was also the way he regarded his own personality. His face resembled that of his mother, and in its wrong appearance he wronged his mother—his real mother, his mother nature, and his moral self developed by the mother teaching—with whom he

was identified and therefore not psychically separated. His regression to the image of his mother's face in times of conflict was a way of exressing the desire to return to the comforting presence of his mother and to a life with mother nature not so exacting as the present, to get close to the face of nature. There were other mother identifications, among which was the narcistic dependence on the mother, treating his wife as his mother and childishly expecting a mother's care from her, and his slavish attitude toward his father, although consciously he rebelled against him. It is impossible to go into all these different processes. They ceaselessly work into each other and a sketchy objective view must necessarily break them up into dead fragments.

We have seen in some of the material presented, as there is also in much not noted here, that when the patient speaks of his musical preferences for other composers, he likes the virile, massive, heavy, dominating. He is then expressing the wish for a love object of his unconscious and sublimated homosexual component, but when defensively entering the every-day world of actual contact with men, he denounces this type and veers toward the quiet and refined men with whom he identifies himself. His own creations are of an ethereal, superrefined quality, himself sublimated into music. Most of his dreams and the terms he uses in ordinary conversation regarding men show an unconscious attraction to those approaching the sadistic type. This tendency dates from experiences with his first violin teacher, who was very stern, domineering, and almost cruel, but whom he liked as well as feared. He took lessons from this teacher before he was seven years old. Before this time he was tolerably happy, although he lived in a very sordid and disgusting environment. The teacher was very rough, cranky, and irascible. "He would hit me," the patient said, "and I was afraid of him and dreaded him. I didn't begin my career with the right man. This trouble is right in my blood. Sometimes I used to go and take my lessons in thunderstorms. I was afraid and would get depressed." While discussing this period of his life, he dreamed *of an approaching storm. The clouds moved very fast. It was taking place at night. He had a peculiar dread. Everything was so light. He was always looking out of the window just as a child does before an approaching storm.*

The anxious fears during the thunder-storms in the lesson hours with this teacher are carried over into the present, and by a mechanism similar to the conditioned psychomotor reflex, he is unhappy during rain without thunder and when practicing music without the original teacher. His dread of thunder-storms goes even farther back than this to days of infancy, when there was a rumbling of the bowels and desire to evacuate at night, angry disapproval of his father and a light in the room. The looking out of the window means a wish to escape outside. The physical discomfort of a sense of weight and strain on the lower part of the spine, the anxious dread that the storm will break (that the feces will come thundering down) arising from intestinal uneasiness and fear of punishment from the father, all these had been carried along to other situations of subordination in the presence of domineering and harsh personalities who reminded him of his father. The old anal urge with its accompanying anxiety, hope, love, hatred, and fear of punishment determined the reaction toward his homosexual object. It was a childish affect toward a father image, first in the shape of the violin teacher, and then through several transferences (which I have not mentioned) until culminating in his enslaving attraction toward the fascinating and terrifying Ruffini.

The day after spending an hour at my office in talking about Ruffini, he brought the following dream. *A man was running after my wife. She said she was going to commit suicide and I couldn't stop her.* This dream nicely illustrates the mechanism of projection and displacement upon his wife of an unconscious homosexual wish. His wife is being pursued by a man by whom he himself wishes to be pursued. In addition it shows a former wish, during an enhancement or temporary rising of the homosexual impulse, that his wife would put herself out of the way without any responsibility on his part. That he secured a position with Ruffini, even though he knew, or thought he knew, what sort of a person he was points to the trend of his creative urge at the time. He had heard of him for twelve years. He greatly exaggerates this man's character, however, according to the customary over-estimation of love and hate objects.

There is a cyclothymic swing between the depressive feeling of unreality and that of exaltation and well-being. His excessive constraint and backwardness, fear of disintegration of personality, of not being able to hold himself together belong to a paraphrenic make-up. On the other hand, he swung to the opposite, hysterical extremity in attacks of dreamy states of ecstacy, dramatic imitation of the persons who annoyed him, and great suggestibility. We have already discussed his anxious and compulsive states.

The many mechanisms revealed by analysis in this, or any case, are impossible to manage satisfactorily in a short article. The fact that we have mentioned them by name must not be mistaken as an attempt to classify the patient in a depreciatory category. Calling names does no good. These terms are simply mediums of expression and apply to every one more or less.

The analysis was by no means complete at the end of the twenty-second session, but because the symptoms for which the patient came to be treated were cleared up, and for other reasons, financial and vocational, he stopped coming. He was rid of the troublesome obsession regarding his son, had made a better adjustment toward his wife, and obtained an insight into his feeling toward Ruffini. He afterward secured another position, and was more free to work on his musical compositions.

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Ambulatory Cases of Lethargic Encephalitis.—Morax and Bollack state that patients who are going about as usual have been found to be suffering from this malady through the ocular disturbances of ptosis and diplopia. Anisocoria may also be a symptom, while a fourth symptom is paralysis of accommodation. Chauffard has seen sudden ptosis in an ambulatory case along with tendency to somnolence. The type of case was mild. Lortat-Jacob saw in an ambulatory subject diplopia and nystagmus.—*Le Bulletin Médical.*

ENCEPHALITIS EPIDEMICA (MISCALLED LETHARGICA), WITH SPECIAL REFERENCE TO DIAGNOSIS

By TOM A. WILLIAMS, M.B., C.M.,

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PREMATURE generalization on a basis of slender experience, and want of neurological knowledge, are rife concerning this disease. The name given it is a glaring instance, for the cases without lethargy are very numerous. It would be as justifiable to give the name "neoplasma cerebellaris" to cases of tumor of the small brain because these are so frequently characterized by torpor. The name "lethargica" might as reasonably have been applied to dementia paralytica. Of enteric fever, this concept showed itself in the name "typhoid." Typhus fever has been named similarly. As a matter of fact disordered feeling and impaired thinking are perhaps as frequent as is lethargy in the course of acute encephalitis.

Of ocular symptoms similar criticisms may be made. Histological examinations show that the disease is not focal, but diffuse. There is a universal invasion of the central nervous system by an infection, the reaction to which is a perivascular diapedesis of mononuclears. This impairs the function of the nerve elements, possibly by ischemia. If this is of only short duration recovery of function occurs when the circulation is reestablished, but after a period comparatively short, necrosis supervenes with the resulting permanent loss of function, as a regeneration in the central nervous system does not occur. In the more severe and rare cases, hemorrhagic exudation may take place. If this is large, or if in a nuclear area, it may cause a destruction of tissue showing itself by permanent impairment of function. As the ocular nuclei are very small, are concentrated in restricted foci, and as they perform delicate functions which cannot be supplemented by other organs, a very slight assault will show itself symptomatically. That is why the affection of these nuclei is so conspicuous clinically when it occurs.

On the other hand a degree and extent of ischemia sufficient to impair the function of a small nucleus scarcely affects noticeably a large area like the centrum ovale. It even may fail to affect symptomatically such an organ as the precentral cortex, of which a considerable lesion may produce few symptoms, a familiar experience in the course of apoplectic hemiplegia.

However, *motor cortex syndromes* do occur because of acute encephalitis. In older people these may be very difficult of diagnosis, as in the case of a woman recently seen where a sudden aphasia while telephoning was attributed with reserve to the vascular inadequacy of late middle life. Encephalitis was not even suspected until three weeks later, when general torpidity intervened and another physician had no difficulty in making the diagnosis, which, however, proved inaccurate, as at death a month after that a frontal neoplasm was found.

When it is the *psychological functions* which only are impaired, the diagnosis is still more difficult. Such a case was that of a man in the 40's who was discovered in his embassy at midday very much excited because of a sudden loss of memory which was almost complete when I saw him two hours later. The agitation he showed was natural under the circumstances, but the alarm it had created among his colleagues was quickly allayed when they observed how easily the patient was managed by me. The next day the amnesia had completely disappeared, the patient remembering perfectly the most difficult tests. Only a general restlessness remained, lasting for a week or two without any torpidity.

Insomnia is a frequent symptom in cases of this kind. It is often of an agitated character and may be attributed to the uneasiness caused by disturbance of function of the thalamic region which produces an affective disquiet, not at all due to psychological situations, and therefore not more than temporarily amenable to psychotherapy.

Only by its acuteness does the disease symptomatically differ from the granulomata which affect the central nervous system, in particular the form of syphilis known as dementia paralytica. This is easy to understand, for pathologically both are due to mononuclear invasions of perivascular distribution. The individual access need not differ in the two diseases; only the course does so.

To some, lymphocytosis of the cerebrospinal fluid has appeared an easy road to diagnosis, but this is not present in all cases, although it is generally so. It must be remembered, however, that it also occurs in disseminated sclerosis, another inflammatory disease occurring acutely, although of chronic course with exacerbations. I can conceive of cases where the differential diagnosis would not be possible without prolonged observation.

The colloidal gold curve, formerly supposed to be characteristic of paresis, is found frequently in encephalitis, but in these cases the Wassermann reaction is always positive in the latter disease, and never so in the former.

Lymphocytosis in mumps has led to an error of diagnosis, and could readily lead to error in tuberculous meningitis also.

To poliomyelitis this disease is pathologically an almost complete homologue, the latter, however, being often more intense pathologically speaking, as shown by the extensiveness of the exudates, and their frequently hemorrhagic nature. This accounts for the permanence of the results in so many cases. Tilney's case of poliomyelitis with prolonged somnolence has an encephalitic aspect.

Diagnostically between the torpid cases of poliomyelitis and the cases of encephalitis with paralysis, a decision can be made only tentatively in the initial period. This is particularly so in encephalitis with muscular atrophy.

Differentia are only tentative, too, in cases of encephalitis where the conspicuous symptoms are spinal segmental. Ascending or descending radiculitis lasting several weeks has characterized these. They resemble the meningitic form of poliomyelitis, and, except by their acuteness, they are not distinguishable from the lightning pains of tabes, except when the patient has well marked other signs of syphilitic radiculitis, such as loss of reflexes and anesthesia, more particularly of the attidude sense, and unless the serological reactions are positive.

This pseudoradicular syndrome probably arises endogenously, the posterior root zone within the spinal cord being progressively irritated by inflammatory invasion. One can hardly postulate a progressive meningitis as an explanation. I have, however, noted the Brudzinski sign in one case and the Kernig sign in two, and these are indicative of meningeal irritation. No post mortem of the radicular form has been reported, all five cases of Pardee, who has described it, having recovered.

Xanthochromia of the spinal fluid has occurred in two cases I have seen. In one of these there was also edema of the optic papilla. The yellow color of the spinal fluid in these cases must be due to absorption from an encephalitic hemorrhage. The diagnosis from a compression syndrome is of course made by the absence of level symptoms referable to the spinal cord.

Papilloedema may not be so rare when more consistently looked for.

From hysteria the diagnosis may be quite difficult when no physical signs have occurred, and flighty behavior is the only symptom; for patients whose cerebrum is impaired show an exaltation of suggestibility. This is a familiar truth to those who deal with states of mental confusion from intoxication. Encephalitis, however, resembles these latter in that there is an impaired fixation of attention, and the ductility, as regards any particular stimulus is evanescent; while in the hysterial the suggestion tends to be tenacious. Further, hysteria should never be diagnosed by exclusion, but only after the discovery of the initial suggestion which has determined the hysterical behavior.

The erroneous doctrine that physical disturbances can be of hysterical original must not be allowed to influence the clinical diagnosis in the study of these cases as has occurred in a local instance recently. The weak suggestibility due to encephalitis was the foundation of an erroneous diagnosis of hysteria in a case recently seen in North Carolina, even although lethargy was present and partial ptosis had occurred.

The most difficult diagnosis of all is from the mild acute psychopathies, with or without delirium. In these cases the diagnosis can be made only by watching the course of the disease, or by finding lymphocytosis of the spinal fluid.

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OSTEOMALACIA: IS IT A RARE OR RATHER COMMON DISEASE?*

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At my service at the Broad Street Hospital, patients suffering from osteomalacia have been observed with varying frequency during the past few years so that a recent article in the *British Medical Journal* (Oct. 18, 1919), quoting Fromme of Göttingen, who described an endemic of osteomalacia in his city particularly interested me. The patients were almost exclusively young males aged 11 to 18. Their work was heavy and they complained of pain in the knees and hips, tiredness on slight exertion, and inability to do strenuous work. *X*-ray studies of the femur and tibia showed rarefaction of bones which in places disappear altogether. There was also a striking widening of the epiphyseal line and in eight cases there was spontaneous fractures somewhat above the epiphyseal line with impaction of the thin diaphysis into the comparatively wide epiphysis. In the case of one female patient the bones of the pelvis showed the above changes and her gait was characteristic of osteomalacia. Other manifestations of bone softening seen in some cases were coxa vera and pes planus.

The causes underlying this condition were stated to be due to underfeeding due to the war, lack of phosphoric acid, as found in cheese, butter, milk, fish, meat, eggs, and rice. The rarefaction of bones is also referable to calcium deficiency. The occurrence of the endemic toward the end of winter, when a shortage of vegetables prevailed, also suggests vitamine deficiency as a factor in this disease. Infectious diseases, notably influenza with endocrine abnormality, may also have influence upon this disease.

Similar endemics are prevalent in Vienna, where hundreds of patients are reported suffering from osteomalacia. During the past few years we have been meeting with an increasing number of cases of osteomalacia and the generally accepted textbook statement that this disease is rather uncommon must be modified.

Patients referred to our *x*-ray and electrotherapeutic service for chronic rheumatism and arthritic conditions, when carefully studied with the *x*-ray, were in a surprisingly large number of instances found to be sufferers of osteomalacia. Sometimes the lesion was localized, but in a fairly large percentage of patients the osteomalacia affected much of the osseous system. The frequency of these cases has been such that whenever a particularly chronic or stubborn arthritic lesion is encountered, a careful study is made to eliminate osteomalacia.

The pathology of this disease is described as a degenerative osseous change with softening and bending of bones with atrophy. Frequently spontaneous fractures occur. The bones become shell-like, the medullary canal increases in size and fatty and colloid degenerations are met with. Calcium salts of the bones are absorbed until nothing but a very thin outer hull remains, which readily fractures. During pregnancy this absorption is due to the demands of the fetus, and the desirability of supplying foods rich in lime during this period is strongly indicated.

While the danger of oseomalacia during pregnancy has been realized and noted for many years, other characteristic symptoms of the disease during other periods are frequently overlooked.

Nervous and mental depression during the climactoric frequently has, as a basis, calcium deficiency, and osteomalacia is frequently associated with it. This points to gonad-ovarian deficiency. Patients who complain of insecurity of limbs, so that they must fix their eyes on the feet in order

*Read before the Academy of Pathological Science, March 26, 1920.

to walk, are usually found to be osteomalacic. This occurs frequently among the aged, when through osteomalacia the bones degenerate and bend and the stature diminishes. Changes in stature of three to four inches within six months have been noted due to osteomalacia.

Very often the lazy man's diagnosis of rheumatism or arthritis is made in cases of ill-defined pains, weakness and insecurity of the limbs, when careful investigation shows osteomalacia as the basic lesion. The rheumatic patient who does not respond to medication within a reasonable time and has had careful examinations in regard to focal infection and autotoxemia should be examined for osteomalacia, and it will surprise the investigator to notice the frequency of the complication. In our studies we have particularly observed this osseous degeneration in the bones of the lower extremity, the pelvis, the vertebræ, and the thorax. In the pelvis, deformities are often encountered which render pregnancy hazardous. The characteristic gait of osteomalacia is the short, unsteady step, with bent back and the head bent forward.

A so-called rheumatic patient in whom a reduction in height is noted is usually found to be osteomalacic. Pain in the tarsus frequently treated unsuccessfully for flat foot, is often due to osteomalacia. In some cases of osteomalacia, diabetes has been a concomitant and this has drawn attention to the possible endocrine basis of the disease. As the parathyroid glands are now believed to preside over calcium metabolism, as the thyroid presides over iodine metabolism, there is some reason to look for parathyroid abnormality in this disease. Adrenal deficiency is also believed to be a factor in many instances. The temperature is usually nonfebrile and the blood-pressure is below normal.

The urine in these patients almost invariably shows excess of earthy phosphates, and frequently glycosuria is noted. The white line of Sargent was elicited in several instances. A typical case which was treated on my service was referred for *x*-ray examination of the hip. Typical osteomalacia of the femur, pelvis, vertebræ, and chest was noted. The patient had lost three inches in height within one year and had run the gamut of rheumatic remedies for ill-defined pains in the back and joints. She could not walk without fixing her eyes on her feet and even then her gait was unsteady and short. Tests for the reaction of degeneration and Babinski were negative and the Wassermann was negative. The patient was placed in bed, received foods rich in vitamines and lime and phosphorus, and was rayed daily with the alpine ultraviolet lamp for 10 to 15 minutes over different parts of the anatomy. Calcium lactate gr. v, t.i.d. was given, also phosphorus in dilution. In view of the possible special endocrine origin of the disease, parathyroid and ovarian tablets were also given, the former in 1/10 grain and the latter in 1 gr. tablets once a day.

The rest in bed, the actinotherapy, and possibly also the medication gave the patient much relief during her hospital stay. She has recently reported another setback and I have referred her to one of our colleagues from out of town for further treatment. Whether the disease can be checked in an advanced condition such as this one is doubtful, but it seems plausible to assert that early manifestations should respond to diet, fresh air, actinotherapy, and endocrine remedies, particularly suprarenal, ovarian or testicular, and parathyroid.

Whether these glandular remedies should be used singly or in combination or alternation depends in our judgment upon the special symptoms. If the white line of Sargent is marked and the climacteric is present, both adrenal and ovarian (corpus luteum) tablets would seem to be indicated. If no special indications present, parathyroid for its favorable action in calcium deficiency would seem to be called for.

This short study is brought to your attention, as it is the belief of the writer that a great many lesions of osteomalacia escape unnoticed until they become chronic and are then relegated to chronic invalidism or the symptoms are attributed

to advancing age. Very often the lesion is first diagnosed when spontaneous fractures occur. As a matter of fact, many chronic rheumatic or arthritic patients will be found suffering from osteomalacia after careful roentgenological and clinical examinations. There is hope for improvement in these patients if the basic cause is removed or ameliorated.

Résumé and Conclusions.—1. It is contended that osteomalacia is not an uncommon disease, but is simply not recognized, as a rule, until spontaneous fractures call attention to the osseous lesion.

2. Osteomalacia simulates rheumatic and arthritic conditions and should be carefully excluded in the above lesions.

3. Aside from the Roentgen diagnosis, which is typical and readily disclosed, there are sufficient clinical manifestations to diagnose the lesion in early stages.

4. These are the characteristic short, unsteady gait, with bended back and lowered head, the indefinite or vague rheumatic pains referred to dif-

ferent articulations, the excess of earthy phosphates in the urine, the frequency of the white line of Sargent, and, as the disease continues, the diminution in height due to the atrophy of bone or bending of the femur and other long bones.

5. The etiology, judging from the endemics encountered in Central Europe, points to under nutrition or improper nutrition with deficiency of lime, phosphorus, and vitamines.

6. Suprarenal, parathyroid, and gonad deficiences are also noted in this lesion. Whether these are reflexly due to the above nutritional defects or are primary in character, remains to be determined.

7. Treatment by means of rest, actinotherapy, diet, and endocrine products, especially in conditions not too far advanced, will be effective.

50 Central Park West.

CHRONIC PULMONARY CONDITIONS SIMULATING ADVANCED TUBERCULOSIS

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Among the many cases of lung disease treated at the Gouverneur Tuberculosis Clinic in the past ten years, the following have been selected for this report as illustrating the difficulty often encountered in the diagnosis of pulmonary tuberculosis.

It has been asserted by the general practitioner that the chief difficulty lies in the diagnosis of the early or incipient case, with few or no chest signs, while the more advanced cases,—that is in the second or third stage,—are comparatively simple and are easier to diagnose. The cases here presented illustrate some of the difficulties of diagnosing those with many chest signs, and demonstrate that it often requires a much longer period of observation to arrive at a correct diagnosis in this latter group, than in the early or incipient class. Of course, the finding of tubercle bacilli in the sputum will at once clear up a doubtful case; but many cases regarded as tuberculous do not show the bacilli in the sputum (closed cases) at any time in their course, even on repeated examinations, particularly those of the chronic fibrous type; and it is this group which is most troublesome to distinguish from other chronic thoracic conditions which run a protracted course, with pains, cough, loss of weight and appetite, and general debility strongly simulating tuberculosis.

After watching these cases for a long time,—and some of them have been under observation for eight years or more,—one should come to some conclusion as to the underlying cause of the trouble with a reasonable degree of certainty, but it is the opinion of the writer that in some instances the actual diagnosis can be ascertained only by autopsy.

If one remembers the frequency with which tuberculous involvement of the lung is found, on autopsy, in cases dying of other causes, one hesitates considerably in declaring that any patient with suspicious lung signs is not tuberculous, especially until all the means at ones command, for diagnosis, have been exhausted.

Case I.—Chart No. 1756. Female; Russian; aged 37 years. Patient was admitted to the clinic November 22, 1909, with a history of having had pneumonia nine years previously; had always coughed. Her present illness began nine months ago with cough and moderate hemoptysis, pains in the chest, occasional night sweats and moderate expectoration; lost no weight, rather gained some. Temperature on admission 99.6° (by mouth), pulse 110, respirations 24. She was a short, stout woman, being only 4 feet, 9¼ inches and weighing 158 pounds, and did not give one the impression of being tuberculous. Physical signs: Resonance impaired at left apex and infraclavicular space. Breathing at apex bronchovesicular and tubular, almost cavernous below the clavicle, where a number of crepitant and subcrepitant râles were heard. Scattered râles of all kinds heard throughout rest of right chest. Heart: No hypertrophy or murmurs. Blood pressure, 120. Sputum negative. Urine, albumin and sugar, negative. An *x*-ray of the chest, taken later, showed pulmonic fields of even size but unevenly illuminated. Considerable infiltration throughout the right chest; left side shows infiltration at root and central portion.

The diagnosis on admission was pulmonary tuberculosis, stage III. If the signs in the patient's chest were caused by the tubercle bacillus she was certainly entitled to that diagnosis; the night sweats and hemoptysis were suggestive of it. At the present time we are more hesitant to make a diagnosis on the first examination, preferring to keep the case under observation in the clinic and to be guided in our diagnosis by subsequent observations, but in our early days of enthusiasm, we did not hesitate to make a diagnosis on the patient's first visit to the clinic.

This patient continued to do well under treatment and steadily gained in weight until June 8, 1911, when she weighed 172 pounds. The physical signs in the chest were nearly always the same, and the sputum was negative on periodic examinations. About June, 1913, sugar appeared in her urine, she began to lose weight and feel badly, cough and expectoration continued with occasional hemoptysis. Her weight went down to 150 pounds, and she frequently ran a pulse and temperature. The complicating diabetes made the case more difficult. About this time also her breath assumed the odor of a pulmonic abscess, possibly from purulent collection in a bronchiectatic dilatation, and she was now generally regarded as a case of bronchiectasis, in which diagnosis Dr. Mannheimer, who was called to see her in consultation, agreed. We continued to treat her until June, 1916, when she was discharged as a case of bronchiectasis and diabetes and not tuberculosis.

This case illustrates the difficulty in diagnosing some of these chronic lung diseases, as in many respects history, symptoms, and physical signs strongly resembled a case of chronic pulmonary tuberculosis, but the continued absence of tubercle bacilli raised a doubt, that was substantiated by prolonged observation, and it has taught us to be a little more wary of making a diagnosis on one examination.

Case II.—Chart No. 2927. Male, Russian, age 57 years. A presser by trade. Admitted to clinic August 17, 1912. Previous history unimportant except for a chronic winter cough for several years past. Present illness dates back to last winter's cough, which persisted until time of admission. Physical signs: Impaired resonance at apices, with wooden box-like resonance over rest of chest, which was barrel-shaped. Breathing labored and of poor vesicular quality over entire chest except the left upper lobe, where it was harsh; musical and mucous râles scattered over entire chest, more marked on left side. Heart: Hypertrophied downward and to right. Epigastric pulsation, no murmurs or thrills. Temperature 98.4°; pulse 92; respirations 20; blood pressure 110. Sputum negative on repeated examinations.

A diagnosis of chronic bronchitis with emphysema was made, and the patient was allowed to come to clinic for treatment and further observation. His condition remained the same with but slight variation as

to weight, temperature, and pulse. Cough was the most troublesome symptom. Periodic physical examinations showed but little alteration in chest signs, and on May 28, 1913, he was discharged from the clinic as "not tuberculous." On December 19, 1918, more than five and a half years after being discharged as not tuberculous, patient was re-admitted to the clinic, having lost some weight; temperature 99.4° (mouth); pulse 110, and respirations 50; the physical signs in the chest were almost identical with those of previous examinations, but a sputum examination showed tubercle bacilli present. He seemed to be in bad condition, being greatly worried over the loss of a son, killed in the war, and died on December 31, 1918, about two weeks after re-admission to the clinic.

The question in this case is, Did the man have tuberculosis at the time of his first admission, or did he acquire it later? The physical signs were typical of chronic bronchitis and emphysema, and the repeated negative sputa would tend to confirm this view; yet it is possible for the two conditions to have co-existed, the chronic bronchitis and emphysema masking and obscuring the tuberculous infection which may have been quiescent, becoming manifest only under the added strain, mental and physical, of this man's grief at having lost his son. The true condition must remain in doubt, but it behooves one always to bear in mind the possibility of tuberculosis co-existing in an apparently uncomplicated case of chronic bronchitis with emphysema.

CASE III.—Chart No. 3163. Male. Age 42 years. Admitted to clinic July 18, 1913. Previous history unimportant except that he was weak for several years before admission. For the past three weeks he had complained of a moderate cough, especially in the morning, with tenacious mucus, pain in the throat, dysphagia, and marked aphonia; had lost about 15 pounds in a short time, appetite poor, hardly able to work, dyspnea on exertion. Temperature 98.4°; pulse 88; respirations 20; no night sweats. Physical examination: General appearance, emaciated, glands generally palpable; throat congested. Resonance markedly impaired over both apices and infraclavicular spaces, especially on the right side. Bronchovesicular breathing in these areas. There were crepitant râles over both apices anteriorly above clavicles, and right infraclavicular space. No abnormal signs in rest of chest. Heart sounds distant but no murmurs or hypertrophy detected. Diagnosis: Pulmonary tuberculosis, stage II; patient referred to throat department for diagnosis of the throat condition. There it was pronounced tuberculous laryngitis. Application was at once made for admission to an institution, and in the meantime the patient was treated at the clinic for about a month, during which time he improved somewhat and gained five pounds. On August 21 he was admitted to Bellevue and from there transferred to Seton Hospital, where he remained but a short time, returning home unimproved.

We did not see the patient again for almost a year, as the family resided outside of the district, but on December 14, 1914, he was readmitted to the clinic. The physical signs in the chest were about the same as in July, 1913, but Dr. Seymour, who made the examination, noticed some skin lesions on trunk and scalp. These were large, discrete, with serpiginous borders and pigmented centers. The possibility of lues was considered and a Wassermann, taken the same day, gave a 4 plus reaction. This gave an entirely new aspect to the case. The patient was put on antiluetic treatment and improved gradually until October 6, 1915, when his Wassermann was negative, his voice entirely cleared, and he returned to work, once more becoming a useful member of the community.

The one feature in this case which from the outset seemed to negative the diagnosis of tuberculosis was the absence of tubercle bacilli in the sputum, while in nearly all cases involving the larynx there is a positive sputum; but it should be mentioned that we had only one sputum examination before the man was admitted to hospital. Subsequent sputum examinations were also negative. Apparently no Wassermann was made in either hospital.

Pathologically, there is much similarity between syphilis and tuberculosis; both produce perivascular and peribronchial infiltration, but tuberculosis of the lungs is very common, while syphilis is not, and it was only natural to diagnose the condition, from the physical signs elicited, as tuberculous. The diagnosis of tuberculous laryngitis fortified us in the stand taken. Wassermanns are not done as a routine because many of our patients object to having any blood taken from them.

This case impressed upon us the extent to which the correct diagnosis and proper treatment help to solve a sociological problem as well as the physical, for, thanks to the keenness of the last examiner, a possible tragedy was averted. During the man's inability to work, the family were in great poverty, the patient sullen and morose, quarrelsome, and abusive to his wife and children, even attempting suicide, while now he is able to help along the family income.

CASE IV.—Chart No. 3856. Male. Age 18 years. Admitted to clinic June 21, 1915. Previous history unimportant, except that he had bronchitis frequently as a child. Patient was well until about five weeks before admission, when he began to cough, worse at night, with a slight yellowish expectoration. Pain in the right chest, dyspnea on exertion, no hemoptysis or night sweats. Temperature 100°, pulse 112, respirations 22. Physical signs: Entire left side dull, becoming flat at the base posteriorly, and absent breath sounds. Skodaic resonance at apex, with bronchial voice and breathing and a few râles; no succusion elicited. On right side resonance impaired at apex, with roughened breathing but no râles. Distant vesicular breathing over rest of right lung. Heart: Markedly displaced to left. Apex beat in fourth space in the axillary line. Right border of heart 3 inches to left of midsternum, while left border of heart was about 8½ inches to left of midsternum. This case was diagnosed as chronic pulmonary tuberculosis, stage III. Sputum negative. Wassermann negative. The patient seemed to improve under treatment and gained weight, but there was much discussion as to the diagnosis made. At one time an examiner thought he elicited succusion in the left chest very distinctly and the diagnosis of hydro-pneumothorax was considered. An *x*-ray, taken at this time, showed no tuberculosis on the right side, lung shadow fairly normal, but the left side showed almost no lung or heart shadow at all. There was only a very small area of lung shadow near the apex, the rest of the left side being a blank. *X*-ray diagnosis "possible hydro thorax."

At one of the clinical meetings of the Gouverneur O. P. D. this patient was presented as a case of hydropneumothorax, with the apparent agreement of the physicians assembled. He was again presented as a case of chronic pulmonary tuberculosis before a private medical society, where seven out of eight physicians present agreed in said diagnosis, while one thought it possible but not proved. About this time Dr. Mannheimer was asked to see the patient in consultation and advised that he be admitted to his ward at Sea View Hospital, where an intensive study could be made of the case, temperature and pulse carefully recorded, the sputum morphologically studied, etc. The patient remained for some time at Sea View and was again examined by Dr. Mannheimer at the Gouverneur clinic on May 4, 1916, with the following findings: Thyroid cartilage displaced to left. Marked chest retraction of left side, with dull percussion note, showing consolidation of left lung with pleural thick-

ening. Several bronchiectatic cavities ascertained on auscultation. Compensatory emphysema of right side, with rough and granular breathing at the apex. Probable diagnosis: Chronic interstitial pneumonia with bronchiectasis; one of those cases classed as lung suppurations but not tuberculous. An *x*-ray taken March 17, 1916, corresponded with above findings, and the diagnosis was accepted as final.

CASE V.—Chart No. 4457. Female. Age 42 years. Admitted to clinic April 2, 1917. Previous history generally negative. Patient was well until four months before admission, when she began to complain of cough, following gagging and choking on a bone; moderate amount of expectoration, occasionally blood-tinged; she felt weak and tired easily, occasional fever and night sweats for past three weeks. The chief complaint on admission was cough. Temperature 99.4°, pulse 88, respirations 22. Height 5 feet 1½ inches. Weight 150¼ pounds. Chest examination: Lungs—Left apex impaired, right upper lobe dull, anteriorly and posteriorly. Distinct vesicular breathing on left side and emphysematous on right with rhonchi all over. Bronchovesicular breathing on right side anteriorly. Heart: No apparent hypertrophy and no murmurs; accentuation of second pulmonic. Sputum, 24-hour specimen was negative. *X*-ray showed hilum glands calcified. Extensive adhesions at right base, but not tuberculous.

The diagnosis made at our clinic was chronic (fetid) bronchitis with bronchiectasis, inasmuch as her sputum, at times, had an offensive fetid odor. She was kept under observation for some time, during which she gained considerably in weight, but with no relief of any of the other symptoms. This patient, prior to admission to our clinic and also subsequently, made the rounds of many dispensaries, private physicians, and consultants, in search of a cure for her ailment. On one occasion, the patient states, she was advised to have a thoracotomy done for the purpose of washing a pulmonic abscess, which was the diagnosis of that particular consultant, a course from which we strongly dissuaded her. In June she decided to go to the mountains and to stay there all summer, in the hope of obtaining relief. She remained at Liberty, N. Y., until September, when she returned to the clinic for an examination. At that time the signs in the chest were intensified; she was discharged as a case of chronic bronchitis with bronchiectasis, and not properly belonging to our clinic.

The patient continued throughout the following year to suffer with pain in the chest, frequently coughed up large amounts of fetid sputum, and occasionally had severe hemorrhages from the lungs. About August, 1918, in one of her fits of coughing, she coughed up a large bone (1½ inches long) which nearly choked her; immediately thereafter she felt relieved. Since then all symptoms have disappeared and she feels like "a new born person." The remarkable feature of this case is that none of the *x*-rays taken showed the presence of the bone in her chest.

Each of the cases here presented represents a type which can be confused with chronic pulmonary tuberculosis. There are many points of similarity in the history, physical signs and course between these chronic nontuberculous chest diseases and chronic pulmonary tuberculosis. We know no royal road to diagnosis. Our experience leads us to believe that a careful weighing of all the elements presented, plus time, often a great deal of the latter, is necessary in order to arrive at the correct diagnosis.

291 HENRY STREET.

Hereditary Syphilis and the New Treatment.—Hochsinger of Vienna has been able to show a falling off in congenital syphilis since the introduction of the modern intensive treatment. Before the war the percentage of syphilitic live-born children in a large maternity was around 2½ and now the percentage has dropped to one. This is explained by intensive treatment, which begins in the chancre period.—*Le Bulletin Médical.*

IN WHAT WAY DO FOCAL INFECTIONS CAUSE SYSTEMIC DISEASE?

BY THOMAS J. RYAN, D.D.S.,

NEW YORK.

THROUGH the brilliant work of Billings, Rosenow, and other observers, we have been led to accept as true the basic principles as to the etiological relation between infection and suppuration in the oral cavity and degeneration of vital organs.

There is a general tendency to agree that niduses of infection from various foci, by the distribution of their toxic material throughout the system, may produce secondary foci of infection, which, in turn, are directly responsible for the development of parenchymatous nephritis, diabetes, and sundry other degenerative disorders of vital organs and structures.

It seems to me that—while not denying the ultimate fact that focal infections may and do stand *in loco parentis* to these degenerative changes in glandular and other structures—yet, from the standpoint of strict pathology, we have accorded micro-organisms, *per se*, a somewhat larger share of credit (or perhaps it is blame) for these deviations than they rightfully deserve.

In this connection I feel strongly that the profession has not yet sufficiently considered the exhaustive and scholarly conclusions of Dr. William H. Porter, Professor Emeritus of Pathology and Clinical Medicine of the New York Post-Graduate Medical School and Hospital—recognized as one of the greatest living authorities on these subjects—who holds opinions on these matters which seem to me to shed new light on the causative relation of these conditions.

These conditions define accurately, to my mind, the nature of the process, particularly with reference to the generally accepted claims that focal infections are primarily responsible, or even secondarily responsible, through the development of new foci of infection, for nephritis, diabetes, and other organic deviations.

Susceptibility and Resistance.—Dr. Porter takes the broad position that an individual, to be constitutionally affected by any pyogenic or septic process, must first have developed a susceptibility to infection, through a lowered state of resistance. The virility and the number of defensive phagocytes must first be reduced. And even then the introduction of pyogenic bacteria from an infected gum-structure or a diseased tooth does not suffice to produce bacterial suppuration.

If bacteria find their way into the blood stream of an individual with normal bactericidal resistance, no infection results, because the bacteria are destroyed by the defensive agents within the circulating blood. In order to develop suppuration and degeneration of the tissues the bacteria must be able to locate and propagate in some given structure. If infection occurs in this way, its development depends upon two conditions—the virulence of the germ, and the chemical state of the tissues. In some individuals the vital resistance of the tissues may be so reduced by local injury, or by some nutritional defect, as to fur-

nish favorable chemical or physical soil upon which bacteria may grow, thereby rendering the course of the suppurative process especially unfavorable and dangerous. If the bacteria which gain admission to the blood stream fail to find a favorable nutrient medium, they cannot multiply and exert their pathogenic action. In other words, there will be no *reaction* to their presence.

Again, every group of microorganisms may have innumerable family divisions, so to speak. Some of these groups are highly virulent, some mildly so, and some apparently almost inert. If the inert family were put into a highly resisting and thoroughly nourished individual, there probably would be no deleterious results. Whereas, if the highly virulent type were introduced into a person of low vital resistance, an intense infection probably would be produced. It is a well-known fact, too, that different tissues have different degrees of resistance.

As a result of all these different factors, we get almost innumerable varieties of clinical pictures, so that it is often difficult properly to class the condition.

Focal Infections, Nutritional Disturbances and Degenerative Changes.—This brings us to the crux of Professor Porter's argument. While the ultimate effect of the germ action may be the development of Bright's disease, or diabetes, or arthritis, or degenerative changes in the blood vessels, these results must necessarily follow, first, a lowered resisting state of the organism; and next, in the case of kidney, pancreatic or blood-vessel degeneration, a disordered state of nutrition. This, according to Prof. Porter, is due chiefly to taking into the system an excessive amount of protein substance—more than the system can utilize. If more protein is absorbed than the system has use for, the blood becomes surcharged with proteins. This means that the epithelial cells of the kidneys must take up these substances from the blood stream and eliminate them in some isomeric or transitional form, or else that they must be oxidized into some form in which they can safely be eliminated from the system. If the oxygenating capacity of the system be exceeded, toxic matter will be developed from these proteins, which will have a profoundly irritating effect upon the kidney cells, and ultimately cause degeneration of the kidney structures, if the causative factor, excess of protein in the diet, is not corrected.

The second most frequent cause for degenerative changes in the kidney cells and other structures results from putrefactive fermentation, so frequent in the alimentary canal. This fermentation of the foodstuffs causes the formation of toxic substances in the intestine. The absorption of these into the system, and the attempt to eliminate them through the kidney cells, produces irritation which, if continued over a sufficient period of time, tends to produce degenerative changes in the renal cells.

The third cause of degeneration of the kidney structures results from the presence of microorganisms, acting either directly or indirectly. Directly, as Prof. Porter clearly states, "when they are acting within the system upon the protein structures, which go to make up the integral parts of the body; indirectly, when they are acting upon the protein elements contained in the food products, while in the alimentary canal."

Dr. Porter concludes that:

> In either instance the microorganisms may produce toxic products, oxidation reduction products, or isomeric protein elements. In the one instance they are produced within the system, in the other within the alimentary canal, to be absorbed therefrom in the circulation.
>
> In either case the nutrition in general is impaired, and the kidneys are called upon to perform an excessive amount and an abnormal kind of work—hence their degeneration. It is further highly probable, if not absolutely proved in all instances, that different kinds of bacteria produce different kinds of toxic substances, either of the oxidation reduction type, or of the isomeric protein form.
>
> From all the evidence at our command, it is probable that, in the vast majority of cases the bacterial action, when it acts as an exciting factor in producing renal lesions (kidney disease), is brought about in the alimentary canal, and not within the system. It is the bacteria acting upon the protein elements of the food stuff in the alimentary canal that excite putrefactive changes, and thus indirectly, and not directly, the bacteria act as causative factors.
>
> Insisting, as many of our focal infection enthusiasts do, that bacteria are in all cases the direct and only etiological factor in producing organic lesions, seems like carrying the bacterial side a little too far.

Fundamentally a Disturbance in Nutrition.—So, while it is undeniable that absorption of toxic products from focal infection may produce degenerative changes in certain organs and structures of the body, it would seem quite clear that they do not produce these changes of themselves, by direct action on these organs or structures—as is claimed by most of the advocates of the modern theory of focal infection—but rather by reason of the effect they have upon digestion and nutrition, and particularly upon the transformation of the protein constituents of our food. Therefore, while the absorption of pus germs from infected mouth conditions may cause septicemia or pyemia, the germs do not generally, of themselves, cause Bright's disease, or other disorganizing changes in the organic structures. And, while any or all of these conditions ascribed to focal infection causes may and do result from focal abscesses, they occur because of the disturbances in nutrition, and because of the toxic substances developed as a result of these metabolic disorders. This may seem rather a fine line of distinction, but to my mind it is a most important one, as it shows, reasoning in the most accurate way, on broad lines of pathology, that the conditions produced by focal infection are even more far-reaching than is generally believed; that the problem concerns the physician equally with the dentist; and that both physician and dentist should work hand in hand in the effort to overcome the grave results of these degenerative conditions.

Success in the management of these conditions is not alone a matter of removing sources of infection, but also of correcting abnormalities in the diet, and of recommending general hygienic precautions to be followed out by the individual.

In any event, if everybody in the world could realize the importance of this big question of focal infection, and would take steps to correct the evil, one of the principal causes of misery,

suffering, and early death, would be avoided. And, thanks to the efforts of dentists, medical men, and scientific investigators, this now seems likely to be accomplished.

511 Fifth Avenue.

SOME OBSERVATIONS ON SUBPERITONEAL ENUCLEATION OF THE UTERUS;

WITH A REPORT OF FIVE CASES.

By HOWARD CRUTCHER, M.D.,

JOLIET, ILL.

On January 13, 1904, at the Wesley Hospital in Chicago, assisted by Dr. Hugh Hover, I enucleated the uterus from a Mrs. F., aged 50, for incurable procidentia accompanied with visual indications of early cancer of the lower lip of the uterine cervix. During the progress of the operation the peritoneum was not opened at any point, and in reply to some inquiry concerning the character of the operation I said, in perfect good faith, "This is what is known as the Langenbeck operation, first performed about the year 1820." The patient made a rapid recovery and was alive and well when last heard from several years after her operation. I am sorry to say that the patient objected so strongly to a microscopic examination of the specimen that laboratory confirmation of the diagnosis was not obtained.

My second subperitoneal enucleation operation was performed in New Mexico on December 18, 1907, in the case of an unmarried woman of middle age for intractable uterine neuralgia, the patient being up for a Christmas dinner a week later. The final results of this operation were extremely gratifying.

The third operation was likewise performed in New Mexico during the month of May, 1911, upon a married woman of middle age with a mingled history of active tuberculosis and suspected uterine carcinoma. The results, immediate and remote, were wholly gratifying.

During the month of November, 1919, I performed the same operation twice, once on the 4th at the Chicago Union Hospital, upon a woman of 63 for total prolapsus, causing the most pitiable disablement, and a second time at the Goshen Hospital, in Indiana, on the 27th, for suspected cancer of the cervix. In the former case I was assisted by Drs. Kenneth Scatliff of Chicago and William McRoberts of Joliet. At Goshen I was assisted by Drs. Kreider, Becknell, and Yoder, all of the Goshen profession. Both of these patients made prompt recoveries, thus leaving my five cases of subperitoneal enucleation unmarred by a single death or even a serious complication.

Until within the past few days I have always supposed that these subperitoneal enucleations were merely repetitions of Langenbeck's renowned feat of 1813, but even a casual survey of Langenbeck's original paper ("Description of a Successful Extirpation of the Uterus, Carried out by the Author," *Neue Bibliothek für die Chirurgie und Ophthalmologie*, von Conrad Johann Martin Langenbeck, Vol. I, pp. 551-558, 1817) will show that the author made no claim to having performed a subperitoneal enucleation of the uterus. While Langenbeck does use the words "a true enucleation," in connection with this operation, it is plain that he meant extirpation, for he says that both ovaries were taken away at the same time with the round ligaments. His own words are: "With the removed uterus, and connected with it, were the ovaries and the resected ligamenta rotunda." It is worth noting that this great surgeon purposely left a small section of the fundus "which," he says, "appeared to be still healthy."

Basing my conclusions wholly upon my own narrow experience, the operation of subperitoneal enucleation is far more difficult, bloody, and dangerous than the uncomplicated clamp operation which I have so frequently performed with such admirable results. Making a complete circular incision with a pair of short, heavy, pointed, curved scissors half an inch from the external os uteri, dense fibrous tissue is met with, full of very active blood vessels, which require the application of numerous heavy Kocher forceps. The operator proceeds upwards, adhering closely to the muscular wall of the womb, retracting fully the severed vaginal mucous membrane and instantly securing every bleeding point with dependable forceps, left in position for not less than twenty-four hours. I am unable to say with certainty whether I have in any of these enucleations wounded the uterine artery, but in some instances I have had good reason to think so, always in cases of doubt applying a heavy Kocher clamp, not to be removed for forty-eight hours. It is impossible to make headway save with clean, precise cuts with the scissors, blunt dissection being as dangerous as it is useless. The peritoneal coat, of course, must be not only dense but in some degree elastic, otherwise we could not perfect a true subperitoneal enucleation.

It is difficult if not impossible to identify the precise termination of the mucous canal in the dome of the uterus, and I have in one or two cases had reason to believe that I had left a trifling segment of the mucous tissue in this region, due to the friable character of the structures, but in no case has such a suspicion been confirmed by subsequent developments. When the small clamps, sometimes quite numerous, are removed, it is advisable to apply firm packing in the vaginal canal for some weeks. Some bland silver solution, alternated with balsam of Peru, has given admirable results. I have no case of vaginal obliteration from cicatricial contractions to report thus far. So far as I now recollect, I have never encountered a case in which the normal functions of the vagina have been materially disturbed by the operation of hysterectomy, provided that the conditions demanding the operation were limited to the uterus itself. On the contrary, some extremely happy results have been brought about at times, one bladder totally disabled from complete procidentia being perfectly restored to its normal functions within forty hours.

So far as ultimate results are concerned, the enucleation operation has nothing whatever to commend it over the easier, quicker, and safer clamp method of extirpating the uterus, but when it is indicated it is certain that it is practically the only course left open to us. To attack a large and uncertain mass of fibrous tissues in order to

expose the broad ligaments for clamping or ligating cannot be justified when the uterus may be enucleated by safer methods of dissection. The base of the bladder and the ureters must always be borne in mind, and these can be in no reasonable danger so long as we adhere firmly to the muscular wall of the womb. No operator, whatever may be his skill, is, or ever can be, at home in tissues where pathology has transformed anatomy into a tangled mass of wreckage that defies identification. The one safe landmark is the firm wall of the uterus itself, and most happily we are generally able to identify it with reasonable confidence.

Medicolegal Notes.

Rupture of Aorta from Vomiting an Accidental "Violence to the Physical Structure of the Body."—The Pennsylvania Supreme Court holds that where an employee died in the course of his employment, from a rupture of the aorta, caused by "an extra effort in vomiting," a claimant under the Workmen's Compensation Act was entitled, irrespective of anterior causes, such as a chronic ailment, rendering him more susceptible to such an injury, to compensation, as the rupture itself occurring from such effort would constitute accidental "violence to the physical structure of the body."—Clark v. Lehigh Valley Coal Co. (Pa.), 107 Atl. 858.

Medical Opinion Based on Hearsay Evidence.—A physician, witness for the State in a murder trial, where the body was found in a river, and the evidence was wholly circumstantial, based his opinion that the deceased died from strangulation or chloroform on what he had heard that another doctor had said about the condition of the deceased's brain, and the latter doctor denied such statement. It was held that, as the trial court both verbally at the time and later in writing instructed the jury to disregard such evidence, the error was cured.—Porter v. State, Texas Court of Criminal Appeals, 215 S. W. 201.

Contaminated Water Supply.—The New York Court of Appeals holds, reversing 174 App. Div. 904, 159 N. Y. Supp. 1144, that evidence that a city water supply was badly contaminated, that there was an increase in typhoid cases during the period of contamination, medical opinion that the plaintiff's attack of typhoid fever was due to such circumstances, made a jury question whether the plaintiff contracted typhoid through drinking contaminated water instead of through some other possible cause.—Stubbs v. City of Rochester (N. Y.), 124 N. E. 137.

Expert Evidence as to Existence of Typhoid Fever.—In actions by passengers on a steamship, where the question was whether they contracted typhoid fever from drinking polluted water furnished by the vessel, the court said that "the rules of evidence in cases of this nature do not require scientific certainty; and we think the testimony of the attending physicians establishes, by a fair preponderance of the evidence, the existence of typhoid or similar fevers. The record does not convince us that able and successful physicians, familiar with typhoid fever, are very likely to mistakenly diagnose and successfully treat other diseases as typhoid or paratyphoid. It is true that, in the case of each of several of the libellants, expert medical witnesses of high standing have expressed the opinion that, upon the hypotheses contained in the question submitted to them, the patient was not suffering from typhoid fever, but this, at most, raised only a question of fact; and in several of the cases the accepted hypotheses either did not accord with the weight of the evidence or contained elements either disputed or non-existent."—Chicago, D. & G. B. T. Co. v. Moore, C. C. A., 259 Fed. 490.

Parents' Refusal of Operation—Repetition of Visits—General and Special Employment of Physician.—In an action for malpractice against two physicians by the father of a girl of eight years who had been suffering from osteomyelitis in the radius, it appeared that one defendant, F., a physician of Sherburn, Minn., treated the case for three weeks from November 12 to December 3, when the disease grew worse. The other defendant, P., a former family physician, who practised in another city, Jackson, was called on November 18, attended with Dr. F., examined the arm, and gave directions as to treatment. He did not have full charge of the case, was apparently not expected to return when called, and when he left, gave directions that if they "needed him any more to call him." On the 22nd Dr. P. was again called and attended. Dr. F. was present. Dr. P. gave some directions as to treatment, but did not come again and apparently was not expected to come without being called. Dr. F. continued to treat the arm. It continued to grow worse and on December 2 Dr. P. was again sent for. He was not at home and his son, also a physician, came instead. On December 3 he took the child to a hospital in Jackson, where he and Dr. P. performed an operation next day. Dr. P.'s employment then ceased. In January the parents took the child to a hospital in St. Paul, where another surgeon performed an operation in presence of the defendant, Dr. P., and found it necessary to remove the radius, and this was done.

It was conceded by all that the proper treatment for osteomyelitis is by operation, consisting of opening the shaft of the bone and affording drainage of the pus and removal of diseased tissue. The plaintiff's charge was that the defendants did not advise or suggest this treatment, that if this had been resorted to promptly the arm would have been saved, but that the defendants did not correctly diagnose the case until the disease had progressed so far that the bone was beyond treatment and the use of the arm virtually lost. The defendants contended that they did promptly diagnose the disease and advised the parents of its true nature, and seasonably advised operative relief, and that the parents objected to any operation, until it was too late to save the arm. On this question the evidence was in conflict. The court instructed the jury that if the defendants within a reasonable time made a correct diagnosis and clearly advised the parents of the nature of the ailment, and the importance of an immediate surgical operation, and of the result likely to follow a refusal, and that the parents refused to permit such an operation, their verdict should be for the defendants; that if they failed to diagnose and treat the child with reasonable and ordinary skill and such failure resulted in the injury complained of, then, the defendants were liable for damages. It was held that, under the evidence, this instruction was proper. The question whether the plaintiff had proven that a better result would have followed an operation was held to be in the case, and the evidence was such as to sustain a verdict for the defendants.

It was not considered very material whether Dr. P. acted in a general capacity or as a consultant with Dr. F. There was no question but that Dr. F.'s employment was general. Since the jury found in his favor they could not have found otherwise as to Dr. P., whether his employment was general or as a consultant. It could not in any case be said that the obligation or liability of Dr. P. was greater than that of Dr. F.

The difference between general and special employment relates mainly to the obligation of the physician to continue his attention. If called generally he must give such continued attention and attendance as the condition of the patient requires. But if called specially and only for the occasion, he owes no duty to repeat his visits or continue his treatment. The effect of the testimony of the plaintiff's witnesses was that it was not expected that the defendant P. would return, except when called, and that he owed no duty to do so, and the court properly instructed the jury that he could only be held liable for such damages as resulted from his connection with the case on the occasion of his visits of November 18 and 22. There was no evidence of malpractice at either of the operations later performed, at which Dr. P. was present, nor was there anything in the case to indicate that he was employed to supervise or direct Dr. F. in his absence, and the court properly instructed the jury that he was not liable for what Dr. F. did or omitted to do in his absence. Judgment for defendants was affirmed.—Nelson v. Farrish, Minn. Supreme Court, 173 N. W. 715.

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THE PATHOLOGY OF INFLUENZAL PNEUMONIA.

THE pathology of the condition now generally termed influenzal pneumonia is interesting from many points of view. It is a matter of history that this form of pneumonia was very prevalent in army camps on this and on the other side of the Atlantic during the war and, of course, unique opportunities were offered for studying the disease from various aspects. Needless to say these opportunities were seized upon by medical men in Europe, in this country, and in Canada, and a mass of literature on the subject is available which should serve to elucidate in many respects this baffling and obscure malady. In the *American Journal of the Medical Sciences* for March, 1920, Dr. Harry Bakwin has a paper on the gross pathology of influenzal pneumonia in France. Among many details of the general pathology to which he draws attention are the skin manifestations. Of these he found that jaundice was the most common. Changes in the recti muscles occurred quite frequently. At times merely an unusual pallor, dryness, and opacity were present. Such muscles seemed to have lost their elasticity, were brittle and very easily fragmented and torn. As for the respiratory system, by far the most usual lesion encountered in the lungs was acute lobular pneumonia and the next most frequent lesion met with in the same locality was lobar pneumonia. This differed from the lobar pneumonia met with in civil life in its bacteriology, streptococci being found in the lungs nearly as frequently as pneumococci, and in its not infrequent combination with lobular pneumonia. Interstitial pneumonia was another type encountered and these cases differed in their bacteriology from those described by MacCallum. Cloudy swelling of the kidneys was found in almost every case. It was usually well marked. Renal congestion was also frequent. The glomeruli, aside from congestion, were normal. The gastrointestinal tract showed few changes.

The following is a summary of postmortem examinations of 106 cases of influenzal pneumonia that died at a base hospital in France: (1) During January and February, 1919, an epidemic of severe lobular pneumonia occurred about the region of Commercy, accompanied by jaundice, cloudy swelling of the parenchymatous organs and heart muscle, and hemorrhages into the pericardium, renal, pelvic and other viscera. (2) Changes in the rectus muscle were observed in 33 per cent. of the cases. (3) Empyema was rare, occurring in less than 4 per cent. of the cases. (4) Acute laryngitis was comparatively rare, occurring in but 6 out of 38 larynges examined, or 16 per cent. (5) Sphenoidal sinusitis was a very common complication and was found in 20 out of 22 cases examined, or in 90 per cent. (6) Seven out of 35 premortem blood cultures showed pneumococci. The rest were sterile with the exception of one which showed meningococcus. (7) The bacteria found in the organs at autopsy were varied, the *Streptococcus hemolyticus*, pneumococcus, staphylococcus, non-hemolytic streptococcus, *Bacillus influenzæ*, and Gram-negative cocci being found in the various cases in the above order of frequency.

It appears then, from the experience of practically all investigators that the main differential feature of this so-called influenzal form of the ordinary lobar pneumonia is the presence of a large number of hemolytic streptococci, the streptococci in general nearly reaching the number of pneumococci, and those of the hemolytic type predominating. It is instructive to note that Bakwin and his co-investigators seldom found the *Bacillus influenzæ*, thus seeming to be somewhat at variance with the experience of Dr. Herbert French, who in a lecture at Guy's Hospital on January 30, 1920, a summary of which was given in the London Letter of the MEDICAL RECORD, on March 6 last, states his belief that Pfeiffer's bacillus is the cause of influenza. However, it is likely that in cases of death from septic pneumonia of the influenzal type Pfeiffer's bacillus would be swamped by the numerous other germs present and especially by the deadly streptococci. In any event, investigations such as those of Bakwin, MacCallum, French and others are of the greatest value in clearing up moot points of that most puzzling of all diseases, influenza.

EXPERIMENTAL PELLAGRA.

SINCE the time of its recognition as a disease there have been two opinions held as to the nature of the causation of pellagra. At the outset the majority believed that it was due to some peculiarity in the diet of those afflicted, while a few investigators have adhered strongly to the theory that the disease is the result of an infection, and some have gone to the extreme of identifying the insect thought to be responsible for carrying the infectious agent. But during the past few years the evidence in favor of pellagra being due to errors in the diet has gradually been strengthened until it has been shown that the disease could be produced at will by subjecting individuals to certain restricted food intake.

The details of this investigation are now available, for Goldberger and Wheeler have published (*Archiv. Int. Med.*, 1920, xxv, 451) an account of the experiment which they carried on in 1915. Twelve volunteers at a prison camp were kept for a period of six months upon a diet consisting of white wheat flour, corn meal, hominy grits, corn starch, white rice, granulated cane sugar, cane syrup, sweet potatoes, pork fat, collards, turnips, turnip greens, and coffee. This diet is characterized by containing only about one-half of the amount of protein found in the diet of those who were used as controls in the experiment and practically none of this was obtained from animal sources. The diet of the controls was also probably more satisfactory in its mineral composition and richer in both the fat soluble and antineuritic vitamine.

The experiment was amply controlled. All the rest of the population living in the camp were taken as control individuals. The volunteers were rigidly protected from communication with the outside and especial attention was paid to their sanitary surroundings. They were required to do less work and were allowed more rest than the controls. The camp was situated in a district in which pellagra was known to exist and the season of the year was chosen in which the incidence of the disease is lowest. Eleven of the volunteers went through the entire period, and of these six developed symptoms which were recognized as being indicative of the presence of pellagra. All of the volunteers lost weight and strength and developed symptoms that might be considered to have been early symptoms of the disease, but in six the diagnosis was definitely made by several consultants. The skin lesion in these six consisted in a well-marked, bilaterally symmetrical, sharply marginated, and more or less scaly dermatitis on the ventral or ventrocaudal surface of the scrotum. This location of the initial lesion is an unusual one and the authors believe that the location of the initial lesion may be dependent upon the specific quality of the diet, for it has been noted that where several members of one family develop pellagra they are apt to exhibit similar initial lesions, while in different localities and in the same locality in different years the initial lesion is apt to show marked differences in distribution.

In the discussion of the nature of the fault in their experimental diet the authors point out that it was deficient in protein, especially animal protein, antineuritic vitamine, and mineral constituents. On the basis of other experiments they hold the opinion that a deficiency in the antineuritic vitamine is not the essential fault. The case as to the mineral constituents is less clear. There is a certain amount of evidence both for and against the importance of these substances in the production of pellagra. The importance of the protein may be perhaps ascribed to the nature of the amino acids composing it. The publication must be taken as a preliminary report and much further study will be needed to determine the exact substances at fault. It is unfortunate that it was not possible to follow these individuals after their return to a more adequate diet to see how rapidly they returned to a normal condition. The information gained by this and similar studies should render it possible to adopt measures which will result in a marked diminution in the incidence of pellagra in this country. The problem is not wholly solved of course, but much progress has been made toward a solution and the complete elucidation of the mystery is but a matter of time.

THE CLINICAL VALUE OF GASTRIC CHEMISM.

THE work of digestion effected by the stomach is very small; this viscus does not peptonize and renders only a very small part of albuminoid substances effectively assimilable. Its part in the physicochemical phenomena of digestion appears to be especially to dissolve and disintegrate the nitrogenous matter, the intestine completing this preparatory work, submitting the gastric chyme to a more complete elaboration. From this it follows that the motor function of the stomach surpasses its secretory function. If the motor function languishes the stomach becomes the seat of abnormal fermentation, the products of which poison the organism. To react against these fermentative processes the organism has the resource of an antiseptic hydrochloric hypersecretion, a resource not without its danger because it exposes to the possibility of ulcer. If there is a secretory insufficiency the duodenal digestion suffices largely to take the place of gastric digestion, on the condition that the motor power of the stomach is intact.

All things considered, abstraction may be made of the work of peptonization realized by the stomach and to regard this organ as a reservoir of alimentary material, so that two essential conditions dominate its physiology, viz., a regular evacuation and a sufficient content of the gastric fluids in antifermentescible hydrochloric acid. If these data are taken into consideration it will be seen how illusory it will be to estimate the efficiency of digestion by dosage of the gastric peptones; illusory likewise, and for the same motive, the many classifications of dyspeptic states which have been made. Let it also be noted that the normal hydrochloro-peptic secretion does not correspond to an invariable type as some observers have maintained: Schüle and Verhaegen have met with distinct hyperchlorhydria in young subjects who had never experienced the slightest discomfort; on the other hand, Rémond and Mathieu have seen a most characteristic apepsia coinciding with complete health. In these circumstances, if one were guided solely by gastric chemism, it would be difficult to determine where the normal state ended and the pathological began.

It is enough to say that the study of gastric

chemism has only a very restricted importance as regards the general progress of the nutrition. It is impossible to ascertain if a subject digests well or badly by simply analyzing the gastric chyme; the indications furnished by the person's general state, or even by the mere dosage of the excreted urea in twenty-four hours, are otherwise precise in this respect. In the research for secretory anomalies the value of gastric chemism cannot be denied; it offers an excellent basis upon which to build the diagnosis of dyspeptic states, such as hyperchlorhydria, Reichmann's disease, simple ulcer, or carcinoma, but still it is to be recalled that the chemical disturbances of the stomach are not pathognomonic of any affection of this organ. Thus, achlorhydria is not characteristic of cancer, as has been maintained, because it is also encountered in amyloid degeneration, in the serious types of chronic gastric catarrh, and in nervous dyspepsia. The same remark applies to hyperchlorhydria, which is met with in Reichmann's disease, simple ulcer, and gastritis. In all these processes, the diagnostician must not be content with a single diagnostic element obtained by the passage of the stomach-tube. Finally, the individual variations of hydrochloric secretion show the absolute necessity of repeated and minute examinations and their interpretation requires all the sagacity with which the clinician is endowed. So far as the choice of a test meal is concerned, it would seem very rational to avoid Ewald's meal, as it does not exercise much if any stimulation on the hydrochloro-peptic secretion, while that of Germain Sée might be adopted to advantage, as it is chiefly composed of albuminoid substances, and Verhaegen's researches fully confirm this view.

Neurotropic Treponemata.

Chauffard, writing in the *Journal de médecine et de chirurgie pratiques,* February 25, 1920, xci, 4, refers to the continuous changes in our conceptions of nervous syphilis. While tertiary syphilis in general is getting milder as a folk scourge, so-called "XV century cases" becoming constantly less and less common, syphilis of the nerve centers, once unknown, is becoming increasingly common. Improvement in tertiary syphilis of the skin, bones, etc., is due to improved knowledge and perhaps also to slowly acquired racial immunity. That the disease as a whole is milder may be doubted in virtue of the Wassermann disclosures that it is the cause of severe cardiovascular and nervous lesions which destroy life in great numbers, although it seems quite certain that patients properly treated are not much exposed to these dreaded sequelæ. Nervous lesions may be grouped under three heads. First, early meningeal cases revealed by lumbar puncture; second, cases of myelitis which tend to appear with some of the lesions of visceral syphilis, as hepatitis and nephritis; and third, cases of paralysis of the insane and tabes. The latter are usually the sequel of benign untreated syphilis. These patients exhibit a proverbial infrequency of ordinary tertiary lesions, just as races of people who still suffer grievously from ordinary tertiary lesions, as some of the indigenous North Africans, do not suffer from tabes and general paralysis. Again, we know that cases occur in which several men infected from a single syphilitic woman have all later developed paresis or tabes (Nonne, Erb, Morell-Lavalée, *et al.*). Experiments by Levaditi and Marie have shown the likelihood of two strains of spirochete, general and nervous. The latter, it appears, are not originally neurotropic, but develop neurotropism in the organism of the victim. Associated with neurotropism is rebelliousness to the action of ordinary spirocheticides. It has been claimed that paretics and tabetics cannot be inoculated with fresh syphilitic virus, which shows that the antibodies generated by neurotropic strains are very persistent. Data which appear to show a distinct neurotropic strain are doubtless accumulating.

Grippe in Warsaw.

A letter from a Polish physician published in *La Presse Médicale* for April 28, xxviii, 26, states that the type of influenza now prevalent in Warsaw varies extremely. It may be nothing more than a coryza or pharyngitis, or it may take the form of a laryngitis so intense as to require tracheotomy. Bronchitis and bronchiolitis are common, and the highest type of severity is a bronchopneumonia. Unlike the accepted types of influenza attributed to Pfeiffer's bacillus or a filtrable virus, this visitation seems associated almost wholly with the *Micrococcus catarrhalis,* or at least with an organism closely resembling it. This is ordinarily a buccal saprophyte but possesses a resemblance to the gonococcus, meningococcus, and pneumococcus—that is, its variability is such that it may simulate now one, now another, of these three organisms, this variability serving to separate it from the typical *Micrococcus catarrhalis* in its saprophytic form. The author, however, clearly regards this germ as no more than a secondary cause, the essential virus being unknown. Primary pneumonia has seldom been seen. The subject with severe bronchopneumonia gives the impression of a deeply toxic case comparable with toxic peritonitis, in distinction to a septic or infectious case. In most cases the disease runs its course in a few days, bronchopneumonia occurring chiefly in the walking patient. Once a certain degree of severity is attained, medication is of no avail. No reference is made to a peculiarly deadly form of influenza which was reported as prevalent in Poland late in 1919, the gravity of which was attributed to the underfeeding and hardships of the people. Despite the alarming state of malnutrition said to prevail at present, the grippe of to-day is apparently both mild and localized in individual areas.

Role of Intoxication in the Genesis of Psychoses.

Barbé of the Bicêtre briefly outlines the evidence for a toxic origin of psychoses in *La Médecine* for February, 1920, i, 5. One naturally begins with the effects of exogenous toxins. It is hardly just to cite drug addiction as evidence, and the author passes over chronic alcoholism, morphinomania, and

heroinomania, but insists that carbon monoxide can cause true psychotic symptoms beginning with a phase of loquacity with laughter, staggering, genital excitation, and hallucination, and terminating in a period of confusion which may pass off or persist. The mental state may be due to a secondary toxic encephalomyelitis. Of other drugs, lead salts, iodoform and salicylic acid may provoke disturbances of orientation, delirium, etc. In all of these intoxications there may be meningeal alterations as shown by lumbar puncture. Other evidence thus far is experimental as when the leech which sucks the blood of the paralytic dement at the moment of a convulsive access develops neurotoxic phenomena. In animal experiment certain drugs have been shown to pass from the blood through the meninges when the latter have first been damaged by direct irritation. In anaphylactic poisoning the cortex, bulb, and medulla suffer and it is believed that in certain recurrent psychoses there is an anaphylactic component.

News of the Week.

Chiropractor Bill Vetoed.—Governor Smith has vetoed the bill which proposed to license chiropractors in New York State and which was passed by the Senate. In recognition of this action, the Medical Society of the County of New York, at its meeting on May 23, passed resolutions expressing their thanks and commending his action. They also passed resolutions of thanks to the President, Secretary, and Council of the Society for appearing before the Governor and influencing him to exercise his power of veto. This bill provided in effect that the power of licensing should rest in the hands of the State Chiropractors' Society, inasmuch as no one was to be licensed who had not belonged to the society for a year and who was not recommended by the board of examiners appointed by the society.

Infant Recovers Damages for Prenatal Injury.—Supreme Court Justice Ford recently upheld the complaint in a damage suit on behalf of an infant, which was brought on the ground of injuries suffered by the mother shortly before the child was born. The mother fell into an open coal hole in the sidewalk, and the child born seven days later showed the effects of the injury. The mother of the infant sued to recover $10,000 from the owner of the property. This decision has set a precedent. Justice Ford in his opinion said: "It is the boast that the common law is elastic enough to fit itself into new conditions and to progress with civilization and our ever-growing humanitarianism, and it is but a manifestation of this spirit of the law to recognize the responsibility of the defendant to this child."

Milk and Child Health Exposition.—During the week of May 17 to 22 an exposition was held, at the Grand Central Palace, New York City, in connection with the New York Milk and Child Health Campaign. The object of the campaign and the exposition was to further propaganda for improvement in the health and well-being of the children of the city, and to stimulate an increased consumption of milk as a vital and indispensable food for growing children.

Monthly Vital Statistics Review.—The New York State Department of Health has issued the third number of its new publication, the *Monthly Vital Statistics Review*, publication of which was inaugurated with the March issue. The *Review*, intended primarily for the use of public health workers in New York State, is an attempt at a much more elaborate presentation of current official vital statistics than has heretofore been tried in this country.

Vaccination Condemned. — At a recent dinner held in the city of the "Mother Church," the "Medical Liberty League, Inc.," under the presidency of Dr. F. M. Padelford, a homeopathic physician of Fall River, Mass., and composed of "medical, clerical and lay authorities," participated in an acute exacerbation of the chronic anti-vaccination malady with which a certain portion of the population seems to be affected. According to the press reports of the affair, the usual terms, "medical trust," "secret methods," "arch enemies of medical freedom," "persecution of the people," "medical ignorance and arrogance," etc., embellished the program.

Junior Physiologist Needed.—The United States Civil Service Commission has announced an open competitive examination for junior physiologist, to be held July 6. A vacancy at Edgewood Arsenal, Edgewood, Md., at $2,000 a year and quarters for a single employee, and vacancies in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination. Applicants should apply for Form 1312, to the Civil Service Commission, Washington, D. C., or to the secretary of the local Civil Service Board.

Sanatorium for Tuberculous Soldiers.—Surgeon General Hugh S. Cumming, of the U. S. Public Health Service, has announced that the tuberculosis sanatorium heretofore operated by the Medical Department of the Army at Fort Bayard, New Mexico, has been transferred to the United States Public Health Service, and will soon be available for the treatment of discharged, disabled soldiers. This institution provides one thousand additional beds for the care of tuberculous patients.

"Country Doctor" Becoming Extinct Species?—According to both medical and lay press reports, the lure of the city has struck the doctor as well as the farm hand. The farmers, it seems, are finding it difficult to provide medical service for themselves and families while this hegira of the medical men grows apace.

Drug Smuggling Ring Broken.—Revenue inspectors of the Port of New York think they have broken up a ring of narcotic drug smugglers by the arrest, recently, of a former detective as he landed from an Italian steamer. In a false bottom of his trunk were found 840 packages of cocaine. According to customs officials, this country during the past year has been supplied almost exclusively with narcotics for the illicit trade from Italian ports.

Smallpox in Jersey.—Dr. J. C. Price, State Director of Health, has recently urged the need of general vaccination in consequence of the prevalence of smallpox in various places in New Jersey. During the past six months the disease has appeared in fifteen municipalities.

Prison Deaths Attributed to Drug Poisoning.—Two deaths from alcoholic poisoning in the prison hospital on Hart's Island have been charged to apparent lack of supervision of the institution. The prisoners, it is said, had had access to the drug room of the hospital. The results of an investigation into the matter have been presented to Mayor Hylan by President La Guardia of the Board of Aldermen of New York.

Spurious Liquor Prescriptions.—Captain Hubert Howard, Federal Prohibition Director for Illinois, has announced that no fewer than 300,000 spurious prescriptions for liquor have been written by Chicago physicians since the dry law went into effect last January. During that period the number of prescriptions for whiskey written by the three thousand physicians of the Windy City totals 500,000. "Insomnia," "costalgia," "gastritis," "gastrodynia," "cephalalgia," are some of the ailments for which spiritus frumenti was ordered, "one oz. three times daily," more or less. The list of maladies calling for this treatment ranges from "cramps" and "boils" to "diabetes" and "dysentery," with "general debility" playing a leading rôle.

Hospitals for War Veterans.—The House Buildings Committee has authorized, in a bill reported unanimously on June 3, the construction of five hospitals costing $10,000,000, to be used by veterans of the war. The hospitals are to be located, one in the region of the Central Atlantic Coast States, one on the Great Lakes, one in the North Pacific Coast States, one in the Rocky Mountain States and one in Southern California.

Misappropriation of Supplies.—Several high Italian officials have been arrested on the charge of misappropriating materials for war sufferers which had been entrusted to them for distribution.

Dr. William J. Robinson of this city was arrested on June 3 after the grand jury had returned two indictments charging him with criminal libel. He was said by one newspaper to be editor of the MEDICAL RECORD—which he is not.

Bubonic Plague at Vera Cruz.—Several cases of bubonic plague have been reported at Vera Cruz, as a consequence of which all traffic by rail or steamship between that city and the City of Mexico, with the exception of that over the railway to Jalapa, has been ordered suspended by the Health Department of the capital city.

Medical Strike in Madrid.—Press dispatches report that physicians in the Spanish capital who serve the mutual sick benefit society connected with labor headquarters have struck for higher salaries. This leaves thousands of workers without medical attendance.

Medical Society Elections.— The CONNECTICUT STATE MEDICAL SOCIETY at its one hundred and twenty-eighth annual meeting held at New Haven in May elected the following officers: *President*, Dr. George Blumer, New Haven; *Vice-Presidents*, Dr. W. H. Judson, Danielson, and Dr. W. H. Donaldson, Fairfield; *Secretary*, Dr. Charles W. Comfort, New Haven.

The MANCHESTER (N. H.) MEDICAL ASSOCIATION at its annual meeting held in May elected the following officers for the next year: *President*, Dr. George V. Fiske; *Vice-President*, Dr. J. F. Robinson; *Secretary-Treasurer*, Dr. Robert Flanders.

Obituary Notes.—Dr. OTTO E. FORSTER of St. Louis, Mo., died of cardiac disease at the Barnes Hospital on May 17, at the age of 61 years, following an illness of two months. He was graduated from Washington University Medical School, St. Louis, in 1881, specializing in otology, rhinology, and laryngology.

Dr. CHARLES CARSON MESSER, who had practised at Turners Falls, Mass., for thirty-one years, died May 20, at the age of 66 years. He was graduated from Dartmouth Medical School in 1880.

Dr. W. ST. GEORGE ELLIOTT, formerly of London and New York, a graduate of the New York University Medical College, in 1863, died at his home in Pasadena, Cal., on May 23, aged 82 years.

Dr. L. H. MAYER, SR. of Johnstown, Pa., died May 22, at the age of 58 years. He was graduated from Jefferson Medical College, Philadelphia, in 1887, specializing in pediatrics.

Dr. HENRY WEIL of New York City and Harmon-on-Hudson died at his home in the latter place on May 30. He was graduated from the Medico-Chirurgical College, Philadelphia, in 1897, specializing in gynecology.

Dr. RICHARD W. MULLER of New York City died June 3, at the age of 69 years. He was graduated from New York University Medical College in 1879, and specialized in dermatology.

Correspondence.

MINERAL SALTS FOR DISORDERED HEART ACTION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The medical profession in this country—and throughout the world—no doubt will be keenly interested in the recent report from London, to the effect that experimental investigations give promise of discovering a remedy for the relief and cure of heart disease in "certain mineral salts." The announcement was made in the House of Commons, by Captain Walter E. Elliot, M. P., referred to as "the member for science," in the course of a speech in opposition to an antivivisection measure known as the "Dogs' Protection Bill," and judging from the numerous references to the subject in current medical literature and newspapers the outcome, whether a success or failure, is likely to be more or less sensational.

In order that the profession may understand the method of procedure and as a matter of scientific record, a summary of the investigations, so far reported, should prove acceptable. Indeed, such a synopsis may present evidence of inestimable value to physiological chemists on this side of the Atlantic, and at the same time bring out some valuable data from experienced clinicians. Here it follows:

Dr. Eliot says that there are two types of heart disorders, namely, valvular ("V. D. H.") and organic ("D. A. H."), and that of all hospital cases, 75 per cent. belong to the latter class. While valvular disease is not regarded as serious, and but slight progress has been made in efforts to relieve or cure, the "D. A. H." cases are "far more complex," but he adds, "we are making very rapid progress in discovering what problems we have to deal with and in forecasting a cure for the abnormal conditions we discover."

Two varieties of "D. A. H." have been success-

fully demonstrated. For example, under normal conditions as regards innervation, the nerve impulse impinges upon the base (top) of the heart, travels downard (towards the apex), causing rhythmical muscular contractions, thus completing the systole. When the nerve impulse is feebly transmitted or obstructed, normal, rhythmical muscular contractions are impeded, there is irregular or impaired muscular coordination—"every muscle-fiber begins twitching independently, and in some cases one single current, so to speak, goes coursing around the heart." This condition is now known as "auricular fibrillation"—graphically exhibited in the electrocardiograms—and differs but slightly from palpitation or "fluttering," in which the nerve impulse, as shown by electrical tests, is merely distributed over or around the base of the heart.

The following extracts will convey briefly the present status of the inquiry:

"The first stage was the discovery of fibrillation. . . . The second stage of our work, on which we are now engaged, is to discover exactly what fibrillation is, and exactly what is going on in the heart which displays it. . . . The question of cure or alleviation of disordered action of the heart constitutes the third stage of our work, and that has been hardly entered upon."

Abstract analysis of the morbid complexus will at least shed some light upon the cause or causes which interfere with normal cardiac innervation. The inquiry has to deal with chemistry and electricity on the one hand, and both are directly, but independently connected with physiology and pathology. There is, in addition, the psychic factor.

Omitting any reference to the teleological aspect, or biological principles, let us begin with the chemical activities. Thus, chemistry is responsible for the molecular changes in the cells, the oxidation, which is attended with heat. Next in order we must consider the electric phenomena, the force, energy, or what-not which is responsible for the transmission of nerve impulses, which create or produce muscular contractions—mechanical stimulus and more heat.

This it should be observed covers the known range of normal nerve stimuli, electric, thermic, mechanical and chemical. The psychic factor should not be overlooked, but no mention is made of the supposititious theories relating to the intracellular function of oxygen as ozone to account for osmotic pressure, or that the electric discharge is similar to, if not identical with, that produced by radium emanations. It should be added, however, that nerve impulses, as now understood, are transmitted through contiguous nerve units instead of continuous structures—each unit being anatomically independent, and this, of course, gives us a line on the propagation of electrical stimuli, and confirms the belief that electricity as well as chemistry is a factor in creating and maintaining molecular action. Attention should also be directed to a well-known property of the electric "current"—the greater the resistance, the greater the heat produced; also, that heat lessens resistance. These data will be found of value in the analysis of auricular fibrillation. Let us suppose, for example, that some chemical deviation in the cardiac musculature or nerve mechanism hinders, arrests, or destroys the capacity for the transmission of nerve impulses—through the medium of the normal channels. Then we shall have increased heat incident to the resistance, more active tissue change, and a diffusion of the electric current which accounts for the muscular twitching. When sufficient obstruction (resistance) occurs, a short-circuit causes the heart to intermit, with a reflex upon the cerebral centers—and in the case of degenerative changes incident to malnutrition, heart failure is inevitable. The cardiograph shows the effect, but it gives no inkling as to the underlying cause or causes—and it is doubtful if experimental investigations upon animals will solve the occult problem, because we are dealing with a pathological condition which cannot be reproduced in the laboratory. Apparently nerve conduction through the intercellular structures is unimpaired; the difficulty, then, lies in the intracellular chemical deviation, and most likely is due to under-nutrition, mineral deficiency, poisons, focal or other infections involving the protein molecule.

Such being the case, what is the outlook? What measures can be adopted which will enable us to determine the character and extent of the disability? Well, we can employ the galvanometer, as elaborated by Arthur E. Baines (Electro-Physiology, 1918). We know approximately the deflection of the needle under normal conditions. The hand-to-hand galnanometric deflection of a healthy man has been shown to be 350 mm. during the daytime and about one-half, or 175 mm., at night. In the case of lobar pneumonia, deflection of the needle will be probably three times as great on the affected side as compared with the corresponding normal area. Hand-to-hand deflections in asthenia are not only low and constant, but negative, although they gradually approach normal as convalescence ensues. On the other hand, neurasthenia presents a typical illustration of demoralization in nerve conduction—due to chemical deviation in the intracellular substance (?). There is a low hand-to-hand deflection, variable as to sign and frequency—5 to 90 mm.; it is inconstant and fluctuating, distinguishing it from all other nervous affections. I have ventured to characterize the pathology of this disorder as disseminated magnesium infiltration.

The treatment of neuritis, so called, furnishes an apt illustration of the correctness of these deductions. Rarely is it a simple inflammatory reaction, even following trauma, and may be promptly relieved by what is now termed ionic medication—and the same is true in respect to neuralgia and sciatica—where the needle deflection is sub-normal. Most important of all, however, is the fact that it applies in the case of organic heart disease, as the reader can learn, from a casual review of my paper entitled, "Applied Calcium Therapy" (MEDICAL RECORD, February 14, 1920), which includes quite a number of illustrative case reports.

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Anosmia and Epilepsy. — Alikhan states that anosmia is a frequent symptom of epilepsy and that it may be hereditary and familial in several generations. He gives an account of a family of 30 members, of which 11 were anosmic, 4 hyposmic, and 2 epileptic. After paroxysms of epilepsy it may be impossible to recognize even so powerful an odor as musk. Cacosmia or the subjective perception of disagreeable odors has also been seen in epileptics.—*Schweizerische medizinische Wochenschrift.*

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, May 14, 1920.

Post-Graduate Arrangements in London.—London is progressing in its arrangements to make of that great city a unique post-graduate medical center. When I say London, I mean that the Fellowship of Medicine has now organized and coordinated medical education in London upon the lines suggested at its foundation meeting. The Weekly Bulletin of the Fellowship, which is the organ of the central bureau of that body, provides information with regard to post-graduate facilities in Great Britain, and the consequence of the various efforts put forth has resulted in the Fellowship becoming a recognized center, from which inquiries are answered and information supplied to medical men in all parts of the world. Not only are letters received but medical visitors from Europe and from all the civilized world who are beginning to arrive in numbers, now regard the headquarters of the Fellowship, 1 Wimpole Street, W., as a source whence they may obtain information and where they may find a *pied à terre* amid congenial society. American medical visitors are especially welcomed at the home of the Royal Society of Medicine and the Fellowship as they thoroughly established a reputation as keen and earnest students and pleasant companions in the persons of those who were in London during the war. In the past London has suffered a good deal from the tradition of its inhospitality to the stranger within its gates. While this may have been partly true, the Englishman is naturally reserved, the fault is being corrected. In fact, the American medical men who have been over in recent years have little cause to complain of lack of hospitality. The truth is that those who dwelt among us for a time have learned to know the Englishman better and to recognize that although disguised by a somewhat icy demeanor, his hospitable instincts were only in abeyance and that really when thawed and warmed he is quite a sociable sort of person. As said before the Weekly Bulletin, which is excellently got up, is a printed proof that the possibilities of medical post-graduate work in London as now coordinated are not excelled and are equalled by but one or two medical centers of the world. And it must be remembered that until the war the dearth of post-graduate facilities in the biggest city of the world were so obvious that foreigners, as a rule, gave it a wide berth. It is curious, however, that there seems to be an apathy among British medical men with regard to the post-graduate opportunities in London. The medical men at home fail to realize or are indifferent to advantages in this respect, which are being seized upon with enthusiasm by medical men from abroad. American medical men who come to London are strongly advised to pay a visit to the Fellowship of Medicine.

The Mackenzie Davidson Memorial Fund.—Sir James Mackenzie Davidson was one of the most prominent workers in radiology of the world. His name is generally associated with the development and improvement of radiographic technique, and perhaps especially with that of stereoscopic radiography, and with measurement and localization of foreign bodies. It is due to these methods perfected by him that many thousands of wounded men have been given relief from much pain and suffering. Of course, his reputation was international, and he was particularly well appreciated in America, where radiology has reached so high a standard. In order to perpetuate his memory it has been proposed to raise funds wherewith to endow a Mackenzie Davidson Chair of Radiology at some university. An appeal to this effect has just been issued in the public press by men distinguished in medicine, politics, and other walks of life for funds to carry out this purpose. In this appeal stress is rightly laid upon the undoubted fact that developments in radiology are of the highest importance in many manufacturing industries as well as in medicine.

The first lecture of the foundation established to perpetuate the memory of the late Sir James Mackenzie Davidson was delivered by Sir Ernest Rutherford, F. R. S., at a meeting of the section of electro-therapeutics of the Royal Society of Medicine held on April 16 last. Sir Ernest Rutherford pointed out that the work done by Davidson was both in the direction of rendering the whole matter of radiology a subject of greater scientific precision and dependability, and in elevating it to a position at which it has arrived as a much requisitioned specialty. He emphasized the point that its followers had now arrived at a parting of the ways; the old haphazard methods, inseparable from a laborious emergence, would no longer suffice if real progress was to be made. Hitherto, there had been no systematic teaching of the subject, but individual workers had surmounted the difficulties and had acquired by much labor a working knowledge of the physical as well as the medical side. He commented with great satisfaction upon the establishment by the University of Cambridge of a diploma in radiology and electrology, for which some thirty students in London had already entered. He was of the opinion that until the scheme was well established it would be best to institute instruction in the subject at two or three convenient centers. Lectures were now being given in London and Cambridge. A goodly part of the lecture was devoted to an exposition of Rutherford's own views concerning certain aspects of the effects of radiation on matters which were somewhat as follows: The effects of *x*-rays in various treatments were similar in many respects to those of the beta and gamma rays of radium, but in some cases radium was preferable on account of its case of concentration on a particular region. The effects of the *x*-rays were probably not due to the rays themselves, but to the power possessed by the radiation to eject from matter electrons at a prodigious speed. Some years ago Mr. C. P. R. Wilson of Cambridge, devised a method by which the trail or track of the ejected electrons could be traced and photographed and the technique of this method was illustrated by the lecturer. He compared it to the tracing of the track of a tornado by the path of destruction it left. He considered that the rays possess the power of chemical dissociation of a fairly close chemical combination like water; and that they

also have the power of association or recombination. The effects seen in water could safely be regarded as occurring in the human body when the rays were applied to it, except that the amplitude would be very much reduced and not every part would be hit by the electrons. The main problem of radiology was to find out the conditions under which the rays passing into tissue would destroy the cells or the foreign organism with the minimum of danger to healthy cells. Possibly the radiation might, in the case of a few organisms of disease, have the power of differentiating between the injurious cell and the healthy; and he thought it ought not to be wholly impossible, by the introduction of certain salts on certain solutions into the patient, to produce chemical reactions which would not occur normally. Some such process seemed a condition of further definite advance in the therapeutic use of the rays.

Death of Sir Henry Burdett.—Sir Henry Burdett passed away on April 29 in his 74th year. He was taken ill last February, as the result of overwork, but for some time hopes were entertained of his ultimate recovery, but the improvement in his condition was not maintained, and he died from heart failure. In the medical world throughout the globe he was known for the work he did for the nurses and hospitals and nearly up to the last he was arguing for the retention of the voluntary system and devising plans for its accomplishment.

He was the son of the Rev. Halford Burdett and was destined for the university and the legal profession, but the untimely death of his father when he was 17 changed his plans and instead of going to college he went to a stool in a bank. Then he became a medical student, passing all but his final examinations. For six years he filled the office of superintendent and secretary at Queen's Hospital, Birmingham, and a similar post at the Seamen's Hospital, from 1874 to 1880, when he was appointed to the important and influential position of secretary to the Share and Loan Department of the Stock Exchange, from which he retired in 1897. But while he did valuable work in the field of finance, it is the results of the application of his trained mind and remarkable ability that bore the best fruits and earned for him the undying gratitude of his fellow countrymen. During the period that he was secretary of the Seamen's Hospital he raised the income of the institution from £7,000 to £13,000 a year. In 1877 he established the Home Hospitals Association for Paying Patients, and three years later he opened the first Home Hospital for the Middle and Upper Classes, having raised £26,000 for that purpose. In the course of a paper read before the Social Science Association in Dublin in 1881, Sir Henry threw out the practical suggestion that an annual conference of representatives of hospitals would be most desirable. He subsequently organized the first hospitals conference, which was held in London in 1883. He also did a great deal of work in the science of hygiene and sanitation, he founded and edited the "Hospital" and established "Science Progress." To the general public, however, he was probably best known as the founder in 1887 of the Royal National Pension Fund for Nurses, which proved an extraordinary success. In the work of the Hospital Sunday Fund he took the deepest interest. He published many works on the activities and organization of hospitals and the various phases of the nurse's life and work, while his "Hospitals and Charities," which is almost as well known in America as in England, is the recognized vade mecum on all matters with which it is concerned. Sir Henry Burdett was an untiring worker, he was full of an intense fire of energy. According to his friend, Mr. T. P. O'Connor, he acted in everything he undertook with the suggestion of a machine that was at once swift, relentless, restless, and a little noisy. Though he always appeared tranquil but vivacious, he seemed to be possessed by a perfect fever for work. A man who regarded life as a race with time; with time always hurrying after and threatening to draw level with and even go beyond the work which, as Mr. O'Connor suggests, in a world where so many people are sluggards, produced now and then a good deal of hostility. The world gets the credit for always loving the lover, it does not always love the worker. Sir Henry Burdett was made a K. C. B. in 1908.

LETTER FROM GENEVA.

(From Our Regular Correspondent.)

GENEVA, May 1, 1920.

Change in the University Faculty.—The important event here has been the resignation of Dr. L. Bard, professor of clinical medicine at the University, who has gone to fill the same chair at the University of Strassbourg. It is probably safe to say that Dr. Maurice Roch, of Geneva, will be his successor, and that he is highly competent to fulfil the duties of this very important professorship. Young, still energetic and an excellent *causeur*, with all requisite scientific attainments, Dr. Roch will have a brilliant future. The spring term of the Faculty promises better than last year. During the war it was natural that a great number of students should be absent and their numbers fell low, but the number to attend the spring term has reached 357, but even this is very much below par.

A Chair of the History of Medicine.—It may be of interest to your readers to know that the University of Geneva is the only one of the five Swiss universities having a chair of the history of medicine, which, with the exception of the Italian schools, where some attention is given to this interesting and important subject, is also much neglected in other countries. There is a chair at Paris and one at Berlin and Leipzig and one at Edinburgh. The courses offered in this branch during the spring term at Geneva are: Medicine and religion; an introduction to the study of the history of medicine, two hours a week; lectures on Galen's writings, one hour a week, and lectures on the history of syphilis, one hour a week. During the winter term there are two courses of lectures on medical history, one a complete course of five hours a week, and the other an elementary course of one hour a week.

Early Treatment of Venereal Disease.—At its

recent session, the Committee of the International Office of Public Hygiene adopted the following resolution after hearing the report of Dr. Carrière, the Swiss delegate, and decided to bring it to the notice of the various governments. The resolution particularly insists upon the efficaciousness of the early treatment of venereal disease as a means of prevention, and in Switzerland the opinion of the medical profession is of this mind. I here transcribe a translation of the above resolution, as it appears to have considerable importance and interest at the present time.

"Since 1914, nothing has occurred in the domain of science which can have much of any bearing in causing any change of our ideas in the matter of antivenereal prophylaxis. But experiments collected since this epoch in some countries, as to the efficaciousness of early treatment of venereal diseases considered from the viewpoint of prevention, engage us to recall to Governments the resolution adopted on this point in May, 1914, by the permanent Committee of the International Office of Public Hygiene and to ask them again with emphasis to adopt all necessary measures to render the treatment of venereal affections accessible to all categories of the population, by suppressing all which, directly or indirectly, is of a nature for preventing or delaying the care to be given to patients during the contagious period of their affection. It is particularly desirable from this viewpoint, that gratuitous treatment should not be limited to certain categories of the population, and that all who desire it should be able to benefit by it. In the same order of ideas, we emit the hope that the offices of industrial or mutual insurance companies will eliminate from their statutes the provision which excludes from the benefit of prestation of these offices persons having contracted a disease through their own fault, a provision which refers especially to venereal cases and which goes directly against the carrying out of prophylaxis of sexual diseases based on their early treatment. It goes without saying that it is much to be wished that venereal disease can be treated from now on from the viewpoint of prophylaxis, as are the ordinary contagious diseases, and that the general principles which govern the prevention of these affections might be applied to venereal cases, namely, obligatory notification (to the department of health) and treatment, penal sanction in cases of contamination transmitted knowingly or not, to others; thereto adding those measures which proceed from the nature of the venereal infection and its social consequences, such as that which would compel persons desirous of contracting marriage to obtain a certificate attesting them to be free from all diseases of this kind. But it does not appear to us, given the ideas still current and prejudices relating to venereal disease, that the time has yet come to interfere with them by laws and rules. Such a procedure would, in most countries, meet such opposition that there would be considerable risk of obtaining results diametrically opposed to those desired. What is particularly necessary for the time being, and we believe that particular attention of governments should be directed to this point, is to educate the public in order to change its mentality and prepare it for more severe measures. This education must be methodically carried out with all the means at our disposal, namely, the creation of propaganda associations, lectures, cinematographic demonstrations, the distribution of explanatory pamphlets, having in view all social spheres, even schools, and employing for each of them the means adapted to their mentality. In this propaganda private initiative and the State should be closely allied and they should mutually sustain one another with all their resources. It is also of import to give a kind of specific education to the medical corps, so that sanitary authorities may have at their disposal a sufficient number of specialists qualified for applying those measures which they may judge as serviceable to use, and that the physicians themselves may be in a state to contribute, by their actions and teachings, to the education of the masses. In this order of ideas it seems to us indispensable to combat medical charlatanism, which is especially flourishing in the domain of venereal disease, by severe punishment, as has been asked by the Central Council of Hygiene of Holland, all those who treat venereal disease without being physicians, and who offer or publicly or clandestinally extol, by writings, pictures, or oral explanation, drugs or objects or methods of treatment for the cure of these affections. The majority of States already possess in their laws governing the practice of medicine and pharmacy, measures which without doubt would permit them to intervene usefully. The application of these divers measures appears to us to constitute a first step in the prevention of venereal disease and can even now produce excellent results. The next step will be that of legislative intervention; but we cannot enter on this ground until the soil shall have been prepared by a continued and systematic propaganda."

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 27, 1920, clxxxii, 22.

1. A Note on John Hunter at Oxford. Henry Viets.
2. Fracture of the Posterior Tubercle of the Astragalus *vs.* Inconstant Os Trigonum. Frederick W. O'Brien.
3. The Product of a Urological Clinic. William C. Quinby.

2. Fracture of the Posterior Tubercle of the Astragalus vs. Inconstant Os Trigonum.—Frederick W. O'Brien reports a case of pain and tenderness in the ankle following an injury received by coming down hard on the heel at the same time twisting the ankle. The diagnosis was fracture of the posterior tubercle of the left astragalus, though with the possibility that what was thought to be a fracture fragment might be the inconstant os trigonum. The right foot was normal and the *x*-ray showed a well developed posterior tubercle. Some months later the patient had pain in the right foot, but could recall no injury. What appeared to be a fracture of the posterior tubercle of the astragalus on this side was found. A month later the roentgenologist reported ununited fracture of the posterior tubercle of the right astragalus and no evidence of separation of recent fracture fragments of the left foot. The treatment of each ankle was by plaster-paris splints. The writer believes there was a definite fracture of the posterior tubercle in the left foot and a separation of the os trigonum from its cartilaginous attachments in the right. If the os trigonum is a separate entity and not an epiphysis, O'Brien says, then the failure to have demonstrated it on the first exami-

nation in the right foot may have been due to the extent and closeness of its cartilaginous attachments which were later separated by slight injury although the matter of roentgen technique should not be overlooked, for unless the angle of rays is correct there might well be an overlapping of structures which would preclude proper definition. Anatomists who insist very strongly that the os trigonum is not the same thing as the tubercle say it may represent practically the whole of the external posterior process, that it may be truly fused with the astragalus or closely joined by synchondrosis. If the os trigonum is only loosely attached or at other times fused with the astragalus, it follows that it might very well be pulled off by strain on the posterior bundle of the external lateral ligament of the ankle. If fused with the astragalus it could be separated by the same forces as fracture of the posterior tubercle, viz., a fall upon the heel with the foot in plantar flexion. It seems fair to conclude the roentgenologist should make a closer study of this region in the presence of clinical signs.

New York Medical Journal.

May 29, 1920, cxi, 22.

1. Sex Disproportion and Its Consequences. R. Murray Leslie.
2. Secondary Nephrectomy. Arthur L. Chute.
3. The Deaf Child in Its Relation to the Parents, the Teacher, and the Physician. Emil Amberg.
4. A Year's Observation in Orthopedic Surgery. Edward Adams.
5. The Frost-Lang Operation. Howard F. Hansell.
6. The Relation of Neurology to the Practice of General Medicine. J. W. McConnell.
7. Contribution to Roentgen Ray Diagnosis. John W. Shuman.
8. Spinal Subcutaneous Injection. Siegfried Block.

5. The Frost-Lang Operation.—Howard F. Hansell describes a modified Frost-Lang operation as practised by the eye surgeons at the Jefferson Hospital, Philadelphia. The operation called by this name consists in the insertion of a gold ball after enucleation of the eyeball, the recti muscles being united by a suture which is made to include the conjunctiva. The procedure followed by Hansell and his colleagues differs from that practised by the originators of the operation: first, in the use of silk instead of catgut sutures; second, in fastening the recti muscles to the conjunctiva before enucleating the ball; third, in the manner of closing the opening in which the gold ball has been placed.

Journal of the American Medical Association.

May 29, 1920, lxxiv, 22.

1. The Change of Type of Disease. Sir Humphrey Rolleston.
2. Experimental Study of the Nasopharyngeal Secretions from Influenza Patients: Preliminary Report. Peter K. Olitsky and Frederick L. Gates.
3. The Bacteriology of the Urine in Renal Tuberculosis. J. Dellinger Barney and Edward S. Welles.
4. Testicle Transplantation. L. L. Stanley and G. David Kelker.
5. Betanaphthol Poisoning in the Treatment of Hookworm Disease. Wilson G. Smillie.
6. A Cardiovascular Rating as a Measure of Physical Fatigue and Efficiency. Edward C. Schneider.
7. The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease. Leon E. White.
8. Nerve Blocking for Nasal Surgery. Robert G. Reaves.
9. Effects Produced in Blood Picture by Oxygen Inflation of Peritoneal Cavity. Charles Goodman.

1. Change of Type of Disease.—Sir Humphrey Rolleston. (See MEDICAL RECORD, May 8, 1920, p. 807.)

2. Experimental Study of the Nasopharyngeal Secretion from Influenza Patients.—Peter K. Olitsky and Frederick L. Gates base this paper on an experimental study made during the two epidemic periods of 1918-19 and the winter of 1920 and (on healthy controls) during the interepidemic period in the autumn of 1919. Their conclusions are that, from the evidence obtained in this study, extending over one and a half years, it would appear that there occurs a specific substance in the nasopharyngeal secretions in cases of epidemic uncomplicated influenza. This substance seems to be present only in the early hours of the disease. It has not been found later than thirty-six hours after the onset, nor in cases of secondary pneumonia, nor in secretions from persons free from the syndrome of influenza either during the epidemic or during nonepidemic periods. With this substance the authors were able to induce a clinical and pathological condition in rabbits, affecting the blood and pulmonary structures mainly, which could be maintained and carried through at least fifteen successive animals. For this reason, and also because of the dilution between passages and the shortening of the incubation period from rabbit to rabbit, they concluded that they were dealing with the actual transmission of a multiplying agent rather than with a passive transferance of any original active substance. This active substance is filtrable, and resists the action of sterile 50 per cent. glycerin for at least nine months.

The manner in which the bacteria of ordinary species, such as the pneumococcus, the Pfeiffer bacillus, *Streptococcus viridans* and others are encountered during the course of the transmission experiments and during the experimental reproduction of the condition described justifies the opinion that these microorganisms are secondary in effect. The essential effects are produced by a substance wholly unrelated to these bacteria. During the course of these experiments cultures from the lung tissue of affected rabbits and filtered nasopharyngeal washings from cases of influenza were seen to contain tiny bodies, almost invisible, which decolorized by Gram's method, and which stained with difficulty with nuclear dyes. This phase of the subject is still under investigation.

The Lancet.

May 8, 1920, cxcviii, 5945.

1. A Lecture on the Surgical Treatment of Prolapse of the Uterus and Vagina. W. Blair Bell.
2. The Pellagra Outbreak in Egypt. II.—Pellagra Among German Prisoners of War; Observations upon the Food Factor in the Disease. J. I. Enright.
3. Syphilis in Diseases of the Heart and Circulation. Charles W. Chapman.
4. Notes on the Causation of Red Degeneration. R. H. Paramore.
5. Orbital Hemorrhage with Proptosis in Experimental Scurvy. S. S. Zilva and G. F. Still.
6. The Industrial Settlement for the Consumptive. P. C. Varrier-Jones and Sir G. Sims Woodhead.

2. Pellagra Outbreak in Egypt.—Pellagra among German Prisoners of War.—J. I. Enright, in this article, reports his observations during the pellagra outbreak in Egypt on 65 German prisoners of war. A critical analysis of the diets which these German pellagrins ate before capture and during their period of captivity prior to the onset of the eruption is sufficient, the writer believes, to explode the food deficiency theory as a predisposing factor. These diets were ample in both quality and quantity. While an originally good diet may be vitiated by loss through (1) abnormal expenditure of energy, (2) defective assimiliation consequent on impaired digestive function, (3) absence of some internal secretion which is necessary for protein metabolism, an analysis of the entire situation seemed to indicate that none of these factors were operative. In this series of cases a peculiar parotitis was relatively common. In some cases both parotids became enlarged, and after an interval of about fourteen days subsided, while in some they suppurated and discharged much pus. Some six months previous the writer saw a similar outbreak of parotitis among otherwise healthy Turks. He felt at the time that the condition was in some way related to food deficiency. In view of these and other facts the question arises whether the parotid enlargement was due merely to secondary infection from the mouth, or to some other as yet unknown factor. The question is suggested as to whether the parotid possesses a rôle in protein metabolism, and whether there is any possibility that this gland may possess an internal secretion the function of which is concerned in the economy of protein, just in the same manner as the pancreatic secretion is essential for normal carbohydrate metabolism. The writer thinks it would be of interest to discover what changes would take place if complete extirpation of the parotids were performed. He feels convinced that in this series of cases he has established a clear case against a food "deficiency" as being the only factor involved in the causation of pellagra.

3. Syphilis in Diseases of the Heart and Circulation.—Charles W. Chapman holds that there are reasons

for expecting visceral manifestations of syphilis to appear at an unusually early period in the case of those who have gone through the stress and strain of the late war. Cases of atheroma and tabes occurring thus early have been reported, and he concludes that it is fair to assume that the heart and other internal organs are equally prone to premature degenerative changes. A number of cases are cited which point the lesson that it is not safe to place implicit confidence in the patient's denial of having had syphilis when clinical evidence points the other way; that when a patient with organic disease comes before us and there is no history of the more usual infections, syphilis should be suspected and confirmatory evidence diligently sought for, especially in patients at or after middle life. When the cardiac symptoms are not urgent it is advisable to prescribe a period of rest, together with a short mercurial course, before proceeding to the administration of the more direct cardiac remedies.

British Medical Journal.

May 8, 1920, *No.* 3097.

1. The Treatment of Eclampsia by Transfusion of Blood. W. Blair Bell.
2. A Lecture on Partial Pyloric Obstruction. A. Ernest Maylard.
3. A Lecture on Heart Affections in Relation to the Labor Market. R. O. Moon.
4. Civil Lessons of the War for the Treatment of Fractures of the Skull. C. M. Kennedy.
5. The Etiology of Diverticulitis. C. H. Willey.
6. Etiological Factors in Abortion: A Study of 100 Cases. Daniel Dougal.

4. Civil Lessons of the War for the Treatment of Fractures of the Skull.—C. M. Kennedy emphasizes the following points in the treatment of fractures of the vault—none of them really new—which have been firmly established by experience in the war: (1) The advantages of total excision of scalp wounds before dealing with underlying fractures were so firmly established during the war that this procedure is likely to become a routine instead of an occasional step in operations upon civil compound fractures. (2) Perforated metal tubes have been shown to have a really useful place for draining cerebral abscesses. (3) "Postage stamp" grafts are quite as good as muscle for hemorrhage from wounds of the cranial surface of the sinus, and may be cut and applied easily. (4) Surgeons who have done much head work in the war have abandoned plugging for wounds of the superior longitudinal sinus as uncertain and dangerous. (5) Lumbar puncture is useful in certain complications of fracture of the skull, more particularly in hernia cerebri, headache with a tense wound, and conditions associated with a high cerebrospinal pressure. Local anesthesia can be used successfully even in most severe cases of fractured vault.

6. Etiological Factors in Abortion.—Daniel Dougal presents a study of 100 unselected cases of abortion admitted to the maternity department of St. Mary's Hospital, Manchester, the majority of which belonged to the class of incomplete abortions. He finds that the commonest period for abortion to occur is between the third and fourth months. Abortion is comparatively uncommon in primiparæ, less than one-fifth belonging to this category. Most women who abort have borne previous full-term children, and in a majority of cases more than one. Frequent abortions in the same patient are uncommon, and when they do occur are not necessarily due to syphilis. As regards etiology, accidental or reflex causes are present in 18 per cent. of the cases. General disease of the mother, disease or displacement of her genital organs, and gross abnormalities of the fetus or placenta (other than those due to hemorrhage of infarction) are found in 25 per cent. Syphilis, as represented by a positve Wassermann reaction, accounts for 12 per cent., but its influence as the actual cause of the abortion is probably much less, and nearer 8 per cent. From the remaining 52 per cent. has to be deducted the figures for the self-induced group, which is probably not less than 20 per cent. In the present series 8 per cent. admitted taking lead pills, and a number of these showed clinical evidence of lead poisoning. This leaves over 30 per cent. with no cause assigned. Pathological investigation throws little additional light on the subject, as most of the morbid changes found do not produce the abortion, but occur during the operation or some other time. It would appear that the mother is primarily at fault as the result of some diseased condition, whether it be of an organic nature, or merely an increased irritability of the centers presiding over the expulsive action of the uterus.

Boletin de la Asociacion Medica de Puerto Rico.

March, 1920, xiv, 125.

The Onion as Object of Worship, Condiment, and Drug.—Dr. del Valle Atiles writes on this subject, beginning with the statement of Pliny that in Egypt the onion was invoked and sworn by as a deity. Its congener garlic is better known as a drug and quite recently important papers on the therapeutic value of this substance have appeared. The number of local and general conditions in which it has been exhibited is considerable—we refer only to its employment by well known medical men—and comprises wasp stings, ozena, otorrhea, pertussis, tuberculosis, various gastroenteric affections, etc. Diallyl sulphide, the active principle of both plants, has also been separately studied. In the form of a distillate of garlic this remedy goes back to Sydenham and Cullen. It has a somewhat different range of applicability, being more concentrated, and is employed as a rubefacient and counterirritant and vermifuge. The author quotes from numerous handbooks on materia medica and therapeutics of past decades. The active principal of garlic and onion has been much used as an enema for the oxyurias and in this connection the fact has been recorded that in some cases a general reaction accompanied by fever has resulted. It has properties not unlike those attributed to asafetida and the two have been given in combination. The peasants of Puerto Rico are said to give garlic to their children for lumbricoid worms and also apply it to the abdomen as a revulsive and cause it to be inhaled in pulmonary affections.

La Grèce Médicale.

January, 1920, xxii, 1.

The Earliest Epidemic of Grippe.—Rondopoulo refers to the discordant opinions of medical historians on this point. It has been dated variously in 876 A. D., the end of the twelfth century, and not until the close of the sixteenth century. The author believes that Hippocrates described an outbreak of the malady in his section on epidemics, as it occurred in Perinth, a Thracian village, in the year which corresponds to 426 B. C. There is a notable correspondence here to the description of influenza by Huxham, in England, in 1733. In both there was cough, which was the predominant symptom; angina, pain in the limbs, chills, fever, coryza, laryngitis, bronchitis, and pneumonia, lassitude and progressive myasthenia, which even culminated in paresis. The author therefore calls "epidemic cough" as it appeared at Perinth the first recorded account of influenza. He disagrees with those who see in the plague of Athens as described by Thucydides any form of influenza, for this was clearly some exanthematic fever, the nature of which is quite obscure.

Acute Cervicofacial Cancer Simulating Actinomycosis.—Gensollen refers to cancers which present evidences of inflammation, suppuration and fistulation in the actinomycotic region of the neck and jaw. It is evident that to cancer has been added an infection of buccal origin. The discharge in these cases will contain none of the yellow grains seen in actinomycosis and biopsy if undertaken will show evidences of prickle-cell cancer, but to be on the safe side an intensive course of potassium iodide might be given, for this will also be of diagnostic value should the case turn out to be syphilitic. But since these cancers are usually quite inoperable and since the iodide may notably aggravate the state of the cancer the author warns against the procedure and would depend on the microscope with an injection of salvarsan for diagnostic use.—*Journal de médecine et de chirurgie pratiques.*

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held February 19, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

The Prevention and Serum Treatment of Lobar Pneumonia.—Dr. RUSSELL I. CECIL made this presentation, which was illustrated by lantern slides. By way of introduction, he said that pneumonia, including bronchopneumonia, was the most serious acute infectious disease with which we had to deal, the death rate exceeding that from tuberculosis. Lobar pneumonia was more important from the economic standpoint than bronchopneumonia because it usually attacked the young and able, while bronchopneumonia was seen for the most part in infants and the aged. It was much more difficult to institute sanitary measures against the spread of pneumonia than against intestinal disease, because it was necessary to teach people not to sneeze and cough in the faces of their neighbors, and because inevitable overcrowding in cities made it difficult to prevent the conveying of the disease from one person to another. The old theory was that most individuals carried pneumococci in their upper respiratory tract and that with lowered resistance autogenous infection occurred, but more recent studies indicated that the normal mouth rarely harbored a virulent type of pneumococcus except when the individual had been exposed to the disease. Types I, II, and III were rarely found in healthy individuals, except among doctors and nurses who were caring for someone with pneumonia. In treating pneumonia, it was necessary to treat the patient by isolation and sterilization of everything that came into contact with him. Carriers should be treated by some of the disinfecting solutions that had proven of value in the army. The above facts made evident the importance of some method of protection against pneumonia that was more effective than sanitary measures. Prophylactic vaccination was possibly such a method. Lister, in South Africa, where the types of pneumococci were somewhat different from those met with here, had been successful by the use of mixed pneumococcus vaccines in producing immunity against those types of pneumonia in a large group of miners. It was decided to make observations as to the value of prophylactic vaccination against types I, II, and III pneumonia at Camp Upton. About 12,500 men, 40 per cent. of the camp strength, were vaccinated, and 60 per cent. remained unvaccinated. Those vaccinated received three injections of a pneumococcus saline vaccine of types I, II, and III, the first dose being three billion, the second dose six billion, and the third dose nine billion. The plan had been to keep these men under observation for five or six months, but they departed at the end of ten weeks, during which time no case of pneumococcus types I, II, or III pneumonia had developed among the men who had received three inoculations of the vaccine. There were only 17 cases of pneumonia of all types among those receiving the vaccine, while there were 173 cases of pneumonia among the unvaccinated. Among the unvaccinated the mortality was 28 per cent., as against 11 per cent. among the vaccinated. As these figures were encouraging, the Surgeon-General had sent the speaker to Camp Wheeler to make further observations. Here conditions were somewhat different in that lipovaccine was used instead of saline vaccine. There was a much larger percentage of recruits, mostly rural, among the troops, and the coming of the influenza epidemic complicated matters. Their experience with the lipovaccine indicated that it did not possess so great a degree of antigenic action as the saline vaccine. From September 21 to December 20, 1918, there were under observation about 16,000 men. Approximately 80 per cent. were vaccinated against pneumomoccus types I, II, and III pneumonia. Among the vaccinated there occurred 32 cases of pneumonia of the types vaccinated against, while among the unvaccinated there were 42 cases. The mortality among the unvaccinated averaged 22.3 per cent., while that of the vaccinated was 21.7 per cent. It was found that following the use of the lipovaccines antibodies did not develop until a week after vaccination. Revising their figures on this basis, it was found that there were only eight cases of the types of pneumonia vaccinated against. Believing it desirable to confirm these statistics by animal experiment the speaker, in collaboration with Dr. Blake, had conducted experiments on monkeys at the Army Medical School in Washington. The monkey was suited to such investigation as it got pneumonia almost like man—high temperature, leucocytosis, rusty sputum, similar physical signs, and a crisis on the eighth or ninth day. If given large doses of the pneumococcus the monkey always died, and at autopsy the same kind of consolidation of the lung was found in the monkey as in man. They were able to protect monkeys with vaccine made from living cultures of pneumococci, but with the killed cultures, using doses comparable to the doses used in man, they had not been able to get satisfactory immunity. When, however, large doses of killed cultures were administered in three subcutaneous injections none of the monkeys thus protected by vaccination got pneumonia, but the controls did. The experiments giving this result were made on rhesus monkeys, while the previous experiments had been performed on Philippine monkeys, which seemed more susceptible to pneumococcus than the rhesus. Furthermore, small doses of pneumococcus vaccine given intravenously to rhesus monkeys afforded complete protection. These experiments on monkeys gave a rational basis for human pneumococcus vaccination. The reactions following these injections were about the same as those following antityphoid inoculation, but larger doses were required. They had not had much success in vaccinating against Type IV pneumonias and thought it better for the present to concentrate their efforts on the study of Types I, II, and III. As to the indications for vaccination against pneumonia, there was certainly need of it in the army where crowding was necessary, and in recruiting stations men should always be vaccinated against pneumonia. Vaccination was also indicated during epidemics of influenza, in institutions and in outdoor workers, policemen, miners, etc., who were exposed to the weather. It was perhaps also indicated for nurses, doctors, and hospital attendants exposed to pneumonia in the wards of hospitals. Another place where it would be useful was in people who were subject to repeated attacks of pneumonia. Vaccination against pneumonia was contraindicated in those suffering from pulmonary tuberculosis and in acute respiratory infections; in such cases it should be postponed until the acute attack was over. As to the serum treatment of pneumonia, those familiar with the work at the Rockefeller Institute were aware that Type I antipneumococcus serum was effective against Type I pneumonia and that by its use the mortality had been reduced from 30 per cent. to a little over 7 per cent. Type I serum had not come into such wide use as its efficacy would indicate. Dr. Cecil cited experiments on monkeys with Type I pneumonia showing a very definite result upon temperature and bacteremia produced by Type I antipneumococcus serum. Controls treated with normal horse serum showed no such effect on the blood culture or temperature. All of the monkeys treated with Type I serum recovered, though they had been infected with lethal doses of Type I culture. The controls died. Moreover, if serum was given early, the disease was practically aborted. In other monkeys, almost moribund with Type I pneumonia, serum treatment was started late in the disease, and even in these cases persistent treatment resulted in a favorable termination. This meant that every case of lobar pneumonia in man was entitled to a bacteriological examination of the sputum and to serum treatment if he had Type I pneumonia.

Dr. FRANCIS G. BLAKE expressed the opinion that we would all have to agree that the consistent work that Dr. Cecil had carried on in the study of prophylactic vaccination in influenza and pneumonia had added a great deal to the subject in general and offered great hope of supplying us with the means of preventing this most serious disease at least to a cer-

tain extent. What had his evperiments shown as to the duration of immunity offered by Type I pneumococcus? This question was important because if it was necessary to vaccinate at frequent intervals it was a handicap unless vaccination could be made absolutely atoxic. During the course of their work in Washington it appeared that prophylactic vaccination might not prove of great value. The disappointing results were due probably to the great susceptibility of the Philippine monkeys to the pneumococcus vaccine, one one-thousandth of a c.c. killing them. With the killed vaccines administered to the rhesus monkey they were absolutely able to produce immunity. The susceptibility of the rhesus monkey was more comparable to the susceptibility of man, and much less than that of the Philippine monkey. The serum treatment experiments spoke for themselves and were particularly valuable because they furnished the first experimental evidence with adequate control demonstrating the value of serum, though it had been felt that this was so by those who had been using the serum for some years. These experiments brought out three points very definitely: 1. The importance of beginning treatment early and this point could not be too strongly emphasized. The serum treatment should not be regarded as a last minute effort to rescue the patient from the grave, and that was the general rule in any disease treated by serum. 2. There should also be a great deal of enthusiasm in maintaining persistent treatment at least three times a day and not desisting until the patient was well. 3. Even though through unavoidable circumstances treatment could not be begun early it should always be tried in the hope that severe cases might be saved as in the monkeys.

Dr. HENRY T. CHICKERING said that although the results of Dr. Cecil's later experiments might not have been as encouraging as he hoped they would be from the results in the first experiments at Camp Upton, nevertheless he felt that the work ought to be continued, particularly since the later work was complicated by the influenza epidemic. In Lister's work the vaccines were given intravenously and that might account for his striking results. In their study of pneumonia Dochez and others had found that immune bodies lasted only a short time and that agglutinins lasted only for a short period, but these might not be the only index of immunity. They had had one very striking case at the Rockefeller Institute. A boy had had fourteen attacks of pneumonia in seven years and in spite of a rather imperfect course of vaccine treatment he developed pneumonia again in the hospital. Attempts were made to find the types of pneumococci present in the attacks. Several attacks were of Type III and there was a typical Type II, and also Type IV. Everyone who has worked with pneumonia recognizes the value of the intratracheal method of producing experimental pneumonia from the investigator's standpoint. It was important to emphasize what had been said with regard to the early use of the serum in animals; they saw the same thing in their patients. If one was able to type the case within forty-eight hours of the chill and when there were signs of incomplete consolidation, one or two treatments with the serum were often sufficient, whereas later on one must give eight or ten treatments. In the majority of cases it was relatively easy to get the sputum. The time to get it was at the first examination. Percussing the patient and attempts at deep breathing on his part usually started coughing and expectoration and a good specimen of the sputum should be obtained at that time. Another point which was brought out and which should be emphasized was the importance of keeping up the treatment religiously until the patient was surely over the acute course of the disease. Dr. Cole recommended 100 c.c. doses of serum at eight hour intervals; and the results were quite good using twelve hour interval treatments. The treatment should be continued as long as the temperature was 101° or above. Of course one should be on the lookout for complications so that if there was a rise of temperature due to an empyema he would not continue to treat that with serum. There was an impression among some clinicians that the serum localized the disease and that the organisms were agglutinated in the capillaries in various parts of the body and there set up a focus of infection. Judging from a small group of cases it seemed that it not infrequently happened that several cases of empyema occurred following the serum treatment, but that might be explained on this basis: One very rarely had empyema with Type III pneumonia. The Type III pneumonias were of two groups, one group running a mild course and the other group being very severe, so that they did not have a chance to reach the empyema stage before death occurred. The empyemas among Type II pneumonias seemed to be more numerous, but he felt that if they had carefully controlled statistics they would find that there were actually no more empyemas among the Type I infections than among the Type II pneumonias. In working with mice it had been found that there were certain maximum doses above which the serum exerted no further effect. If the infecting dose were more than .3 c.c. of a virulent health culture of pneumococcus Type I it made no difference how much serum was given, the mice usually died. If a case was seen late and one found 75 or 100 colonies, even if the serum was given persistently, not infrequently the patient died, if not of the primary pneumonia of some complication. The cases that had empyema were probably the severe cases that without the serum treatment would not have reached the empyema stage, and that probably explained the fact that empyema seemed to occur oftener in the cases treated with serum.

Dr. CECIL said that regarding the duration of immunity following prophylactic pneumococcus vaccination was a problem which he planned to investigate in the near future. His impression was that pneumococcus immunity lasted several months and that it would be necessary to repeat vaccination every year in order to give protection during the season when pneumonia was prevalent. Lister's work was done on negroes and they seemed to tolerate vaccination better than the white race. There seemed to be no relation between the degree of immunity and the amount of protective substance in the serum of monkeys. In their serum-treated monkeys they had not met with empyema. In respect to influenza, one argument against the influenza bacillus was that it was difficult to obtain this organism by culture. They had found that with monkeys the influenza bacillus in some instances appeared and then suddenly disappeared, and that it spread rapidly from one part of the respiratory tract to another. In some cases it disappeared altogether within twenty-four hours. He thought that in many cases the influenza bacillus initiated the disease and was then supplanted by the pneumococcus or streptococcus. Dr. Cecil cited an instance in which a volunteer took a freshly isolated influenza bacillus culture, receiving the bacteria directly in his nose. In about three hours he began to have a headache and the leucocyte count went down from 11,000 to 8,000. His symptoms were sore throat, slight coryza and general malaise. On the second day very few influenza bacilli were found except in the leucocytes. During the second day he was quite uncomfortable, but by the third day he had recovered. It was a question in this case whether we were dealing with a real infection or simply an intoxication. If he was infected with the Pfeiffer bacillus there was very slight bacteriological evidence of it on the second day.

The Relation of the Influenza Bacillus to Influenza.—Dr. FRANCIS G. BLAKE presented this contribution. He said that from time to time, during the years following the discovery of the Pfeiffer bacillus its etiological relationship to influenza had been questioned because it was shown that *B. influenzæ*, or an organism apparently indistinguishable from it by the tests available were not infrequently present in the mouths of normal individuals, because it was found not infrequently associated with other disease affecting the respiratory tract, such as measles, pulmonary tuberculosis, bronchiectasis, bronchopneumonia, etc., and because of the apparent difficulty of demonstrating that it possessed pathogenicity for laboratory animals, a fact which lead some investigators to the opinion that the influenza bacillus was merely a saprophyte and possessed no pathogenicity for man. It seemed quite

clear, however, that none of these objections could be maintained as valid reasons for abandoning the conception of the possible etiological importance of the Pfeiffer bacillus since it was well recognized that many bacteria whose etiological relationships to various diseases affecting the respiratory tract was fully established might be found in the upper respiratory tract of healthy individuals, and were also found in association with other pathological conditions than those which they commonly caused, as, for instance, the pneumococcus. It was further thoroughly established that B. influenza, at least certain strains of the organism, might be pathogenic for man since it had been found as the only organism present in cases of meningitis, endocarditis, pneumonia and other conditions. That it might be pathogenic for animals had been ably shown by Wollstein and others. Such, in brief, was the status of the influenza bacillus at the outbreak of the present pandemic. With the outbreak of influenza in 1918, the failure of many bacteriologists to find *B. influenzæ* in more than a small proportion of cases greatly shook belief in its etiological relationship to influenza. A careful investigation of such reports, the essayist believed, would show more or less wholesale routine laboratory examination carried out under the stress of war conditions, frequently without the use of adequate media or sufficient attention to the cultural peculiarities of the influenza bacillus. This opinion was supported by the fact that many bacteriologists throughout the world, thoroughly familiar with the technique of cultivating the influenza bacillus had found this organism constantly associated with the disease, both in its early stage before complications had arisen and also present in a large proportion of cases in the bronchi or lungs at autopsy. Although such investigations appeared to have established the constant associatin of Pfeiffer's bacillus with influenza, its mere presence, even in 100 per cent. of the cases, constituted only suggestive evidence and by no means proof of etiological relationship. According to Koch's postulates it was furthermore necessary at least to reproduce the disease experimentally in animals or man by inoculation with pure cultures of the organism and having reproduced the disease to recover the organisms from the experimental disease, and again to produce the disease in other animals. A review of the literature showed that in the majority of animal experiments reported the methods of inoculation had been by subcutaneous, intraperitoneal, or intravenous routes, and it was not to be expected that a disease which might safely be classified as a respiratory infection could readily be reproduced in animals by introduction of the virus by other than the natural mode of infection by man. The fact that attempts to reproduce the disease by inoculation of the mucous membranes of the respiratory tract had failed might be due to failure to take into consideration that such pathogenicity as the influenza bacilli possessed might be rapidly lost upon artificial cultivation outside the animal body. Further experiments to reproduce the disease were undertaken with Dr. Cecil at the Army Medical School in Washington. The detail of these experiments was described and illustrated by means of lantern slides from which the following summary was deduced: 1. Bacillus influenzæ, when attention was paid to maintaining it at a proper grade of virulence. could initiate in healthy animals an infection of the mucous membranes of the upper respiratory tract which might spread by continuity to the lower respiratory tract, producing a tracheobronchitis, and in a certain proportion of cases a characteristic type of bronchopneumonia. Control experiments with highly virulent strains of pneumococcus and hemolytic streptococcus had shown that these organisms did not possess this property and that they must gain admission to the bronchi before they could initiate an infection of the respiratory tract. 2. The disease experimentally produced by inoculation of the nasal and buccal mucous membranes with *B. influenzæ* was essentially identical with influenza in man with respect to its symptoms, clinical course, and complications. 3. *B. influenzæ* could produce in animals a characteristic type of bronchopneumonia which was identical with the kind of pneumonia which had been described as typical influenzal bronchopneumonia of man and which had been ascribed to infection of the lungs with *B. influenzæ*. 4. In short, these experiments showed that *B. influenzæ* could produce the clinical syndrome of influenza. Dr. Blake stated that though this evidence appeared quite conclusive there remained certain definite objections to accepting the Pfeiffer bacillus as the primary cause of influenza, which might be divided into two groups, (1) those based upon general theoretical grounds or upon negative experimental evidence, and (2) those based upon positive experimental evidence. Without going into these in detail, Dr. Blake pointed out that of the general arguments against the influenza bacillus two of those most commonly advanced had been the undoubted presence of influenza bacilli in the throat of normal individuals and in association with other respiratory diseases than influenza. These had been disposed of early in the discussion. However, there were certain other probabilities, one of which was that when we used the term *B. influenzæ* we were in reality applying a single name to a large group of organisms which possessed a certain limited number of common morphological and cultural characteristics. Another and perhaps more important general argument advanced against the influenza bacillus was the brief incubation period of the disease, which suggested that it was communicable only in its earliest stages. These facts, however, did not seem necessarily incompatible with the acceptance of the Pfeiffer bacillus as the cause of influenza. The well-recognized difficulties in establishing infection in animals with the *B. influenzæ* suggested that its power of infectivity might be limited to a brief period of its life cycle. After discussing the positive experimental evidence brought forward by Dr. Williams in Dr. Park's laboratory, namely, that every influenza bacillus was different from nearly every other influenza bacillus and hence the influenza bacillus could not be the cause of the pandemic, Dr. Blake suggested as harmonizing apparently opposing facts the possibility that the pandemic disease was primarily initiated by an as yet undiscovered organism and that there resulted under the influence of this virus a concomitant infection with *B. influenzæ* which was responsible for the principal clinical manifestations of the disease influenza. Only future investigation would determine whether this assumption was correct.

Dr. WILLIAM H. PARK said he thought Dr. Blake was going to speak only of the evidence tending to indicate that the Pfeiffer influenza bacillus was the cause of influenza. He had, however, added some of the evidence on the other side. The Research Laboratory had carried out an interesting accidental experiment. Four of the laboratory assistants at different times had been sprayed with fresh cultures of the influenza bacilli by the needle being pressed off by the pressure of the fluid in the syringes. Two of these persons had developed a moderate infection and in both of these the type of culture which was sprayed into the nostrils was the type obtained during the infection and for many days afterwards. The other two did not develop the infection, though one became a carrier for several weeks. Dr. Blake spoke of the fact that the early fulminating cases might show during the first day the Pfeiffer bacillus in pure or nearly pure culture and later would show mainly the streptococcus, pneumococcus or other organisms. They had not found this always the case. Two fulminating cases coming under his observation at the beginning of the epidemic which died within three days and in both the smears and cultures made from the lungs showed enormous numbers of a hemolytic streptococcus, and there were apparently no other forms of microorganisms in the lungs. Undoubtedly influenza bacilli were present in the trachea. Only a small minority of their acute cases (20 per cent.) at death showed influenza bacilli in the lungs. Dr. Williams and her associates had tried to isolate a filterable virus, but with negative results. The simple finding of a filterable virus in a few cases would of course prove nothing more as to the etiology of influenza than finding an unidentified new pathogenic microbe. It would still be necessary to prove that such a virus was the cause of the pandemic and not one of the complicating infections. One

of the questions that must be considered in etiological investigations was "What are the marks of a case of epidemic influenza?" Until we agreed upon some definite clinical picture or established some causative microbe it would be difficult in any given case to differentiate the ordinary respiratory infections from influenza. We did not really know that the influenza of 1892 was etiologically the same disease as that of 1919 or whether what we considered the typical cases represented chiefly the effects of the unknown virus alone or the combined effects of the Pfeiffer bacillus, the streptococcus, and the pneumococcus with it. Were we certain that the early milder European outbreaks in 1918 were true influenza, and also the cases designated as influenza between the epidemics of 1892 and 1918? Dr. Williams had searched the cultures from 100 cases but did not find the epidemic strain. When investigators had spoken of the significance of finding the Pfeiffer bacillus in 100 per cent. of the cases they used the name in a very liberal way. They really meant they had found many very different types of the organism. These could not possibly be from the same epidemic source. The findings suggested very strongly that these persons were influenza bacillus carriers before they were attacked by the influenza. Earlier investigation had always indicated this. The Pfeiffer bacillus had been found in every case of whooping cough and in 90 per cent. of persons having acute measles and in a large percentage of cases in other respiratory infections. Dr. Williams had taken cultures from separate groups and had isolated ten or twenty colonies from the cultures of each in order not to miss the infecting strain selecting those developing first on the plates, those developing later, and those developing last. She had picked out these colonies from the cultures from undoubted epidemic influenza, but instead of finding an epidemic strain she found a multitude of types. These findings convinced them that the Pfeiffer bacillus had not been established as the cause of influenza. The pathological and bacteriological results of the work of Dr. Blake and Dr. Cecil had in his mind been very important in experimentally demonstrating that lesions could be formed in monkeys by the Pfeiffer bacillus similar to those seen in the pneumonias occurring in influenza.

Dr. HANS ZINSSER said that Dr. Cecil and Dr. Blake had indeed carried out Koch's postulate with the influenza bacillus and had produced lesions similar to those produced by this organism in some human cases, but the question as to whether the condition they had produced was true epidemic influenza or corresponded merely to a secondary condition analogous to the pneumococcus and streptococcus lesions was still open. Dr. Park had clearly stated the problem when he said that the production of lesions in monkeys had little etiological significance in regard to the pandemic under discussion. The conditions which Dr. Cecil and Dr. Blake produced in the monkeys' lungs and the similar conditions often spoken of as influenza at the present time were not those seen in the cases of influenza during its early epidemic stages in France, and as he understood in this country as well. Dr. Zinsser described this condition as it occurred in France, where it was characterized by rapid dissemination, sudden onset, violent headache, muscular pain and fever, but by absence of respiratory or other local symptoms, at least during the early phases of the epidemic. It usually lasted three days; none of these cases died; all got well. The disease was at first spoken of as "three day fever." Later, throat symptoms appeared and in these influenza bacilli were found. The disease at this time was certainly not the type that was seen later in the camps of this country and were being seen in the hosiptals, associated with the pneumococcus or the hemolytic or other streptococci, according to the locally prevailing type. It was his first impression that "pure" uncomplicated influenza was the relatively mild disease described, the pulmonary lesions, pneumonias, etc., representing secondary infections. In studying the flora of the respiratory tract the influenza bacilli were often found most abundant at first in the upper air passages, but were later displaced by secondary invaders. The presence of the influenza bacilli in normal throats had not yet been studied statistically with sufficient thoroughness, and was a problem open to possible error because it was difficult to say who had been exposed to the infection and who had not been. It was quite possible that influenza bacilli would be found in the throats of many people who had not been sick at all because of a fair amount of resistance. If the influenza bacilli were regarded to be the cause of the disease as at first observed, it was difficult to understand why the patient should be so terribly ill with nothing but a small focus of influenza bacilli in the throat, giving rise there often to nothing more than a local pharyngitis; this could be explained only on the basis of a production of a poison by the organisms comparable to exotoxins of other bacteria. Recent work in the Columbia Medical School Laboratory by Mrs. Parker showed that the influenza bacilli produced powerful poisons during the early stages of their growth in liquid media which were toxic for rabbits. Just exactly what these poisons were was not yet clear to them, especially since they were finding poisons quite similar to them in connection with other bacteria, but it was not impossible that these poisons might actualy be formed in the body, and would then easily account for the severe symptoms accompanying the localized infections. The only way to definitely ascertain the nature of these poisons would be by determining whether or not they could produce neutralizing antitoxins. They were at present inclined to believe that they were not identical with the true exotoxins, but their nature was being carefully studied at the present moment. The typing of influenza bacilli and the work done by Anna Williams, Wollstein, and their coworkers in this direction promised considerable light on this subject. Dr. Zinsser said that he had not followed the most recent work of the Department of Health, and did not know whether they were using the complement fixation test or the agglutination test.

Dr. PARK replied that they were using largely agglutination.

Dr. ZINSSER said that in Dr. Longcope's clinic they had begun to examine convalescent patients by complement fixation with influenza bacilli. A great many of these patients seemed to have shown complement fixation with various antigens, but this work was just beginning and there had not yet been an opportunity to make a sufficient number of controls on normal sera, and it would be very difficult to obtain sera from anyone at the present time and be sure that they were normal. However, this direction of research would also have a certain amount of bearing on the problem under discussion. Dr. Zinsser further said that of course it has been long known that the influenza bacillus could cause a variety of respiratory infections in human beings; that the work of Dr. Cecil, and Dr. Blake had certainly made it seem somewhat more likely that the influenza bacillus was responsible for what was commonly spoken of as "flu" or influenza but that it did not bring positive proof of this particular phase of the problem, and that, while he himself was inclined to favor the etiological significance of the influenza bacillus, he thought that final judgment must be withheld until some of the apparently contradictory points of evidence had been more thoroughly cleared up, however much one desired to incriminate the influenza bacillus.

Dr. BLAKE, in closing, said in reference to Dr. Zinsser's question as to the relation of the influenza bacillus to the production of pneumonia, he wished again to emphasize the fact that although they were able to produce pneumonia by the influenza bacillus, the point they stressed particularly was that the influenza bacillus was able to initiate an infection of the upper respiratory tract which appeared the same as the type that appeared in the spring 1918. He saw a great deal of this type of infection at Fort Sam Houston in Texas and thought at the time that it was the same kind of an infection that they were having in the army in France. That suggested a question which he would like to ask Dr. Park, that was, whether it was necessary that an epidemic should be caused by one strain of the organism, and whether it might not be possible that a number of strains were involved, which when conditions were right caused an epidemic. In an epidemic of pneumonia among monkeys at least four

types of the pneumomoccus were concerned. During an epidemic it was doubtful whether the influenza bacillus along was often found associated with pneumonia, though the influenza bacillus alone did produce pneumonia in a small proportion of cases.

The Treatment of Influenza.—Dr. SAMUEL A. BROWN said that our knowledge of the exact cause of influenza was so deficient that it was necessary to approach any plan of therapy with a note of empiricism, but because of this we should not ignore the many facts that had been gleaned from an extensive clinical experience in the handling of the disease. Before considering the treatment of influenza we must consider our problem. The disease, in a large percentage of cases, began apparently with an infection of the mucous membranes of the nose and throat or the respiratory tract followed by symptoms of general infection, associated with all the complications with which we were familiar. Symptoms of toxemia were apparent from the beginning, and as the period of convalescence was approached the toxicity was often more marked and was one of the problems which might often be more serious than the active symptoms of the infection. Many of the milder types of influenza were accompanied by a long period of convalescence extending over weeks or months with evidence of vasomotor, cardiac disturbances, anemias, etc., so that in considering the treatment the toxicity seemed to be the factor in mind from the beginning of the disease to the very end. There were three definite stages, the stage of invasion, the stage of active infection, and the stage of convalescence to consider. The treatment of the disease was not a problem purely for the nose and throat specialist or for the internist alone. Treatment must be directed first toward the destruction of the invading organism locally and generally. There must also be systematic treatment for the control of the active symptoms and minimizing the effects of the toxemia and shortening the period of convalescence. All cases, even though very mild, must be looked upon seriously. From the very beginning of the disease the patient should be instructed to remain at home and in bed at an even temperature as one of the most important factors in the control of the disease. A cathartic should be the first item of treatment. Local treatment of the nasal and respiratory mucous membranes should be begun at once with alkaline irrigations and a solution of argyrol or some preparation of silver either for the destruction of the infective organisms or for both protective and prophylactic reasons. Of the drugs which were of value in the constitutional treatment, the preparations of quinine stood out as fundamentally the nearest to a specific which we had, and while we were entirely unable to prove its destructive power upon the specific bacteria it was given for much the same reason as that advanced for giving large doses in pneumonia. Quinine should be given in two or three grain doses every two or three hours until there was evidence of cinchonism. The dosage should then be reduced but the quinine continued. The drugs for the symptomatic treatment should be combined with the quinine such as phenacetin for the reduction or control of pain, headache, and temperature; small doses of codeine for the control of the cough and throat and salicylic acid also as analgesics. This combination was the usual basis of the grippe capsule so-called and might be modified to meet the symptoms evidenced by the individual case, such as the addition of caffeine citrate in cases in which the depression was very marked, or strychnine in the cases associated with slow pulse and depression. Another plan of treatment which the speaker used extensively consisted in the administration of Dover's powders, three grains to three grains of quinine every three or four hours. This plan was particularly applicable where there was a good deal of dryness of the skin, slight cough and restlessness. From his personal experience this procedure did not seem as advantageous as the plan outlined above. There had been many cases of intensification of depression resulting from the use of aspirin during the epidemic of last year. The third factor of importance was the increasing of elimination. For this purpose large quantities of fluids, preferably the alkaline waters, solution of bicarbonate of soda, Vichy, kalak, or other waters of this type so that the kidney and skin activity could be utilized in the elimination of the toxin, and combined with this high colonic irrigation of three to five gallons at a temperature of 118° to 120° every day or every other day, depending upon the severity of the infection. The irrigating solution should contain one dram of Rochelle salts and one dram of soda to the quart. The depression which was associated with the end of the active stage should be counteracted in the beginning by moderate alcoholic stimulation and forced feeling. These patients as a rule objected to food, but it must be insisted upon and given in small quantities frequently. As the patient passed from the stage of active infection to convalescence the use of alcohol should be increased to the point of liberality, the quinine and phenacetin decreased and the codeine and heroine continued in decreasing doses if the irritable cough persisted. The irrigations should also be continued and owing to toxic changes in the blood mass the administration by hypodermic of strychnine or arsenic on alternate days should be prescribed together with absolute rest and stimulating massage. The treatment of this stage was to the speaker's mind one of the most important ones and a feature in the treatment often neglected. In the more severe forms of influenza infection the quinine might be given hypodermically in the form of quinine and urea hydrochloride 15 grains, or in some other soluble form, three or four times a day. Associated with the administration of the quinine in its various forms Dr. Brown said he had extensively used camphor hypodermically, giving from 20 to 40 grains in twenty-four hours. The use of diaphoretics, such as spirits of Mindererus, white drink, etc., might also be of considerable value in increasing the activity of the kidneys and skin. In latter-day prescribing many had omitted to use some of the old-fashioned preparations which had been useful for generations and which were just as useful to-day if selectively applied.

Dr. HUBERT V. GUILE stated that there was no question that patients who had been put to bed early in the course of their disease and had been kept there five or six days after the temperature became normal had been far less liable to develop relapses and the subsequent likelihood of bronchopneumonia. As for medication his experience had been limited to the use of aspirin, salol, and sodium salicylate, all of which seemed to give the patient relief from bodily discomfort and therefore had a distinct therapeutic value. Expectorants and occasionally sedatives were indicated for the control of associated bronchitis. A large number of drugs had been recommended for the treatment of influenza, but the disease was of such short duration and the outcome so invariably favorable, that it was difficult to say just how much the results were due to treatment and how much to the patient's own immunity. Because of the frequency with which it was complicated by bronchopneumonia one was almost justified in regarding any case of influenza that had persisted more than five days as more than likely to have developed pneumonia. With the exception of the serum treatment of Type I pneumonia, which occurred on only a small minority of cases, we were again compelled to resort to purely symptomatic treatment. At present he feared the great bulk of treatment in pneumonia was directed toward the prevention of circulatory and cardiac failure, when it was by no means certain that this was a frequent cause of death. In addition to the serum treatment of pneumonia there were a few other therapeutic measures that gave promise of ultimate usefulness. Haldane had recently brought to notice the importance of the proper administration of oxygen inhalations in the treatment of anoxemia, which he defined as a condition in which the rate of supply of oxygen to the tissues by the blood in the systemic capillaries was insufficient for the normal processes of life. This he maintained was a common situation in the bronchopneumonias of the so-called influenzal type. He seemed to have placed the use of oxygen on a rather more scientific basis and we were possibly justified in a procedure that was formerly justified as more or less of an extravagance. Another procedure, the outcome of our experience abroad, was the use of intravenous hypertonic glucose

solution. This seemed to be of distinct value in the critically ill presenting marked toxic symptoms. Its beneficial effects were attributed to the restoration of dehydrated tissues, to its slight caloric value, and to its possible tonic effect on the heart muscle. Non-specific protein therapy, which had proved of some value in the chronic infective arthritic diseases had been applied in bronchopneumonia and there seemed to be promise of some assistance along these lines. The same statement held true of passive immunity obtained by the use of serum of convalescent patients. Lumbar puncture was another measure that was occasionally of value in delirious patients. It was always a good practice in ruling out the possibility of meningeal involvement and at the same time had a distinct effect in quieting the delirium. As for the use of drugs in the treatment of pneumonia, digitalis seemed to be fairly generally accepted as the one upon which most reliance could be placed. It should be given early in the course of the disease in sufficient dosage to digitalize the patient slightly. For emergency stimulation the writer had found camphor and caffeine the most efficient, with adrenalin if the blood pressure was unduly low. Pituitrin had been useful in combating tympanites.

AMERICAN ASSOCIATION FOR THORACIC SURGERY.

Second Annual Meeting, Held in Atlantic City, N. J., June 9, 1919.

THE PRESIDENT, DR. WILLY MEYER, OF NEW YORK, IN THE CHAIR.

I. President's Address: The Necessity for the Application of Differential Pressure in Thoracic Operations.—Dr. WILLY MEYER of New York delivered this Address. (See MEDICAL RECORD, October 11, 1919, xcvi, 15.)

II. A Partial Review of the Subject of Military Surgery of the Chest from the Point of View of the Experience of the World War.—1. Report of 160 Penetrating War Wounds of the Thorax.—Dr. GEORGE J. HEUER of Baltimore, Md., based his remarks on 160 cases of penetrating chest wounds which came under his personal observation at an evacuation hospital. The circumstances surrounding the treatment of these cases were most favorable. The hospital was large and in a relatively quiet sector, and therefore the early evacuation of patients was not necessary. Practically all the cases remained under his care for from three weeks to three months; in other words, until the incidence and the results of the treatment of early and late complications were known. With the exception, perhaps, of an occasional late pulmonary abscess which might have occurred unknown to them, they knew the late as well as the immediate results in this entire series; and the mortality, he believed, represented the entire mortality. Certain facts regarding chest wounds had been well established when we entered the war; first, that over 60 per cent of cases which died at evacuation hospitals died within forty-eight hours of hemorrhage, shock, and open "sucking" thorax; and second, that the later deaths were practically entirely due to infectious complications. Surgeons had concerned themselves with the attempt to lower the immediate mortality and to prevent the later infectious complications, and their activities had taken two chief directions: first, to differentiate chest wounds into those which required immediate operation and those which could be safely treated expectantly—in other words, to establish operative indications—and, second, to develop surgical procedures which would lower the immediate mortality and at the same time prevent the infectious complications. The larger problems, then, in the treatment of chest injuries had been recognized and in part solved, and their work had no other merit than that which a careful study of a series of cases might give to unsettled points in the treatment of thoracic injuries. When analyzed from the standpoint of treatment, the cases could be grouped into those requiring immediate operation and those which might be treated expectantly. The operative indications in the former group were: 1. An acute hemorrhage threatening life; 2. Open sucking chest wounds; 3. Large retained foreign bodies; 4. Extensive fractures, chiefly of the ribs. From the standpoint of wounds, the cases presenting these indications included the large shell wounds and the bullet wounds with extensive fractures. Often two or three of the operative indications coexisted in the same case. The latter group, those which might be treated expectantly, included those with closed thorax in association with hemo- or hemopneumothorax, and from the standpoint of wounds included the clean perforating and penetrating bullet wounds unassociated with extensive fractures and the small shell wounds of similar character. The operative treatment of the first group naturally depended on the condition of the patient. Shock was common and often profound, and therefore an ideal operation might not be possible; but, given a patient in fair condition, and presenting one or more of the operative indications above, the ideal operative procedure consisted of the following steps: (1) A long skin incision excising the wound of the soft parts. He had always followed the wound of entrance. (2) Resection of 10 cm. or more of a single rib, resection of all fractured ribs, control of bleeding from the parietal wall. (3) Wide opening of the pleural cavity and careful removal of loose bone fragments from the region of the wound. (4) Complete evacuation of the hemothorax. Removal of foreign bodies if lying freely in the pleural cavity. (5) Inspection of the lung; removal of bone fragments and foreign body from the lung tissues; excision of the wound tract in the lung if possible; resection of the injured lung tissue if necessary; careful suture of the lung with a deep and pleural layer of sutures. (6) Complete closure of the wound without drainage, by muscle plastic if necessary. It might be noted in passing that the through-and-through wounds perforating the entire lung did not yield themselves to the treatment outlined under (4). The treatment of these cases consisted in as careful cleaning of the tract as possible and control of hemorrhage. As regards closure without drainage, he had had an excellent opportunity to note wounds in which the pleura was sutured but the soft parts left open. Over a third of them had become infected, with a resulting pleural infection. As would be noted later, this did not occur if the chest was completely closed. The non-operative treatment of the second group consisted in absolute rest in bed, morphine to induce quiet, measures to combat shock, repeated aspiration for cultural purposes, and repeated larger aspirations beginning on the third day and continuing until the hemothorax was completely evacuated. When cultures showed infection of the hemothorax, rib resection and drainage was immediately done under local anesthesia, Carrel-Dakin treatment of the cavity was instituted, and the wound was closed by secondary suture as soon as the cavity, as proven by cultures and smears, was sterile. Of the 160 cases, ten were admitted in a moribund condition and died within an hour untreated. Forty-five cases presented one or more of the positive operative indications mentioned above and were immediately operated upon. Seventy-five per cent. of them had open sucking wounds and were seriously shocked; yet in a majority a fairly complete operation was done. Twenty-five per cent. of the cases died, chiefly from shock and other serious injuries. Seventy-five per cent. recovered. It was a fact worthy of comment and indicating the adequacy of the complete operation as outlined above that in the cases personally operated upon by him there was not a single instance of pulmonary, pleural, or chest-wall infection following operation. The wounds healed per primum. The lung was completely expanded within a week or ten days. In the entire series no special anesthesia apparatus was employed and there was no respiratory accident. The lung was not distended nor the air in the chest aspirated at the end of the operation. One hundred and fifteen cases, including ten moribund on admission, were considered belonging to the non-operative group. From all causes, and I include cases dying, from other injuries, 18 per cent. of this group died; if we exclude the cases moribund on admission, 8.5 per cent. died. Fifteen per cent. of these 115 cases developed secondary infection in association with hemothorax and were subjected to imme-

diate rib resection and drainage. The cavities in these infected cases were sterilized and the wounds closed before the patients were discharged. The total mortality in this series from all causes was 20 per cent. If the cases moribund on admission and dying untreated were excluded it was 13 per cent.

2. War Wounds of the Chest.—Dr. CHAS. GORDON HEYD of New York read this paper by invitation. All wounds of the chest were potentially infected. Modern surgery, however, was able to obviate, inhibit or prevent infection if the surgeon was able to operate during the golden period of operability—the first eight hours, preferably four—between the receipt of injury representing contamination and the development of infection which ordinarily became apparent about the eighth hour. The ideal operation contemplated (1) debridement of all soft tissue about the orifice of entry or exit, particularly all portions of contused, necrotic or infiltrated tissue in or about the area of the wound; (2) the regularization of all bone ends; (3) complete esquillectomy or the removal of all bone fragments, particularly the indriven spicules of bone in the lung or pleural cavity; (4) the removal of the foreign body, unless smaller than the nail of the little finger; (5) a debridement of the traject in the lungs and, if badly infiltrated or lacerated, resection—partial or complete lobectomy; (6) adequate surgical and anatomical repair of the lung by suture; (7) complete toilette of the pleural cavity, removal of blood, foreign bodies, fragments of bone, portions of clothing, etc., many times lying free within the costophrenic sinus or impinging upon the opposite chest wall; (8) repair of the diaphragm and such intraabdominal exploration as would seem indicated; (9) the hermetical closure of the wound in the chest wall by any of the accepted methods. A satisfactory classification of war wounds of the thorax could be arranged as follows: 1. Perforating wounds, through and through, due to bullet; 2. Perforating wounds, through and through, due to shell fragments; 3. Penetrating wounds, with retention of large foreign body; 4. Penetrating wounds, with retention of small foreign body; 5. Tangenital wounds; 6. Cave-in, stove-in or crushed-in thorax; 7. Sucking wound or open thorax; 8. Combined abdominal or multiple wounds. In his experience there were operatively proved injury to the chest, 51 cases; gunshot wounds, 40, with 15 deaths; bullet, 4, with 1 death; undetermined 7, with 2 deaths. The types of injury were perforating, 23; penetrating, 17; tangenital, 2; cave-in, 2; thoraco-abdominal, 7. Total mortality, 18. Mortality by type of injury: tangenital wounds, 2, with no deaths; perforating wounds, 23, 6 deaths; penetrating wounds, 17, 6 deaths; cave-in, 2, with 1 death; thoraco-abdominal wounds, 7, with 5 deaths; admitted in pronounced shock, 19, with 8 deaths; admitted with sucking wound, 15, with 11 deaths; hemothorax, 28, with 12 deaths; hemopneumothorax, 5, with 2 deaths; the ribs were fractured in 18, with 8 deaths; the scapula 6 times, with 4 deaths. The average duration between injury and arrival at hospital was 19 hours; the earliest time was 4 hours and the longest time was 96 hours. A summary of the surgical indications for operative intervention could be tabulated as follows: 1. The closure of sucking wounds of the chest wall irrespective of the retained foreign body or the mechanism of production of the injury. 1. Continued bleeding or unusual hemorrhage. 3. Grossly infected, contused or contaminated wounds of the soft tissues. This variety eliminated the cases with a clean cut rifle bullet wound or the penetrating type of wound due to small shell fragments. 4. Wounds with fracture of the ribs, clavicle, scapula or vertebra, complicating the original or primary injury. 5. The retention of foreign bodies other than small éclat. By small was meant a shell fragment certainly not larger than the nail of the little finger. 6. The onset of a progressive hemopneumothorax. 7. Stove-in or crushed-in chest with multiple fractures of many ribs whereby the bone ends protrude into the pleural cavity bringing about a laceration of the lungs. In wounds in the scapular region perforating high up between the vertebral column and the scapula it was rather difficult to obtain adequate access to the pleural cavity. Trephining the scapula proved a very unsatisfactory procedure and excision a needless loss of bone substance. It was much better to divide the rhomboid muscles, the serratus magnus and the latissimus dorsi at the lower angle of the scapula and to throw the scapula upwards and outwards. If the nature of the wound would permit resection of the fourth or fifth rib was carried out from the midscapular line upwards to the posterior axillary line. Where an injury was low down with compound comminuted fracture of the sixth, seventh or eighth rib in the midaxillary region, then the incision was enlarged by resecting the seventh rib. Through such an incision the pericardium was sutured twice, and in another case a large transdiaphragmatic hernia was replaced with ease. When the diaphragm was injured well out in the costophrenic sinus the central portion was occasionally sutured to the parietal pleura. This technique was employed only in combined thoracoabdominal cases and where it was essential to close the pleural cavity and at the same time insert gauze into the renal fossa or into the liver. Rarely a loss of substance of the diaphragm could be repaired more easily by suturing the lacerated edge to the parietal pleura than by closure of the defect.

III. Thoracic Surgery in War: 1. Lessons Applicable in Civil Practice.—Dr. SAMUEL ROBINSON of Santa Barbara, Cal., in presenting this paper, said the association might well be grateful for the contributions to thoracic surgery resulting from the late hideous war. It was an ill wind that blew no one good. It behooved us to elicit from the voluminous and often varied experiences conclusions applicable not, it was hoped, to future wars, but to civil practice. The handling of gunshot wounds of the chest, now so greatly improved by the teachings of war, was, alas, one of the least vital problems in times of peace. The bullet wounds of civil life when not immediately fatal, would be treated much as before. The shell fragment inducing the intrathoracic lesions which had presented the gravest problems in the therapy of war, might concern us no more. And although thoracic surgery of war which this association chiefly labored to combat had had little to do with those chronic diseases, other than that of empyema, he rejoiced to note that certain facts established by the war would be applicable in the struggle against these diseases of civil life. Of these war contributions to thoracic surgery the essayist confined himself to the discussion of wide open pneumothorax and of pleural infection. The wide open, socalled blowing wounds of the chest were improperly treated at the early part of the war. The success following the immediate, though temporary, closure of these wounds in 1916, emphasized certain principles in intrathoracic surgery which might well attract attention. Surgeons were at first misled by the old conception that an open pneumothorax was a fortunate occurrence associated with laceration of the lung, resulting in the collapse of the lung and the consequent limitation of hemorrhage. The difference between a closed and an open pneumothorax was evidently not appreciated. A bullet wound of the chest might be accompanied by a certain degree of lung collapse, either from a temporary entrance of air through the wound or from the escape of air from a lacerated lung, or from the compression of a hemothorax. The spontaneous closure of the chest wall opening in such perforating wounds sometimes resulted in a closed pneumothorax which was an ideal condition for the control of lung hemorrhage. The open pneumothorax associated with blowing wounds, however, added certain dangerous features which were not at first recognized. Death resulted in the earlier cases not always from hemorrhage but often from the asphyxia resulting not only from the loss of inflation on the wounded side but also from the restricted work of the lung on the sound side. Eventually it became apparent that a prompt though temporary closure of the gaping shell hole in the thorax not only saved many lives, but relieved the distressing symptoms of hopeless cases. The cyanosis and dyspnea were promptly relieved, the heart action was improved, and the mental anxiety and emotional shock alleviated. The improvement of surgical resistance consequent to the preliminary closure of the wound permitted subsequent operative procedures for the arrest of hemorrhage, for the extraction of projectiles, and for the repair of the lung. In animal experiments we were inclined to regard the phenomena associated with wide

open pneumothorax as due to the mobility of the mediastinum resulting in the movement of this partition toward the uninjured side at that moment when the sound lung required for its inflation that all the walls of its pleural cavity remained fixed. Although the mediastinum in man was more rigid than in animals, the work of the sound lung, nevertheless, was greatly restricted in the presence of a wide-open pneumothorax. Disturbances in the pulmonary circulation following this condition, with overwork of the right heart, were also responsible factors in the fatal outcome of blowing wounds left open. Analogous to this demonstration of the dangers of a wide-open chest associated with blowing wounds were the fatal consequences resulting from wide open drainage of empyema associated with the hemolytic streptococcus pneumonias. The death rate in the early part of this epidemic following the usual empyema drainage technique was appalling. Here again the asphyxiating effect of an operative blowing wound was demonstrated; the septic fluid was generally thin, the lung was often only slightly adherent. The lung of the opposite side was suddenly overworked, and this asphyxiating effect, added to the already toxic state of the individual, generally resulted fatally. Just as it was finally learned that blowing shell wounds should be promptly, though often temporarily closed, it became apparent in the streptococcus empyemas that a wide-open wound should be avoided; that frequent aspirations were necessary preliminaries to drainage; that drainage should not be established until the fluid was thickened and the exudate had become sufficiently plastic to prevent complete collapse of the lung. Even when drainage became necessary suction devices were of greater value than in the routine treatment of empyemas following the pneumococcus pneumonias of civil life. For many years it had been recognized that a sudden wide open drainage of a thin empyema fluid, particularly in children, was a matter of some concern. But here again the war had thrust before us a new problem demonstrating that in certain infectious diseases, as well as in traumatic open lesions, a persistent, wide open pneumothorax might serve as a fatal accompaniment. The dangers of open, postoperative pneumothorax were again recognized in connection with extensive intrathoracic operations for the removal of projectiles from the lung and pleural cavity. If at the end of such operations the pleural cavity was left open for drainage the outcome was obviously endangered, and ere long it became the established custom to close the chest wall tight after operations upon the lung, although it was obvious that infection had been carried into the chest and must be taken care of either by general resistance or by subsequent aspirations or drainage. It had soon become apparent that if septic fluid accumulated following intrathoracic operations for shell wounds it could be removed subsequently, but that if drainage were established at the time, the intrathoracic negative pressure would be destroyed, lung reexpansion would be limited, and the excursion of the sound lung would be deleteriously hampered. These three examples in the treatment of war wounds and streptococcus pneumonias of the disastrous effect of wide open pneumothorax had made a profound impression upon our minds, and it behooved us to profit by these teachings in our future intrathoracic work of all sorts. It had occurred to him that we might be persuaded by these particular war teachings regarding open wounds that in our attack upon intrathoracic pathology of civil life we might more often perform several stage operations, knowing that in the interval between them if the chest were closed tight we would not thereby increase the risk of death from sepsis, but that we would on the contrary stimulate both lung and heart action, which thoracic operations were so prone to derange. The war had impressed upon us the importance of avoiding persisting open pneumothorax. Inasmuch as drainage of the pleural cavity provided a postoperative pneumothorax, the problem was presented in the earlier part of the war as to whether drainage was necessary for the purpose of removing infection despite the dangers of pneumothorax associated with it. In other words, the old problem was reawakened as to whether open pneumothorax or the retention of infection was the greater menace to life. Although the surgery of war had added further proof that the peritoneum had extraordinary resistance to infection, it had also persuaded us that the resistance of the pleura to infection was greater than had been generally supposed. Frequent aspirations of infected material had resulted in recovery without eventual open drainage. It was obvious that when the greater portion of the infected pleural contents had been removed the pleura was often capable of resisting the infection which might remain. It had been demonstrated, furthermore, that the pleural cavity, unlike the abdominal cavity, might be mechanically cleansed previous to its closure after an intrathoracic operation. Some operators had employed simple swabbing out of the pleura with absorbent material; others had washed out the cavity with various antiseptic solutions before closing it. At the present time it was not possible to conclude that any one antiseptic had been of greater specific value in cleansing the pleura than another. Furthermore, the evidence was not yet conclusive that the antiseptic treatment of the pleura after operation had removed infection any more successfully than the mere mechanical cleansing. One might even argue that inasmuch as postoperative aspirations of the pleura had generally been necessary regardless of the handling of the pleura before closure, that the pleura might have withstood the infection in conjunction with aspiration even if no means had been employed to cleanse it before closure. It was conceivable that following civil operations for excision of portions of the lung for abscess and bronchiectasis, it might be advisable to swab out the opened pleural cavity both mechanically and antiseptically, even though the remaining lung might continue to feed infection to the pleura. Surely the tendency would be increased to close the chest after such operations and to rely upon subsequent aspirations of infectious fluid. A cleansing then previous to such closures might become a definite asset to our technique. Medical publications were now including extensive reports of the employment of Carrel-Dakin solution in empyema, and not a few conscientious surgeons were convinced that the convalescence in such cases had been greatly enhanced by the use of such methods of lavage. It was to be expected now that although pleural lavage had gradually become practically obsolete in the treatment of empyema prior to this war, many doctors would now employ antiseptic solutions for the irrigation of postpneumonic empyema cavities; the more enthusiastic would regard this treatment as essential. The problem of pleural lavage in civil practice would now be reawakened, but should it not be our inclination to continue to regard lavage as of problematical value? That a large number of cases of hemolytic streptococcus empyemas had appeared to convalesce more rapidly because of lavage could not be denied; nevertheless, great fears might be entertained that the practitioners would undertake to employ this lavage treatment in the commoner types of pneumococcus and streptococcus empyemas, regarding it as a cure-all in these cases. Surgical clinics would receive cases of chronic empyema with inadequate or ill-placed drainage which had been subjected for months and years to antiseptic irrigation, in which the attending physician had failed to recognize that any irrigation or any paste failed to close the cavity of any considerable size unless the mechanical conditions of drainage were adequate. With the added enthusiasm for lavage, men would fail to recognize that plastic operations were necessary in the presence of a thickened pleura and retracted lung and that such could not be cured by irrigation. Although the nature and extent of the discharge in chronic empyema cavities might be bettered by antiseptic lavage, wide open drainage at the bottom would remain a necessity to prevent septic absorption until such moment as further plastic procedures were necessary to obliterate the rigid wall pleural space. Was it true that the routine postpneumonic acute empyema of civil practice which closes spontaneously in a large proportion of cases would do so more effectively with lavage than without? If such were the case lavage would again become as popular as it was twenty-five years ago. However this might be, one should not lose opportunities to convince one's fellow practitioners that when the cavity of an acute empyema does not close in due time, continued

lavage with any one of the many solutions which the war has occasioned will neither counteract the absorption from a badly drained cavity nor close such a cavity when prolonged infection has produced the characistic signs of chronic empyema. The war had afforded also innumerable contributions of instrumentation, technique, anesthesia, and the like. He had selected what appeared to him to be important problems for thoughtful consideration and application.

2. Thoracotomy from the Standpoint of Repair.—Dr. JOHN L. YATES of Milwaukee, Wis., presented this paper by invitation. He stated that a satisfactory method of performing thoracotomy, which Dr. Meltzer held to be so desirable, must provide for recovery with virtually unimpaired function, with transient distress and disability and with negligible danger. Recovery without materially impaired function was possible when the movements of the thoracic parietes were unrestricted, when the intrapleural negative pressure was within normal limits, and when the pulmonary elasticity was preserved. The most important factor in preserving these three necessities was the utmost restriction and limitation of pleurisy. Since the majority of thoracotomies were undertaken for the cure of pleurisy, and since pleurisy was the inevitable consequence of all thoracotomies and the most common cause of failure of this operation, it was the big problem to be considered. Thoracotomy from the standpoint of repair defined a method of operating which would permit a tissue healing compatible with the return of function. This entailed the following essentials: (1) An incision so placed that parietal mobility would receive the least restriction; (2) So that parietal healing should occur with the minimum of irritation and therefore with the greatest certainty; (3) Intrathoracic manipulations should be designed to reduce pleural irritation in so far as possible; (4) Differential pressure should be provided so that at the end of operation negative pressure was reestablished and with it the return of function of respiration and pulmonary circulation was guaranteed; (5) The nitrous oxide and oxygen method of pressure analgesia developed by J. T. Gwathmey was at the present time the method of choice; (6) Closure of lung after any intrapulmonary operation should be such that immediate function was possible, hence no mass suturing was permitted; (7) Closure of parietal pleura should be such that accurate serosa to serosa approximation was obtained without undue suture tension which was attainable best after a rib exsection; (8) Every thoracotomy was followed with an accumulation of fluid which was unmistakably evident by the second day. Primary drainage of the pleural cavity prevented the accumulation of this excess exudate; (9) Primary drainage of the thoracic cavity in the simplest form was a tube inserted intercostally in an airtight fashion and armed with a one-way valve. Primary drainage by this means was indicated at the end of thoracotomy whenever there was any likelihood of undue pleural irritation, and as this danger was more often present than absent, routine drainage was probably advisable.

3. Full Exploration of the Thorax in Recent Wounds of the Lung.—Dr. HOWARD LILIENTHAL of New York advocated a large incision in the seventh intercostal space, with a wide rib retraction by means of a powerful spreader. Through such an approach all parts of the pleural cavity could be explored, and if a detailed operation were necessary the wound might be further enlarged by posterior section of one or more ribs. In the majority of cases the rib cutting was not necessary, merely the wide incision and rib spreading. Through this opening even the wounded pericardium might be explored and sutured. When the operation was completed the wound in the thoracic cave could be easily closed by approximating the rib with pericostal sutures. A pleural suture was not required provided the edges of the pleural wound were turned outward and held while the ribs were crowded together. This operative method had given him great satisfaction in the evacuation hospital work. He did not believe that the resecting of the axillary portion of the fourth rib, which was a favorite thoracotomy of some surgeons, was as desirable, as less access to the remote portions of the lung could be obtained through it. In doing this wide form of thoracotomy he preferred some form of differential pressure. He gave choice to positive intrapharyngeal insufflation.

Dr. NATHAN W. GREEN of New York had observed, in reading the literature of the surgery of the lung and pleura, that many men recommended operating under local anesthesia because, in the first place, the patient could control the condition of the lung at the operator's request. Another reason was that possibly less poison was superimposed upon the already existing infection, with less poisoning of the leucocytes and consequent diminution of their phagocytic action, notwithstanding the large operation to be done. If one operating under local anesthesia attempted to take hold of the patient's lung, the patient would not permit it; he would complain bitterly of deep-seated pain. The best alternative was to use general anesthesia at the same time having substituted for the patient's volition an apparatus by which, so to speak, one could blow up the lung or hold the breath, or let it out. The apparatus that accomplished this was an apparatus for differential pressure. It was most important, when one was operating in the chest cavity, that he be able to control the volume of the lung, namely, the degree of expansion or of collapse. This in itself was the most positive reason why differential pressure should be used in thoracic surgery.

Dr. MEYER asked that thoracic surgery in civil life be considered principally. All recognized that under the stress of war the majority of our colleagues who had the courage to proceed actively in thoracic cases had to go in, the way they did, because apparatus were not at hand. But now we were confronted by the question whether it was correct, whether it was advisable to apply the experience gained during the war, near the battlefields, to civil practice. Was it advisable to say, because the experience had been gained in war surgery, that one *might* get along in this 50, or perhaps 40 to 45 per cent. of patients with injury of the lung who did not die on the battlefield without the use of apparatus, that the differential pressure method was superfluous—an unnecessary ballast?

Dr. HOWARD LILIENTHAL of New York had already gone on record in this meeting as to the necessity of differential pressure in operations opening the thorax. In addition he stated that if the thorax was to be widely explored, and if one did not have means of keeping the patient's respiration as nearly normal as possible by some form of differential pressure, there would be times when one would have to close the wound on account of the threatened asphyxia. It would be necessary either to close the wound or to make traction on the lung. Adhesions in the thorax were common, especially in the apex, and that was one reason for the absence of trouble in many instances in which no differential pressure was employed. Other cases were handled quickly, and for only a small part of the time was the lung entirely free so that it could collapse. It was not quite fair to judge differential pressure methods by the war surgery. In the latter class of work he had had with him a foot bellows and apparatus for intrapharyngeal insufflation. The method was easily learned by the nurse anesthetist. One did not need to have the most complete form of equipment. The danger of overdistention was slight, and often when the patient coughed or strained it would be noted that the lung expanded more completely and forcibly than one would dare to expand it artificially. With the chest open a manometer was necessary. In one case of gunshot wound of the chest, in which the bullet had entered below the left nipple and lodged between the ninth and tenth ribs, when the differential pressure was omitted there was clearly embarrassment of respiration, which was immediately relieved when differential pressure was started again. The apparatus used was only a Paquelin bulb with secondary chamber. The bullet was removed, and the lung disinfected, and the man recovered with scarcely a symptom. Even at the front one could always carry a Paquelin bulb. Dr. Heuer's results were certainly brilliant, yet one wondered whether possibly even a better record could have been made with the aid of differential pressure. In civil practice it was absolutely wrong and unsurgical not to be prepared with this simple expedient for saving life.

Dr. MEYER asked that those tell their experiences who had seen thoracic surgery well accomplished in civil life without differential pressure apparatus, and who had not observed any untoward results. This ought to be known. Perhaps on the basis of their favorable experiences it might be possible to throw overboard what was now considered essential.

Dr. CARL A. HEDBLOM of Rochester, Minn., had not had much experience with differential pressure in thoracic surgery. During the past year he had operated on a series of cases of chronic empyema, doing a decortication by the rib spreading exposure. He could not get Dr. Lilienthal's retractor, so he and Mr. Little had made one which he had found very serviceable. In these cases there was no respiratory difficulty even after the affected lung had been entirely mobilized. The thickened mediastinum made possible adequate functioning of the sound lung. In case of intrathoracic tumor he had used intratracheal insufflation with success. He had had no experience with pharyngeal insufflation, but the method appealed to him as very practical in cases in which things went wrong when operating under local anesthesia. Recently, in suturing the lung to the parietal pleura in a case of abscess he had accidentally opened the thin visceral pleura. He had no particular difficulty, but if he had had a pharyngeal insufflation apparatus for inflating the lung he would have been more certain of having securely sutured the lung to the parietal pleura.

Dr. JOHN A. HARTWELL of New York asked if the question did not resolve itself into physiological factors. In man when the chest was opened on one side the elastic fibres in its structure tended to force the air out of this lung and it collapsed. Graham had shown not only on the dog but on the cadaver, that the other lung also was influenced by the inrush of air. In other words, the mediastinum was not in the least fixed and the open pneumothorax transmitted its influence directly through it. If the opening on the one side were as large as the opening into the trachea the man would not get sufficient air into the two lungs to live comfortably. Therefore, by making the operative opening eight and a fraction square inches his ability to take air through the trachea would be so much compromised that he would be liable to collapse. In the dog, when the area of the opening in the chest equalled that of the open glottis, the dog suffered respiratory difficulty and promptly died unless differential pressure were used. Therefore, when it was necessary to do an operation in a case in which the normal lung pleura and mediastinum were to be dealt with, none of these structures being thickened or rigid, it would seem absolutely essential and without discussion that one must be able to force air into the man's lungs when he himself could not do it; in other words, when the operative opening approached eight square inches. The simple pharyngeal apparatus of which Dr. Yankauer had spoken in his paper, would meet all the requirements. The discussion had been confused because different conditions were being considered. Empyema or other inflammatory conditions presented an entirely different situation because the inflammatory adhesions and thickenings prevented the bilateral disturbance mentioned. Under these circumstances it was entirely justifiable to open one pleura without differential pressure, but, when possible, the simple pharyngeal apparatus with gas-oxygen should be at hand. Even if one made a large opening in the chest, as suggested by Dr. Lilienthal, and did not have a free intake of eight square inches, the man would be able to get sufficient air into his lungs to prevent disaster.

Dr. MEYER said this also seemed to answer in cases where there had been a long continued inflammation. He referred to the wide resection of the chest wall according to Schede, in cases of old chronic empyema, particularly in tuberculous patients. He was of the opinion that even there, where the mediastinum seemed to be fixed, if one operated on the left side and exposed widely the pericardium under atmospheric pressure, these patients must be assisted with the help of physical means in the first 24 or 48 hours, in order to get over the effect of the operation by this difference in the air pressure. He was convinced that with it one could tide these patients over the worst.

Therapeutic Hints.

Eczema.—In a discussion of the treatment of eczema Eisenstaedt gives measures which have been found safe, and in the majority of cases satisfactory in his own work. The external treatment of eczema, he holds, depends on the intensity, the stage of the disease, and its duration; in other words, on the clinical symptoms as interpreted from a pathological point of view. Those substances which produce irritation of the skin should first be eliminated from the patient's surroundings. In severe and generalized or extensive cases the patient should not wear starched linen or other articles of dress which rub against the inflamed parts. He should be confined to his room and should not exert himself, so as not to become overheated and thus produce hyperemia, which aggravates the condition. The skin should be treated with preparations which tend to alleviate the itching and to cause the inflammatory process to retrograde. There is no specific medication for the disease, each case requiring therapy based on the clinical picture at the time the patient comes under treatment. The physician should not change too rapidly from one type of medication to another.

Rickets.—John Laird, discussing the treatment of rickets, says when the time for prevention has passed, and the disease, through neglect or improper treatment, has made its appearance, the digestive organs must receive first attention. It is desirable that the bowels be gently cleared of all fermenting refuse matter, and a diet prescribed which will be suitable to the weakened condition of the stomach, while the child should be kept warm. When an excess of carbohydrates is given to the infant, fermentation with acidity readily takes place, and causes griping pains, often followed by diarrhea. This abnormal acidity in the results of stomachic digestion, on passing into the intestine, tends to neutralize the activity of the biliary and pancreatic secretions, and thus interferes with the digestion and absorption of the fatty elements of food, which are so necessary for the rachitic child. To correct this excessive acidity in the early stage of rickets is a matter of great importance. Laird, acting on the principle laid down many years ago by Ringer, that "acids given shortly before a meal check stomachic acidity," remembering at the same time the need that exists for phosphorus and lime salts in the rachitic child, has given with much success the following combination of remedies:

℞ Acid phosphoric dil. 3i
Liq. calcis saccharat. 3iss
Syrup. aurant. 3ii
Aq. chlorofomi. .....ad ℥iv
M. A teaspoonful to be given in a little water every third or fourth hour, shortly before meals.

A soluble phosphate of lime is formed with excess of phosphoric acid, and, on shaking, a clear solution is obtained, which is readily taken by children. When the digestive system is in good working order, cod-liver oil, in small quantity, either alone or combined with malt extract, will be of service. If given while the excessive acidity in the stomach prevails, it will only prove harmful.—*The Prescriber.*

Miscellany.

Professor Boeckel and Strassbourg University.—The old French medical school at Strassbourg before the German conquest in 1871 had as members of its faculty E. Boeckel, Sedillot, Küss, Stoltz, Schutzenberger, and numerous other men eminent in their day. Of all this number probably few or none survive, at least in a state of activity, with an exception in Boeckel, who with his brother was a distinguished operator. The surviving member was honored recently by the present French faculty on the occasion of his visit to Strassbourg and an address of welcome was delivered by Professor Teissier. The visit was described as a "holy pilgrimage" and Boeckel appeared in the uniform of a French military surgeon, he having, despite his age, served in the XIV legion. Surgeon General Delorme who had known him under the old French régime also made a speech upon this occasion, in the course of which he spoke of the great services of the old French faculty which had peopled Alsace-Lorraine with distinguished practitioners including many French army surgeons—Strassbourg having been the seat of the school for military practitioners. Two distinguished military alumni were Villemin, discoverer of the contagion of tubercle and Laveran of malaria plasmodium fame.—*Gazette des hôpitaux.*

Black Magic in France in the XVI Century.—To conjure the spirits of the dead and command infernal spirits which have never been incarnate are practices coeval with the world itself. In time these practices were used to exploit the credulous. Black magic goes in cycles and in the XVI century a cycle of great extent and intensity appeared in Europe. There were during these times as many as 30,000 alleged sorcerers in Paris alone and tenfold that number in the whole of France. The more these people were prosecuted the more they flourished. The widow of a marshal of France who evidently suffered from hysterical grand mal was burned alive in Paris. In such familiar episodes the accusation was often that the victim had bewitched people by wholesale. The truth appears to be that the victim's convulsions had caused imitative behavior on the part of young girls in convents, etc. Durodié in the *Gazette hebdomadaire des sciences médicales de Bordeaux* for February 8, 1920, xli, 6, in connection with this subject has given an account of an alleged demoniac, a young woman who in 1599 was well known in a certain quarter of Paris for her habit of convulsions. She was said to be possessed of three separate devils. She was regarded by the authorities as a victim and not as a sorceress and many attempts were made to exorcise the spirits. She even went before a board of mixed theologians and medical men and diverted them by the most extraordinary convulsive phenomena which included leaping and contortion, accompanied by lugubrious cries suggesting various animal species. Theologian Marius tried to calm her by speaking in Greek whereupon Medical Doctor Mareschal addressed her in Latin, putting certain subtle questions in that tongue. Marthe, the victim, was unable to reply, whereupon the board decided officially that she was not possessed. As she had intimated that she could answer better in another place, she was taken into a chapel where she was secretly watched. She had convulsions as before and was later found to be markedly anesthetic to the needle test. After some delay there was a public exorcism but Marthe with great agility broke away from the throng. She was recaptured and later said that the spirit had left her, but soon resumed her convulsions. Prolonged observation was then decreed during which her behavior was of the most placid type, so that she was pronounced a fraud. She was handed over to the custody of her father under the supervision of the courts.

History of Smallpox and Vaccination in Venezuela.—According to Rosales, variola was first officially shown to exist in this country in 1572, when it was enumerated with other endemic affections which attacked the public on a large scale. The disease had been brought to the country by a Portuguese sailor, and did not vanish until 1580. It reappeared in 1588, this time from New Grenada. It reappeared three times in the seventeenth and three times in the eighteenth centuries, and in 1658 practically killed off the slaves. In the nineteenth century there were many epidemics—so many that it is doubtful if the disease ever ceased outright. Since 1906, while the disease is never wholly absent, there has been no mass incidence. The Indians have always been the chief victims. It is said that the first attempts at vaccination were made in 1769, but this doubtless refers to the inoculation, not of cowpox, but smallpox. We do not hear of genuine vaccination until 1803 and in the following year Balmis, called the Spanish apostle of vaccination, visited Caracas with governmental authority and vaccinated many people. Very puzzling were several deaths of prominent people five or six or more days after vaccination without the least evidence of any local or general outbreak. There were four of these cases. Another subject, although vaccinated, died of smallpox contracted in the usual manner, the interval having evidently been too short for protection. Still another vaccinated subject apparently developed both affections side by side. The preceding were all vaccinated at the same time and place, by the arm-to-arm method. They are the more difficult to understand because several others showed the usual cowpox and were afterward immune to smallpox. We next hear of vaccination in 1818-19, when many subjects were vaccinated by the arm-to-arm method. No untoward events are mentioned, and an Englishman, Forsyth, seems to have been in charge, and to have been secured by the Federal Board of Health. In 1841-2 no less than 24,000 individuals were vaccinated. In 1865 fluid vaccine was first received from London. In 1881 vaccination was made compulsory in Venezuela. In 1897 a Pasteur Institute was established and vaccine was made in the country for the first time; and soon afterward, the supply being insufficient, a special vaccine institute was projected, but the war retarded the movement, and not until quite recent times has the Bacteriological Laboratory of the Board of Health taken over this duty. During the first half of 1919 a million persons were vaccinated. —*Anales de la Direccion de Sanidad Nacional.*

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SOME PRINCIPLES SELDOM RECOGNIZED IN THE TREATMENT OF SYPHILIS AND THE SYPHILITIC.*

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Oh! Syphilis, when wilt thou be understood?
—Ricord.

IT is neither my intention to offer here any plan nor to laud any drug, but rather to discuss briefly some of the principles now utilized and other principles seldom recognized in the treatment of syphilis and the spyhilitic in any period of the infection. It seems to me that irrespective of the time that may have elapsed after infection, the same principles should govern our treatment of the individual, no matter what form of medication we may decide upon to administer to him. Since we have no certain means of knowing the termination of syphilis in individuals who have acquired it *in utero* or at some time after birth, all such individuals are here considered syphilitics.

Recognizing an individual to be a syphilitic, the questions naturally arise: How shall we treat him and over what period of time? In other infectious diseases our therapy should be, and usually is, founded on knowledge of the individual's health and disease tendencies as disclosed by a study of his family history; a study of his life, of his reactions to his environment, of his habits, of his occupation and on knowledge of his total physical condition. This principle seems axiomatic in its application to the treatment of disease whatever its nature may be. Strange to say this principle at the present time is not often recognized in the treatment of the syphilitic, since the treatment is based mainly on one seeming essential fact: the individual gives a positive Wassermann reaction. With this limited knowledge concerning him, so-called "specifics" are administered in the course of time until the Wassermann reaction becomes negative. The many negative Wassermann reactions in any period of the disease, relatively speaking, even in the presence of active manifestations of syphilis and the possible presence of disease other than syphilis in the syphilitic, render the use of this or any other laboratory sign wholly illogical as the essential indication for, or guide to, treatment.

*Read before a joint meeting of the St. Louis Neurological Society and the St. Louis Society of Internal Medicine, February 23, 1920.

There is no denying the fact that the present-day objective in the treatment of syphilis is the certain "cure" of the disease by chemical means; hence, in trying to carry out this objective, the syphilitic during his periods of treatment is often lost to view. As a profession we have never had much concern about him after the "cure" has been wrought, and never have we had so little concern as at the present time. Many of us are acquiring the habit of disregarding the syphilitic as an individual prior to, during, and after treatment, and of treating the positive Wassermann reaction rather than the individual. Such pernicious therapeutic principles can only have the effect of giving to the syphilitic an unwarranted sense of security and of commercializing the treatment of the disease. Mainly since the advent of the Wassermann reaction and arsphenamine, syphilitics are taught to believe themselves cured when the Wassermann reaction is negative, and are thus made to feel safe from further manifestations of the infection as never before in the history of syphilis. Many physicians believe, and consequently many individuals are taught to believe, that a positive Wassermann reaction is an indication for intensive treatment and that a negative reaction, in the absence of gross signs, is a contraindication for any treatment whatever. The syphilitic is thus becoming a sort of laboratory animal. Basing their propaganda upon such teachings and practices on the part of many in the profession, some laboratories are now commercializing the treatment of syphilis. Some of them are ready to take over the treatment of syphilis, not only in the early, but in the later, periods of the disease, so long as these are accompanied by a positive Wassermann reaction. Shall we blame laboratories engaged in such harmful and pernicious practices for reaping a commercial harvest gleaned from such practices when the Wassermann reaction is used so largely by the profession, both as an indication for, and as a guide to, the treatment of syphilis? Rather should we blame ourselves and pause to reflect on the natural history of this—*the most insidious of all diseases,* and during our periods of reflection ask ourselves at least three very serious questions:

1. Have we any justification for the present-day teachings and practices in the treatment of syphilis?

2. Are our brilliant so-called "cures" now, or have they ever been, with but few exceptions, other than symptomatic cures?

3. Have we any biological or clinical evidence justifying the conclusion that the favorable influence of remedies in human syphilis is dependent upon any other factor than their influence on the defensive mechanisms inherent in the syphilitic?

Each of these questions may, in a measure, be answered by recalling the natural history of a syphilitic infection, either aided or unaided by remedies. Such symptoms as malaise, indisposition, general bodily discomfort, pain now here and now there or definitely localized, mental and physical inadequacy, torpor, gastric disturbances, dizziness and slight elevation of temperature occurring in some individuals usually six to twelve weeks following the infection, are considered *constitutional manifestations* or the reaction of the whole organism to the spirochetal invasion. These symptoms usually become less pronounced and subside in a short time, whether the individual has treatment or not; the local manifestations, if any have occurred, disappear, and, as a rule, in the course of time a relative degree of health returns. The patient thereafter considers himself cured if he has had what his physician believes to be adequate treatment; or, if his disease has not been recognized by himself or his physician, he remains in any case oblivious to it and enters the so-called *latent periods* of the disease. In some individuals such periods develop very early; in some very late, and in others, fortunately in only a few, not at all. Arbitrarily fixed, the so-called latent periods begin from one to five years after infection. Careful inquiry into the personal histories of those known to be syphilitic during these periods and even of many of those to whom we have given what we consider adequate treatment, discloses in many, breaks in health which can often be interpreted as recurrences of the constitutional manifestations of the disease.

When we seriously study the recurring constitutional manifestations of syphilis, we shall find them to be by far the most frequent and among the more important manifestations.[25] They are among the more important, because they seem to be Nature's warnings and seem to represent the reactions of the whole organism to the virus—its struggle to overcome the infection or to establish a better tolerance for it. It is a clinical observation, not always appreciated, that during the so-called latent periods of syphilis its more serious manifestations seldom develop without warnings. Our recognition of recurring constitutional manifestations will often enable us to aid Nature in her efforts and thus prevent, by well-directed therapy in many individuals, the more serious manifestations. Clinical experience in the natural history of syphilis, which has been accumulated by many workers, should lead us to the realization that scarcely any organ or tissue may remain exempt throughout the so-called latent periods of the infection; that its frank manifestations may occur or recur at any time in the life of the infected individual, however thoroughly we may have treated him in the earlier periods of his infection; that its subtle physical signs, such as cardiovascular changes, alterations in reflexes, in the special senses, sensation and pupils, pallor and pigmentations, etc., etc., may develop insidiously in many syphilitics in the course of years—in some early, in some late—after infection with or without definite subjective complaints; that studies of the life histories of many syphilitics show that they are often incapable of reacting in a normal manner to the stresses and strains of existence; that because syphilis is a chronic infectious disease, not a few of its subjects are individuals of lowered general resistance; that some syphilitics are potentially, and possibly inherently, either paretic or tabetic, or both; that a large number of apparently healthy syphilitics, however thoroughly we may have treated them, show positive Wassermann reactions and most of them definite physical signs after sufficient time has elapsed following so-called "specific" treatment and that we have no definite means of knowing when the one-time infected individual is free from his infection. It is particularly the insidious development of definite physical findings and the recurrences of constitutional manifestations in many individuals in the so-called latent periods of the disease which should cause us seriously to question the reality of such periods and never to lose sight of the constitutional nature and chronicity of a syphilitic infection. All clinical evidence is in support of the idea that the virus, once it has invaded the tissues of the body, so long as it remains, seldom, if ever, becomes wholly dormant—latent.

If the teachings of clinical experience be accepted, are they not in conflict with the idea of latency—an idea in which we have heretofore implicitly believed? The idea of periods of *relative tolerance* for the virus, meaning thereby an *excellent*, a *fair* or a *poor* resistance of the *whole* or *parts* of the organism but seldom an absolute resistance, seems to be a better conception: one more in accord with clinical experience and the natural history of the disease than that of latency.[26] The recurrence of constitutional manifestations and the development of subtle, though *definite signs* during the assumed periods of relative tolerance, are doubtless due to many factors, chief among which seem to be the *inherent resistances* of the tissues of the individual, his habits, his mode of living and his environment. If the first factor (inherent resistances) is defective and from circumstances becomes more so, the disease may pass beyond our control. The other factors (habits, mode of living and environment) may in many cases be controlled, and the first (inherent resistances) may often be improved by attending to the others with the result that a good degree of health can be established in the vast majority of syphilitics. But our control of any one or of all of these factors is seldom absolute; hence as a working clinical axiom it may be asserted that the individual, who has contracted a syphilitic infection either in utero or after birth, remains thereafter one of lowered general resistance.

When laboratory aids to diagnosis are used as evidence of cures, both the physician and the patient are in positions most insecure: The physician is led to feel that he need no longer be concerned about the *cured* patient, and the patient is led to feel that he need no longer be concerned about his disease. The patient may thereafter live as he will. He may marry, of course, since he is cured and this too with medical sanction! There is no denying the fact that many in the profession believe in their ability to cure syphilis wholly by chemical means, and they naturally grasp and utilize to the fullest extent all evidence which may be utilized as proof of such cures. It has, therefore, been easy to accept as evidence of cures, and without criticism, the evidence afforded by the beneficent diagnostic aids,

which have come to us in recent years through the laboratory. In this connection it may be mentioned that for years we have pointed with pride to the progeny of syphilitic parents—parents whom we have treated thoroughly and well. When the progeny disclosed neither Hutchinsonian teeth, interstitial keratitis, bone, joint, mucous membrane, or skin manifestations we believed we had found convincing evidence of our cures in the parents. Fortified by the absence of manifest signs of syphilis in the progeny and with a negative Wassermann reaction in the parents, many of us have found ample justification for the present-day teachings and practices in the treatment of syphilis. Those of us who have found ample justification in such evidence will continue to find it; will continue to be blinded by the glare of our therapeutic triumphs until we begin more generally to study the life histories of syphilitics, including those formerly treated thoroughly and well by us; until we begin to study the life histories of their wives and children, and until we begin to make intensive physical examinations of the several members of the family. A few studies have been made in this direction and some of these are recorded in the voluminous literature of syphilis.* Personal studies in these directions will appeal to the investigator stronger than words, and when made in sufficient numbers will cause many in the profession to be less certain about their ability to cure the disease by any drug or combination of drugs yet known to us; to have less confidence in the present-day teachings and practices in the treatment of syphilis; to recognize most keenly that most of our cures are symptomatic cures; to be less willing to give sanction to the marriage of a syphilitic, and to appreciate more fully than we do to-day that syphilis is *a racial poison* unparalleled by any other.

No one has ever contended that syphilis is beneficial for the race; on the contrary, it is coming to be universally recognized that syphilis is a germplasm or racial poison. We have heretofore considered it a racial poison only when the parents have been untreated or inadequately treated, and we shall continue to do so until we fully recognize syphilis as *a possible germ-plasm poison and as a familial disease.* When we find evidence of syphilis in the husband, wife or in both, we should adopt the principle of studying all of the progeny. In doing so, we should not content ourselves with serological studies and with searching for the usual signs of congenital syphilis in the progeny, but we should apply in these studies the knowledge we now possess in reference to certain laws of heredity, and in doing so ask ourselves these questions:

Is syphilis a germ-plasm or racial poison only in the progeny of the untreated or the inadequately treated; and do the progeny of the adequately treated wholly escape its blighting effects?

We know of no standard of normality by which we may measure individuals in reference to total development and adaptability to environment, except that standard disclosed by the parents or more remote ascendants. It is generally accepted as the rule in human and animal breeding that, in the absence of disease factors, "like begets like" in total development and adaptability to environment, and that healthy parents beget children comparing favorably with each other and with their parents in these directions. "A chip off the old block" is expressive of the expectation usually realized in the offspring in healthy human breeding. The parents and more remote ascendants, therefore, serve as firm foundations—as *biological standards*, by which the individuals of the race may be measured. I have repeatedly emphasized the importance of using such standards in our studies of the effects of disease in parents on the offspring, and have called these *comparative clinical and anthropometric methods.* When such methods are applied in syphilitic families, it is rare, indeed, to find a child meeting the usual expectation of healthy human breeding. To become convinced of this fact, one need only to make such studies in a few families wherein syphilis is known to be present in one or both parents and as a control in a few families where syphilis, other disease, alcohol, and other poisons can be positively excluded. Such studies will show the relative infrequency of the usually recognized signs of congenital syphilis in the progeny of syphilitic parents, but will show in many of such progeny *deviating characteristics* in total development and adaptability to environment, and that even the progeny of those whom we believe to have been adequately treated seldom wholly escape the blighting effects of the parental infection.

A prominent dermatologist, recently lauding arsphenamine, expressed the belief that by its use the period of treatment might be shortened and that marriage of the syphilitic might not be so long deferred. Our therapeutic triumphs have made us optimistic in the belief in our "cures," and the proof of this fact is best evidenced by the attitude of many of us toward the marriage of the syphilitic. We are at the same time most pessimistic about the future of individuals who fail to remain under rather constant treatment until the Wassermann reaction has become repeatedly negative. Before the Wassermann era, clinical experience had taught us that the syphilitic should remain under treatment three, four, or five years, and since this era, so far as we know, the nature of a syphilitic infection has not changed. It is safe to say that not more than 10 per cent.[21 26] of the syphilitics who come under medical observation in the early periods of the disease receive what is believed to be adequate treatment; hence the number of adequately treated cases is an insignificant number when compared with the number we believe to be inadequately treated and with the number who either ignore or are unaware of their infection. The truth of the matter is that no one can say when a syphilitic is cured, since clinical experience teaches that in any period of the life of the infected individual incident to the lowering of general or local resistance or independently of the one or the other, active manifestations may occur or recur, and these, too, in some, irrespective either of the manner or the length of treatment. Neither can we say when the syphilitic is no longer capable of conveying the disease to his wife and, if so, probably through her to his child. But this we do know: Serological studies of the one-time-known-to-be syphilitic are in accord with clinical experience in showing that a relatively large

*The most complete family study thus far published appears to be that of W. Raven (*Deutsch. Zeitschr. f. Nervenheil*, 1914, vol. 51, p. 314).

number of supposedly adequately treated individuals are still syphilitics; that some of the wives of such syphilitics are also syphilitics, and that some of the progeny of such syphilitic parents are likewise contaminated. Believing in our cures and resting contentedly in the presence of apparent good health, in the presence of a negative Wassermann reaction and in the absence of active manifestations, we come to regard the one-time-known-to-be syphilitic as cured, and thereafter he is no longer the object of medical observation and study. If he is cured certainly he may marry, since there can be no danger to consort or progeny; and if we later look at the consort and progeny at all, unless we find the usual gross manifestations, we construe the absence of such as evidence of the value of our therapeutic endeavors.

A consideration of the natural course of a syphilitic infection, modified as it often is and doubtless cured in some by treatment, appears to afford neither justification for the present-day teachings and practices in the treatment of syphilis nor for the belief that our cures in most cases are other than symptomatic, but it definitely points to the conclusion *that the same mechanisms of defense become operative in the presence of a syphilitic infection as in any other infection.* If the same mechanisms of defense are at the bottom of our so-called cures, then we have, in these mechanisms, rational foundations for our therapy. These mechanisms of defense (inherent resistances) may be so active in some individuals that they speedily overcome the spirochetal infection unaided by any medication whatever. These mechanisms of defense (inherent resistances) are, therefore, the syphilitic's most valuable asset in combating his infection. If this be true, then they should be most zealously guarded both by the patient and the physician: by the patient in his manner of living and in his cooperation with his physician; by the physician in his advice, in his use of drugs, and in his avoidance, if possible, of every weakening influence on these mechanisms.

Clinical experience daily teaches the beneficent effects of our remedies in the relief of some syphilitic manifestations, but it also teaches that it is possible through over-treatment to do harm. A medieval dream, renewed with delight by many in the profession on account of the discovery of arsphenamine, has proved in the light of clinical experience to be largely iridescent and founded upon theoretical rather than upon biological conceptions. Our medicinal treatment of syphilis is still largely empirical, and it will aid us and in turn it will aid the army of syphilitics if we recognize this fact. Clinical experience, as well as the natural history of human syphilis, teaches that in arsphenamine, mercury, iodides, iron, etc., etc., we have *remedies* merely—not *cures* in themselves of a syphilitic infection. When these drugs act beneficially in the treatment of syphilis, they appear to act as stimulators of the defensive mechanisms in man rather than as direct spirocheticides in him. So long as one may so adjust the remedy to a particular individual without over-stimulating and thus weakening or paralyzing his defensive mechanisms, remedies have an important place in the treatment of syphilis, but we must remember that our remedies are like two-edged swords—*they can be made to do great good* and *they can be made to do great harm.* It seems to me that the least important thing to do for a syphilitic, relatively speaking, is to give him medicine. I say *least* important, because the giving of medicine supplies only one of the many conditions underlying a well-directed therapy, regardless of the nature of the disease. The natural history of treated and untreated syphilis teaches that notwithstanding the absence of a natural immunity to syphilis in man, he, nevertheless, seems to be possessed of unusual inherent resistances to, or of a natural tolerance for, the virus of syphilis. If this be true, we may deduce two fundamental principles in the treatment of the syphilitic—first, *the principle of making an accurate survey of the individual's inherent resistances through a study of his family history, of his past and present reactions to his environment and of the sum-total of his physical condition;* second, *the principle of strengthening the individual's inherent resistances by every possible means throughout his natural life.* Both these principles seem to be neglected when the Wassermann reaction is used as an essential indication for and a guide to treatment, when we blindly base our therapy on so-called specifics and when we ignore the teachings of clinical experience in the natural history of syphilis.

Remembering the protean manifestations and the chronic and insidious nature of a syphilitic infection and our inability to know its termination in any individual save by reinfection, are we not for these reasons justified in holding firmly to the principle—that a known syphilitic should be the object of medical observation and study throughout the remaining years of his life?* Does not accumulated clinical experience in the problems of syphilis justify the general acceptance of this principle? This principle will meet with many objections, chief among which will be that such concern on our part about the disease will unnecessarily alarm patients and make of them *syphilophobics.* We do not hesitate, however, to educate our tubercular patients, to speak frankly to the individual about his organic heart disease, to keep the chronic nephritic under constant observation, to be solicitous about the patient with diabetic symptoms, and our frankness in such conditions leads only to good, beause we thereby educate and thus secure the earnest cooperation on the part of such patients. Then why have we been less frank with syphilitic patients or less solicitous about them when all clinical experience teaches that we are dealing with an infection in many individuals, the chronicity of which can be compared with no other prevalent, communicable disease? The answer is: *Our therapeutic triumphs have heretofore blinded many of us to the teachings of clinical experience and the natural history of treated and untreated syphilis.*

No man can deny the brilliant, one might say miraculous, results of our so-called "specifics" in the prompt relief of many of the manifestations of syphilis, but let us hesitate to interpret these results as other than symptomatic cures. The prompt disappearance of some symptoms and some physical

*By observation and study is not implied constant medication or any medication whatever after the first three to five years, unless a complete restudy of the *whole individual* at least once in each year should indicate further medicinal treatment.

signs and the natural history of treated, as well as untreated, syphilis should convince us that the same mechanisms of defense are at work in the human organism in the presence of a syphilitic infection as in any other infection, and that our remedies *do not act directly as spirocheticides and sterilizers, but rather as stimulators of the defensive mechanisms inherent in the host.* Let us aid these, if we may, through drugs, but while we are trying to do so, let us not forget that these mechanisms are the syphilitic's most valuable asset in his struggle with his infection. Let us educate him in the nature of his infection—give him neither false security nor undue alarm about it. Let us teach him that right living and drugs are equally important and that constant vigilance throughout his life is the price of his safety. Let us make him feel, if he will thus live, that in all probability he will lead a relatively healthful and useful life in spite of his infection—a more healthful and useful life than he who lives riotously, even though he be free from such infection. Let him know that clinical experience teaches that the syphilitic need deny himself nothing that life affords when used in moderation, but for the welfare of his potential mate and descendants—for the welfare of the race—that he should gladly deny himself the privilege of marriage.

With such therapeutic principles, as herein discussed, to guide us, we shall find more to do for the syphilitic than in trying to convert his positive Wassermann reaction into a negative one; we shall then think more about the individual and less about his disease; more about strengthening his inherent resistances to, or increasing his tolerance for, his infection, and to this end we shall find many ways in addition to the use of remedies. Confessing the limitations of our measures and remedies, yet fully conscious of the great good to be derived from them, may we not through a more general recognition of their limitations and through the education of the masses more nearly approach the *ideal cure*—the prevention of syphilis?

When we shall become less certain about our cures of syphilis—think more about the individual, the consort and progeny—may we not then reasonably anticipate the dawn of a better day for the syphilitic and the dawn of a brighter day for many of the race?

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727 METROPOLITAN BUILDING.

THE SIGNIFICANCE OF THE DIASTOLIC PRESSURE.

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WHEN Dr. Crawford honored the writer by an invitation to read a paper on Blood Pressure at this meeting of the American Life Convention, he suggested special attention to the Diastolic Pressure, and, if possible, mortality ratios of entrants with both large and small pulse pressures.

A review of our claim cards showing pulse pressure satisfied us that the numbers with this pressure under 25 mm. or over 50 mm., were so small that statistics prepared from them would furnish very inconclusive information. Further investigation

along this line was abandoned. It will consequently be necessary, in order to comply as nearly as possible with the invitation, to discuss the diastolic from other angles, in this way, and through comparison with the systolic, trying to arrive at some definite conclusions as to its significance, normal limits, and range.

Prior to 1905 estimation of the diastolic pressure was very unsatisfactory, except with the use of instruments too cumbersome and intricate for office or general work. Readings determined by palpation, while reasonably accurate, and sufficiently so for everyday estimation of the systolic, were far from satisfactory in fixing the diastolic. Interpretations of the point of maximum oscillation differed widely. The diastolic, in consequence, was given little consideration and very meager data were collected. When, in the year above mentioned, Korotkow introduced the auscultatory method, estimation of this pressure was much simplified, more general interest in it was aroused, and to-day it is recorded almost as often as the systolic, though by many not yet as accurately taken. Improvement in this respect is noted and now diastolic readings at both the fourth and fifth points are frequent.

The diastolic pressure at the present time is considered by the majority of observers the more important. Certainly no blood pressure record is of great value without it, as judgment based on the systolic alone may be very misleading.

The significance of the diastolic and pulse pressures, in the absence of sufficient statistical data to justify definite conclusions, must be based on what we have of these, but more important, on known physiological and pathological changes affecting or involving the circulatory system. We, therefore, ask your indulgence while we recall a few fundamental facts before directing your attention to a study of our available diastolic data and the fourth phase.

The factors controlling the circulation of the blood are exceedingly complex, and their fine and intricate adjustments admit of wide variations of pressure in health, and of marked compensations in disease. They may be considered in a broad way under two headings: 1. Nervous, which (a) act directly on the heart and (b) directly on the arteries and to a less extent on the veins. 2. Biochemical substances produced in (a) the endocrine glands, (b) in the body tissues, as a result of increased activity.

1. The nerve control appears to be the more important of the two, and for descriptive purposes may be divided into two groups, although intimately associated. They are, first, the vagus, accelerator and depressor nerves to the heart, and, second, the vasomotor, constrictor and dilator to the arteries.

Two of these appeal to the writer as worthy of special mention. The first, and most important, is the vasomotor control of the splanchnic vessels, which constitute a great reservoir for the blood and which through contraction or dilatation determine, to a large extent, the height of the blood pressure, particularly the diastolic, and the volume of blood in the systemic circulation. The second, important, but not very often mentioned, is the depressor nerve which, when stimulated by strain from increased pressure in the heart or aorta, occasions relief through central stimulation of the vagus, resulting in slowing and decreased force of the heart.

2. Biochemical substances derived from (a) the endocrine glands (b) tissue activity, as intestinal putrefaction. (a) The hormones from the ductless glands, particulraly the adrenals, thyroid, and pituitary, exert their influence by action on the heart and arteries. Those from the adrenals and pituitary have somewhat similar action, increasing cardiac tone and rate, constricting the arterioles and raising peripheral resistance with increased diastolic and systolic pressures. Those from the thyroid, on the other hand, have an opposite effect, dilating the peripheral vessels, increasing heart rate, through stimulation of the accelerator, but not tone. The diastolic and systolic pressures, therefore are lowered. The hormones of the adrenals and pituitary on the one side, and the thyroid on the other, have opposing actions, so that failure of the thyroid secretion results in increased pressure.

(c) Intestinal putrefaction with absorption of toxic products thus formed, is believed to result in constriction of the arterioles and increased resistance. Many abnormal conditions, either acute or chronic, influence the blood pressure in a manner more or less profound, and it would seem this influence is chiefly exerted on the diastolic in a majority of cases. Examples of this might be multiplied. We will let a few suffice. First, the acute infections, after the early sthenic stage, show more or less loss of vasomotor tone, lowered diastolic, weakened heart muscle and lowered systolic. If the heart has sufficient force, and rate, and lack of arterial tone is not too great, it may be able to overcome the vascular failure. The increased rate and force of the heart, however, are necessary far more for the maintenance of the diastolic, than the systolic. We believe recovery in this class of diseases and prolongation of life in many others is dependent on the diastolic, a sufficiently high level of which is essential for cardiac nutrition. This will be referred to later. Another instance, but with opposite effect, is that of autointoxication from putrefaction of material in the intestine. Abnormal products from this cause, absorbed and circulating in the blood, irritate the arterioles, resulting in constriction with increased peripheral resistance and higher diastolic. The systolic is also raised, but chiefly, if not entirely, on account of the extra effort put forth by the ventricle to overcome the increased resistance. We believe that with heightened diastolic, the volume of blood and heart tone being the same, the systolic is always raised from increased effort, and that the diastolic instead of following the systolic, as has sometimes been said, really determines its height in such cases.

Broadly speaking, abnormal blood pressure cases may be placed in one of two groups. First, those with changed diastolic pressure with accompanying and often more marked change in the systolic. This group is the result of variation in peripheral resistance. Second, those with little or no change in the diastolic but increase or decrease in the systolic as a result of change in cardiac action. Briefly, the diastolic is mainly the result of arterial tone and changes in it arise from changes in the latter. The systolic is the result of cardiac energy

put forth, and is largely based on the height of the diastolic.

Many conditions affect cardiac action and effort that have little or no effect on the arteries. Those affecting the arteries are fewer in number. The diastolic is, therefore, less subject to frequent and marked variation as arterial tone is more stable. When changed, however, it returns to normal more slowly. Increase in this pressure thus throws more constant and effective strain on the arteries, and ventricle leading to failure of elasticity in the former, and hypertrophy followed by dilatation of the latter.

Before leaving this part of our discussion, we wish to refer especially to that condition which is particularly indicated by changed blood pressure, and which is of such vital importance in our work. We refer to arteriosclerosis involving the renal blood vessels, and constituting the primary and only impairment of these organs which leads to marked change in pressure which is constant. Here both diastolic and systolic reach their highest readings; the diastolic from greatly increased tension in the periphery and increased pulse pressure; the systolic from hypertrophied left ventricle with much increase in force and effort to enlarge the pulse pressure that sufficient blood flow through the kidneys may be maintained.

We think we have shown above the possibility of wide variations in blood pressure readings. A few of what seem to us the more important factors have been briefly and imperfectly referred to. We would like now to consider the heart, which is the main compensating factor, provided the supply of blood is maintained. This most wonderful of all pumps, under the influence of the nervous system, and stimulated by arterial and venous pressures, runs either fast or slow, or with increased or diminished force to meet the constant and ever-varying changes to which it is subject. Volume of blood and peripheral resistance remaining the same, increased rate or force or both, raise the pressures, while diminished rate and force lower them. Lowered peripheral resistance, blood volume the same, calls for increased cardiac work through increased rate and force to maintain primarily a sufficient diastolic. Increased peripheral resistance, when temporary, results in slowing and decreased force of the heart. The variations possible are many with a mechanism so able to adapt itself to changing or changed conditions. It possesses the power, not only of a pump, but of a safety device. Its nutrition is, therefore, a matter of vital importance, and as the nutrition is dependent on a sufficient diastolic level, the importance of this pressure is at once manifest. When too low, the heart muscle is under-nourished and circulation impaired or stopped. When too high, the volume of blood forced into the heart wall is increased, adding additional strain to an already overworked and hypertrophied organ. Degeneration and failure are inevitable as a result. We are convinced that ventricular hypertrophy is the result far more of the constant necessity of overcoming a high diastolic, than of the intermittent effort required for sufficient pulse pressure, a pressure so essential to the nutrition of the tissues.

At the 26th Annual Meeting of the Association of Life Insurance Medical Directors, we read a paper prepared from an analysis of the blood pressure readings submitted to the Prudential Life Insurance Company of America. There were 18,637 cases with systolic readings and 5,018 with both diastolic and systolic. As a result of this study we concluded that the average systolic pressure rose gradually as age advanced from 119 mm. Hg. at ages 15 to 19, to 139 mm. at ages 65-66, the average for all ages being 125 mm. The average systolic was 2 mm. less under age 40 than for ages 40 and over. The average range was shown to be 30 mm. or 15 above and 15 below the averages at the different ages. The average low limits were thus for ages 15-19 104 mm. rising to 124 mm. ages 65-66. The high limits progressed from 134 mm. at the younger to 154 mm. at the older ages. "It was felt, however, that a pressure somewhat below the low limits is not usually as serious an impairment as one equally above the high limits." Since this was written, Dr. J. W. Fisher, Medical Director, of the North Western Mutual, has found a very favorable mortality experience among those with low systolic pressures. We now consider with great leniency all low systolic readings where the diastolic pressure seems sufficient and the pulse pressure is not under 25 mm. We further showed there was a rise in systolic pressure with increased pulse rate corresponding to 1 mm. for every increase of 5 pulse beats. An increase in this pressure in heavy weights was also observed, being 3 mm. above the average in those 20 to 29 per cent. and 4 mm. in those 30 to 39 per cent. overweight, age and height not considered. Height had little or no effect, the pressure being but 1 mm. less under 5 ft. 7 in. than at 5 ft. 7 in. and over.

We have presumed to give the foregoing systolic data as we think, from further study, the systolic is to a considerable extent indicative of what occurs in connection with the diastolic. We have, of course, considered averages of normal lives.

That a distinct relationship exists between the two pressures was indicated by our analysis of the 5,018 cases previously mentioned. This showed that the increase in the diastolic, as age advanced, corresponded closely with that of the systolic. The pulse pressure remained practically constant through the different age groups, though slightly smaller (1 mm.) on the average under 40 than for 40 years and over. The increase in the pulse pressure as age advances seems to be the result of less rapid rise in the diastolic, which is to be expected in connection with the natural changes—thickening and loss of elasticity—taking place in the arterial walls. The following figures, Table I, suggested the above comments:

TABLE I.

Ages.	Cases.	Average Systolic.	Average Diastolic.	Average Pulse Pressure.
15-29	3569	125	89	36
40-66	1449	130	93	37
15-66	5018	126	91	36

We felt in 1915 when preparing this table the diastolic readings were higher than would be reported when more experience had been acquired by our examiners and the same method and point used

by all in taking the diastolic. The figures in Table I were obtained partly by auscultation and partly by oscillation, so are possibly close to an average between the 4th and 5th points. Our thought at that time seems borne out by the figures given in Table II.

TABLE II.

Ages.	Cases.	Average Systolic.	Average Diastolic.				Length of Phase.
			4th Point.	Pulse Pressure.	5th Point.	Pulse Pressure.	
15-29	472	122	85	37	79	43	6
30-44	1106	125	88	37	82	43	6
45-66	257	131	91	40	85	46	6
15-66	1835	125	88	37	82	43	6

The number of cases in this table is small, but the great majority were examined by thoroughly competent physicians. The readings were all taken by auscultation, and almost all subsequent to those referred to in Table I. The steady rise in the diastolic is again seen, as also its relationship to the systolic. The age grouping, however, indicates the increase in pulse pressure, and less rapid rise in the diastolic takes place after 44 years of age, when vascular changes usually set in and advance. It will also be noted that the figures for the diastolic at the 4th point are lower by 3 mm. and at the 5th point by 9 mm. than in Table I.

It is our opinion that these figures represent very closely normal diastolic averages even when taken at the 4th point, which are in this table slightly higher, at the 4th point than normal, as will be explained later.

An attempt was made by us in 1915 to determine the diastolic range. It was then stated that the total range was 36 mm., or 18 above and 18 below the average. We ventured the opinion, "That the diastolic range should be greater than the systolic seems hardly possible, as this pressure is more constant and less influenced by emotion." We are still of the same mind, and believe the diastolic range averages less than the systolic. We know of no figures to verify this, but feel pretty confident it is strictly in accord with physiological laws governing the circulation.

Were 36 mm. to be taken as the range with 18 above and 18 below, we would get the following high and low diastolic readings based on Table II.

Ages.	4th Point.			5th Point.		
	Low.	Average.	High.	Low.	Average.	High.
15-29	67	85	103	61	79	97
30-44	70	88	106	64	82	100
45-66	73	91	109	67	85	103
15-66	70	88	106	64	82	100

Probably a range of 24 mm. is nearer the truth, and the high and low limits that it is wise to consider normal may be obtained by adding 6 mm. to the low (5th point) and subtracting the same number from the high (4th point) above given. If we now use the 4th point to establish the possible high and the 5th for the possible low we find using a 24 mm. range:

Ages.	4th Point. High.	5th Point. Low.
15-29	97	67
30-44	100	70
45-66	103	73
15-66	100	70

This amounts to a range similar to that for the systolic and is certainly liberal. Reasoning along this line, it seems safe to affirm that any diastolic pressure, at any age, under 60 mm. or over 103 mm., is abnormal if constant.

Lest it be thought we are disposed to adhere too strictly to rules based on statistics, we wish to state our belief that the systolic, diastolic, and pulse pressures may show wide variations in health, wider even than any figures we have given would seem to warrant. It is only when these variations from the averages are constant that we regard them as indicative of disease.

Many of the averages given as normal for the systolic were based on readings taken by palpation. It is now thought that five millimeters may in good risks be added to the high limit for any age when the pressure has been taken by auscultation and such averages used.

Figures decidedly outside the limits above shown are constantly reported but are not usually considered cause for immediate action in otherwise insurable risks. Additional readings confirming or correcting them are secured and careful urinalyses, chemical and microscopical, obtained when the pressures run close to or over the high limits. These precautions seem to us more necessary with diastolic departures from the strictly normal than with systolic. The systolic may vary to such an extent under emotion, nervousness, muscular strain, etc., that in our judgment we may usually disregard it when the diastolic is normal for the age and the applicant normal in other particulars. However, pulse pressures over 60 mm. or under 25 mm. are cause for close scrutiny of every other feature, and usually make at least one additional observation and special questioning of the examiner advisable.

Our knowledge of and confidence in the ability of the examiner are very important factors in estimating the readings given. In our experience it happens occasionally that very extraordinary pressures are submitted by less experienced examiners. Such readings as 120 diastolic and 130 systolic disturb our confidence in the ability and progressiveness of an examiner much more than they do in the insurability of the applicant, and, with the systolic normal, may be disregarded as far as acceptance of an otherwise good risk is concerned. Fortunately the number of doctors recording such readings is decreasing. We believe there should be none, and that these faulty readings cast a serious reflection on the physician reporting them.

A matter of considerable interest in our work, not only from the scientific side but also the practical, is the point at which to take the diastolic pressure. Some have claimed the 5th point or disappearance of all sound is the one to use, while probably more prefer the 4th point where the tone changes. That the 4th point represents the true diastolic pressure seems to have been established.

Determination of this point, however, is not always easy and at times is impossible. The point of disappearance, we think, is more frequently given correctly.

In establishing normal pulse pressure limits the length of the 4th phase and the most satisfactory point at which to take the reading have to be considered. The following questions present themselves: 1. Which point is the most desirable at which, for insurance purposes and in general practice, to take the reading? 2. If the 4th point, is it uniformly determined and reasonably accurate? 3. If the 5th point, what is the average fourth phase and how great an error is made when using this as the index? 4. Are departures from the average due to too high estimation of the 4th point or too low of the 5th, or to both? 5. How frequent are these departures? 6. How great are they? 7. Are they actual or simply apparent, due to individual interpretation?

Dr. W. A. Jaquith, Medical Director of The Prudential Insurance Company of America, in a paper read at the 29th Annual Meeting of the Association of Life Insurance Medical Directors, expressed the following opinions: 1. There are decided differences in the average readings by different examiners. 2. Age is certainly not a factor. 3. Variations have largely resulted from differences in individual interpretation. 4. The 4th point is shown to be more liable to incorrect estimation than is the 5th. 5. The 5th point thus appears to us as the one at which, for the sake of uniformity and accuracy, we should ask our examiners to take the diastolic reading.

The doctor has kindly permitted me free use of his paper and consented to additions to the tables already presented by him.

This report was based on an analysis of the blood pressure readings taken by 53 selected examiners in 754 cases.

"The 4th point could not be determined by 6 (11.3 per cent.) examiners in 8 (1.06 per cent.) cases."

The present analysis of 1,835 cases reported on by 219 examiners includes those used by Dr. Jaquith.

TABLE III.

FOURTH PHASE BY PERCENTAGES AND EXAMINERS

Examiner	Cases	Phase 2-6 mm.	Phase 7-8 mm.	Phase 9-10 mm.	Phase Over 10 mm.
A	48	52.1	35.4	6.3	6.3
B	31	87.1	12.9	....	....
C	181	98.9	..	0.5	0.5
D	37	70.3	16.2	8.1	5.4
E	159	97.5	1.9	0.6	....
F	30	43.3	30.0	6.7	20.0
G	41	85.4	7.3	7.3	....
H	165	82.4	10.3	6.1	1.2
J	31	61.3	19.4	9.7	9.7
K	42	42.9	7.1	47.6	2.4
L	31	93.5	6.5	....	....
Combined.	799	83.2	8.8	5.8	2.3
All others.	1036	68.5	12.3	11.5	7.7
All combined	1835	74.9	10.7	9.0	5.3

The examiners, eleven in number, who reported on 30 or more cases, were all experienced and, possessing our confidence in their ability, have been considered individually in Tables III and IV. The remaining 208, the great majority of whom were equally competent, are treated as a group, the number of cases examined by each of them being less than thirty.

The foregoing table (III) shows very definitely that there are marked differences in the length of the fourth phase, even by examiners of about equal ability in blood pressure estimation. The frequency, for instance, with which the length of the fourth phase was reported as 2-6 mm. varied from 43 per cent. to 99 per cent. of cases examined by each, and for the phase over 10 mm. from 0 per cent. to 20 per cent. It was found over 10 mm. by three examiners in 3 or 0.6 per cent. of 508 cases. This percentage is so small, where large experience is a factor, that it will give us little trouble. We think it extremely doubtful that the 291 cases reported on by the remaining eight examiners had a fourth phase over 10 mm. in 15 of this number (5 per cent.). The difference cannot well be due to such marked differences between the two groups, but rather to difference in interpretation. We recognize, of course, that the high percentage (5) above shown is not altogether comparable with the percentage (0.6) as there is much greater opportunity for variation among eight than among three examiners. None of the three, however, found the phase over 14 mm., as shown by Table IV.

TABLE IV.

LENGTH OF PHASE OVER 10 MM. BY EXAMINERS.

Examiner	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-29	30 & Over	Total	
A	..	..	1	2	..	..	..	..	..	3	...
B	..	..	..	..	..	..	..	..	..	0	...
C	..	1	..	..	..	..	..	..	..	1	...
D	..	..	..	..	..	..	..	..	2	2	...
E	..	..	..	..	..	..	..	..	..	0	...
F	2	3	1	..	..	..	..	..	..	6	...
G	..	..	..	..	..	..	..	..	..	0	...
H	1	1	..	..	..	..	..	..	..	2	...
J	1	..	1	..	..	1	..	..	..	3	...
K	..	..	1	..	..	..	..	..	..	1	...
L	..	..	..	..	..	..	..	..	..	0	..
Combined.	4	5	4	2	0	1	0	0	2	18	2.3%
All Others.	28	15	13	4	8	2	3	2	5	80	7.7%
All Combined	32	20	17	6	8	3	3	2	7	98	5.3%

One most excellent examiner, D, is shown by this table to have recorded a pulse pressure of over 30 mm. in two cases (5.4 per cent.) out of 37. We have not the slightest doubt as to the correctness of these readings and believe they serve to emphasize the fact that occasionally we meet with a very much lengthened fourth phase. In the 799 cases received from the eleven examiners it was reported over 18 mm. in 3 (0.4 per cent.) cases and in 20 (2 per cent.) of the 1,036 from other examiners, seeming to confirm the statement above as to difference in interpretation.

These differences are still better shown by Table V, which compares with the lengths of phases reported by all those reported by the eleven examiners. The number of cases with the phase over 10 mm. is for all examiners 98 (5.3 per cent.) for the eleven 18 (2.3 per cent.). When securing the data for this table the number of examiners reporting the phase 7-8 mm. was, for some reason not known, overlooked. The percentages given for the examiners are for those reporting a certain length of phase. As there is duplication the exact number who reported the phase over 6 mm. cannot be determined from the figures shown.

TABLE V.

FOURTH PHASE OVER 6 MM. BY EXAMINERS AND CASES.

Phase	All Examiners.				Selected Examiners (11)			
	Examiners	%	Cases	%	Examiners	%	Cases	%
7-8 mm.	..	..	197	10.7	10	90.9	70	8.9
9-10 "	51	23.3	165	7.0	9	81.8	46	5.8
11-12 "	19	8.7	32	1.7	3	27.2	4	0.5
13-14 "	17	7.8	20	1.1	3	27.2	5	0.6
15-16 "	15	6.8	17	0.9	4	36.3	4	0.5
17-18 "	5	2.3	6	0.3	1	9.0	2	0.3
19-20 "	8	3.7	8	0.4	0	0.0	0	..
21-22 "	3	1.4	3	0.2	1	9.0	1	0.1
23-24 "	3	1.4	3	0.2	0	0.0	0	..
25-26 "	1	0.5	1	0.1	0	0.0	0	..
Over 26	5	2.3	6	0.4	1	9.0	2	0.3
Total	..	..	460	25.1	..		131	16.8

There were 46 cases (2.5 per cent.) in which the phase was 15 mm. or over—Table VI, and 15 cases

TABLE VI.

FOURTH PHASE 15 MM. OR OVER BY AGE AND PULSE PRESSURE.

Age.	Cases	Systolic.	Diastolic				4th Ph.
			4th Pt.	P.P.	5th Pt.	P.P.	
20-24	2	129	98	31	78	51	20
25-29	5	129	99	30	80	49	19
30-34	9	127	100	27	79	48	21
35-39	10	127	95	32	73	54	22
40-44	9	130	104	26	83	47	21
45-49	5	130	95	35	75	55	20
50-54	3	134	102	32	80	54	22
55-59	3	129	97	32	71	58	26
All Ages	46	129	99	30	78	51	21

(0.8 per cent.) with the phase 20 mm. or over—Table VII. Only 14 of the 15 are shown in this table.

TABLE VII.

FOURTEEN CASES WITH THE FOURTH PHASE OVER 20 MM.

Age	Systolic	Diastolic				4th Phase
		4th Point	P.P.	5th Point	P.P.	
38	125	85	40	45	80	40
57	146	95	51	51	95	44
24	139	100	39	76	63	24
47	130	112	18	88	42	24
40	130	100	30	78	52	22
40	135	110	25	75	60	35
34	118	112	6	68	50	44
42	130	100	30	70	60	30
36	125	100	25	70	55	30
37	128	103	25	75	53	28
37	130	82	48	56	74	26
50	130	105	25	70	60	35
32	126	110	16	86	40	24
33	135	100	35	78	57	22
Combined	130	101	29	70	60	31

Comparing Table VI with Table II, we find the systolic in the former (VI) 4 mm. higher, the 4th point 11 mm. higher, and the 5th point 4 mm. lower than in the latter (II). The phase is here 15 mm. over the average 6 mm., 11 mm. of the 15 being due to higher 4th point and 4 mm. to lower 5th point. A similar comparison between Tables VII and II shows an increase of 5 mm. in the systolic with the 4th point 12 mm. higher and 5th point 12 mm. lower. The distinct increase in the average systolic in these two tables, 4 and 5 mm. respectively, is interesting. It is not uniform, however, by ages.

That the readings at the 4th in Tables VI and VII are correct is very doubtful. This is particularly well shown in Table VII where the average 4th point is 101 mm. and the average pulse pressure but 29. With the exception of three cases the 5th point (Table VII) is quite within normal limits. Were these three cases excluded the average of the readings at the 5th point would be 76 mm. These three cases, age considered, had normal 4th points and if not included would allow a higher average (105 mm.) at this point. They were the only three in the total number of cases with the 5th point under 60 mm.

It seems, then, that increased length of the 4th phase is more the result of reading the 4th point too high than the 5th point too low. Unquestionably one occasionally meets a case otherwise satisfactory with a very low 5th point, but the number is exceedingly small, being 3 or 0.16 per cent. in our cases. We believe, then, there is more difficulty in determining correctly the 4th than the 5th point and occasionally it cannot be heard. Age is not a factor, as shown by Tables II, VI, and VII. Experience seems important, as evidenced by Tables III and V.

Acuteness of hearing, or differences in ability to detect change in tone probably play a considerable part, for none of the examiners who reported the cases used in this analysis have impaired hearing, so far as is known.

Whatever the cause or causes, we think it evident that they do not affect interpretation of the 5th as much as the 4th point, and that, as shown by Dr. Jaquith, the 5th is the more desirable one to use, at least for insurance or general clinical examination. Referring to Table II, we find the average difference between the two points is but 6 mm. and from Table IV that at the worst but 7.7 per cent. show the 4th phase over 10 mm., at the best 2.3 per cent. with an average of 5 per cent. It was 2-6 mm. in 75 per cent.

Before closing we wish to state what appear to us well established and safe guides in selecting risks.

Ages.	Systolic.		Diastolic.	
	High.	Low.	High.	Low.
15-19	130-135	95-100	80- 85	60-65
60 and over	150-155	110-115	95-100	65-75

These we advance as guides and not arbitrary limits. We would not be willing, however, to accept risks at any age over twenty years with constant systolic pressures under 100 at the younger or over 155 mm. at the older ages nor with constant diastolic under 60 at the younger or over 100 mm. at the older ages.

These limits, it is felt, give ample allowance for all normal variations, the result of influences to which reference has previously been made.

Pregnancy Following Radiotherapy of Fibroid Uterus.—That radiation for fibroid believed to act through suppression of ovarian function does not necessarily entail sterility is shown by Delbet's announcement that pregnancy has followed three cases in the practice of Dr. Ménard. This throws doubt on the supposition that improvement of fibroids is due to the action of the rays on the ovaries. By localizing the action of the rays on the uterus the good possibilities will be realized without prejudice to the ovaries.—*Le Bulletin Médical.*

PRELIMINARY REPORT ON A NEW METHOD FOR THE CLINICAL DIAGNOSIS OF TOXIC THYROID STATES.

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WITH A NOTE ON THE SEROLOGICAL TECHNIQUE.
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A SCIENTIFICALLY exact method for the diagnosis of plus, minus, and toxic thyroid states would be a great boon to clinical medicine. And the problem is not insoluble; but the solutions so far suggested are inadequate.

E. C Kendall[1] among others has proposed the basal metabolism as a guide to the existence of hypo- and hyperthyroid conditions. But apart from the expense and complicated procedure of this method is the objection that no one yet knows how many other clinical conditions may temporarily influence the basal metabolism in both plus and minus directions.

E. Goetsch[2] has suggested the severity of the patient's reaction to a measured hypodermic dose of adrenalin as a measure of his thyroid activtiy. I cannot learn that this test has proved generally popular or generally confirmatory of evident clinical signs. M. S. Woodbury[3] in a study of some fifty recent cases of thyroid disease at Clifton Springs, N. Y., concludes that the adrenalin test is an indicator of "general sympathetic hypersensitiveness" which may or may not be of thyroid origin.

It was my idea at one time that if the thyroid secretion appears in the blood in protein form, it might be picked up by a complement fixation test and titrated. In order to try out this supposition the following experiment was repeated a number of times: A healthy young sheep was immunized by successive injections of a saline suspension of thyroids from freshly killed dogs. Using the injection as antigen, a pronounced and abundant antibody could be demonstrated in the sheep serum in the course of a few injections. But not the slightest binding could ever be observed with normal dog serum as antigen. This seems to prove either that the thyroid secretion is not present in the serum at all in protein form, or that, if so, it is in too minute amount to be available for a fixation test. As I have not found any mention in the literature of such an experiment as this, it seems worth while to record it even in its present fragmentary form.

Failing in this attempt my attention was turned to the possibility that when the chemistry of the thyroid gland is materially disturbed, as in exophthalmic goiter, the thyroid toxins (assuming for the time that such bodies exist) might be accessible to study by the same (complement fixation) method.

There is almost no literature on this subject that I have been able to find, except some pioneer work done almost ten years ago by Prof. Marinesco, and his associate, A. Papazolu[4]. The latter of these observers claims to have found antibodies a number of times in the serum of patients suffering from Basedow's disease. He used as antigen aqueous, alcoholic, and ethereal extracts of Basedow goiters, parenchymatous goiters, and normal thyroids. Of his 38 tests 14 showed complete fixation, 12 almost complete fixation, and 12 were negative.

This work, while interesting and suggestive, dates back to the very early days of scientific serology, and seems not to have been very carefully controlled. Moreover Papazolu used alcoholic and ethereal as well as aqueous extracts of his thyroid antigens, thereby of course getting fixation with many luetic subjects.

Using non-lipoidal antigens (for method of preparation and serological technique see below) derived from various thyroid tumors (about ten in all) it has been impossible to get fixation with the serum of Graves's disease except in the case of a single goitre kindly given us by Dr. John Rogers. This growth Dr. Rogers thought to be a true Graves' tumor. Unfortunately it was all extracted, nothing being left for microscopic examination. Antigens from four normal human thyroids gotten at autopsy under favorable conditions entirely failed to bind.

About this time through a fortunate combination of circumstances Mr. Koopman observed that with *normal dog thyroid* random samples of Basedow serum would bind powerfully, and that they would not bind with any other dog organ.

Starting out with this test as a guide—*i.e.*, using dog thyroid as antigen—fixation experiments have been done on more than 175 human serums, of which 40 were under suspicion of positive thyroid dyscrasia.

Of the 40, 18 were clinically undoubted Graves' disease, 2 were probably so, 10 were doubtful, and 10 were probably *not* Graves. I have full notes of most of these cases; in all the instances where the blood only was sent (through the courtesy of medical friends kindly interested in the research), the diagnosis was made by a colleague in whom I had unusual confidence. I believe the chances of error in this regard are reasonably remote.

The 18 Graves' cases were all one plus to four plus. The probable cases were positive; six of the ten doubtful cases were positive; the ten "probably not" were all negative.

As to the controls, numbering over 135 patients, all were negative except one. This exception was a young married woman of about thirty years, with a tertiary specific skin lesion on one knee. She was not particularly nervous; her pulse was 96; her eyes and thyroid did not strike one as pathologically prominent. She had a positive Wassermann and a positive thyroid fixation. She was lost before it was possible to make any further investigation of her history and condition. All the other controls—representing nearly all the chronic, and many of the common acute diseases (non-infectious)—were, as already noted, negative. About 20 were old fibrocystic goitres. Serum kindly sent us by Dr. George Draper from a borderland case was, he reported, negative to the Goetsch test; we found it two plus positive to the dog thyroid test. Another serum (Dr. Jos. H. Fobes) was posi-

tive to the Goetsch test, and also two plus with dog thyroid.

The new test has been repeated hundreds of times and has been checked up with all needful controls. If anyone alleges that the binding is due merely to the chance appearance in human serum now and then of a native amboceptor, then he must also explain why in more than ninety-five per cent. of the cases the native amboceptor appeared in patients with a positive thyroid dyscrasia.

Speaking further for the value of the test is the fact that in several of the positive cases which have improved very much or apparently gotten well in the last eighteen months, the test has varied concomitantly with the clinical improvement, falling from four plus to two plus, and later disappearing entirely. Dr. H. H. Janeway, of the N. Y. Memorial Hospital, who has recently experimented extensively with radium in these cases, tells me that he considers the test of distinct value in the quantitative adjustment of such treatment to the clinical condition of the patient.

The number of cases so far observed is too small to make the suggestion more than tentative, but with this reservation I venture to hope that the new test may be found of value in several directions:

1. In the clinical diagnosis of a great many cases which are now very perplexing—early cases, late cases, borderland cases, anomalous cardiac neuroses, and thyroid tumors without definite signs of thyroid poisoning, such as unusual menstrual swellings, post-puberty enlargements, and fibrocystic goiters in the early stages. Such a test would help to differentiate exophthalmos due to other causes than Graves' disease, and would eliminate many cases of severe tobacco poisoning due to cigarettes, where the symptoms and signs (as recently noted in army soldiers and recruits) have been such as to deceive the very elect.

2. The test would aid in the adjustment of therapeutic measures to the immediate condition of the patient.

3. And finally it might throw considerable light upon the etiology of cellular tumors in general.

Subject to later modification the view may be suggested that spontaneous recovery in exophthalmic goitre is due directly to the formation of these corrective antibodies in the patient's own system; and that rest, careful feeding, and relief from anxiety contribute to the cure merely by aiding the patient's normal immunity-mechanism.

In explanation of so curious and unexpected a phenomenon I have no reasoned hypothesis. It may, however, be tentatively suggested, that dog thyroid contains a substance, or group of substances, native in the dog, but toxic in man. For such a supposition there are numerous analogies elsewhere in biochemical physiology. For this substance I offer the name *cynothyrotoxin* (of evident derivation), and I presume it to be formed in the human thyroid under the abnormal chemical conditions which appear when exophthalmic goitre develops. It is probably not the only toxin involved (as indicated above in the case of Dr. Rogers' specimen), but is of special importance, and is often present when plus thyroid states are abnormally excited.

In extenuation of the inadequate number of positive cases, herewith described, it may be said that however many cases I might publish, facts so unusual would still have to be verified by many other laboratory and bed-side workers. I have therefore concluded to "release" this report without further apology.

SEROLOGICAL TECHNIQUE.*

This reaction is apparently due to a specific thyroid substance which combines with an antibody in the blood of the patient.

The degree of specificity of the reaction depends of course upon the amount of thyroid antigenic substance in the antigen used. The antigen is an extract of the thyroid of normal dogs. It is best to use the mixed glands of five or six dogs. As at present prepared, the extract contains much extraneous matter which takes no part in the reaction; if some method of securing the antigenic substance free from all foreign matter could be devised, the specificity would be enhanced. As far as we have gone, we know that the antigen slowly deteriorates even when kept under the best conditions and after about three weeks it is necessary to obtain a new supply. Drying instantly spoils its antigenic properties and it does not withstand heating to 50° C. for 15 minutes.

The best method of preparing it which we have been able to find is as follows: The glands are obtained under aseptic precautions as soon as possible after the dogs have been killed. Each gland is trimmed carefully, and minced finely with sterile scissors. The whole mass is then ground in a mortar with a measured quantity of washed and sterilized sand and of dry sodium chloride. The amount of sand is of no importance, but the salt should be added in the proportion of 1/10 gram to each gram of gland used, and a few drops of 2 per cent. aqueous solution of tricresol are added for each ten grams of thyroid. This mixture is corked tightly and laid away in the ice-box. For use it is made up with distilled water, using 10 c.c. of water to one gram of the original amount of gland. The sand and solid matter are removed with the aid of a centrifuge.

The test is set up in form of a titration, using constant amounts of serum in not more than one-quarter of the least amount which is anticomplementary. The antigen is used in varied amounts, beginning with an excess and ending with the least amount which can be expected to give fixation. The exact amounts used will depend upon the total volume of the test the worker is accustomed to using. At the same time an antigen control is made with the same quantities of antigen as are put in the test. This procedure will obviate the necessity of putting in a separate titration of the antigen before the test itself is made. The result is indicated by the difference between the quantity of antigen which is anticomplementary of itself, and the quantity which binds complement in the presence of serum. A negative serum with the an-

*By John Koopman, B. S. The earlier part of this work was done in part at the Loomis Laboratory of Cornell Medical College. The assistance of the college authorities is herewith formally acknowledged.

tigen will often bind less complement than the antigen alone. A positive serum will bind with one-half or less than one-half the least anticomplementary dose of antigen. Fixation is carried out for from four to six hours in the ice-box. At the present time the range is short, but with improved methods of preparing the antigen it is hoped the range will become greater.

Besides the tests on human glands and human tumors (*i.e.* thyroid tumors), as above mentioned, we have not tried the glands of any other animals except bullock and pig. These were negative. It is quite possible that some may be found which will produce better results than dog thyroids.

Much more work also remains to be done on fixation results with extracts of true exophthalmic goiters. These are now very hard to get in New York operating rooms, as surgical removal of them has gone out of fashion; and when gotten we have not been able to devise any way of keeping them in fit condition for antigen formation for more than two or three weeks.

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NEOPLASMS IN THE LIGHT OF EXPERIMENTAL STUDIES.*

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Serious experimental work with neoplasms began with the first years of the present century. Previous to that time a few isolated inoculations had been performed. Following the work of Jensen of Denmark, in 1902, on animal neoplasms there began a series of painstaking observations on neoplastic growths from the experimental side. To-day in most medical centers are prominent workers on the cancer problem and there are maintained large collections of living tumors propagated in animals. This work has confirmed previous ideas regarding the cause and behavior of tumors as observed clinically besides yielding new conceptions of malignant disease. No work in medicine has been pursued more assiduously and yielded so little in the way of practical value so far as human beings are concerned. This paucity of results illustrates what a difficult one the cancer problem is.

The experimental side of malignant disease is essentially confined to its manifestations in the lower animals. In man the incidence of tumors in small, occurring neither in epidemics nor yielding an abundance of material that can be critically studied. The inoculation of neoplasms from one person to another, much less to a series of persons, cannot be done. The tumors most frequently studied experimentally are the sarcomas and carcinomas occurring spontaneously in the domestic varieties of rats and mice, and artificially propagated in other individuals of the same species. Spontaneous tumors have been observed in other domestic mammals, but owing to the larger size and greater commercial value of the animals such tumors have not been so carefuly investigated as those found in the smaller forms. A most interesting tumor has been found in the domestic fowl.

Once a malignant tumor has spontaneously developed in an animal it has usually been found possible to propagate it almost indefinitely by removing it from the original host and transplanting bits of it into many individuals of the same species as the original host. The transfer is made under aseptic precautions by inserting well under the skin a piece of the tumor about one millimeter in diameter by means of a hollow needle provided with a stylet. All individuals of the same species or race are not equally susceptible to tumor inoculation, nor are all tumors equally capable of growing in other hosts even of the same species. This is especially true of the first inoculations of the new tumor. With repeated inoculations the tumor may have its virulence increased so that the percentage of takes is nearly one hundred. Such work necessitates elaborate system of records showing the weekly progress of inoculated tumors. The propagation of new and established tumors is always done on a series of animals involving thousands of individuals.

When such a bit of tumor is inoculated from one host to another, there is transferred with it a small amount of supporting and vascular tissues of the original host. In a successful take, these normal structures of the old host are absorbed by the new host, while the tumor cells proliferate and attract into their mass connective and vascular tissue from the new host. Many tumors have been propagated long after the death of the original host. One of the Jensen mouse tumors is still under cultivation after nearly a score of years. Its original host has been dead many mouse generations.

The question arises as to whether these animal neoplasms are entirely in the same category as human tumors. Most of the mammalian tumors studied seem on the whole quite comparable to the sarcomas and adenocarcinomas of man. They occur spontaneously in animals of an age comparable to the cancer age of man although for purposes of experimental propagation young animals are almost exclusively used. Youthful tissues do not impede a neoplasm once it has started. These tumors sometimes attain a comparatively enormous size, often with a mass half that of their host or more. But they cause little inconvenience to their host, at least until necrosis has set in. The cancerous cachexia of man is not faithfully reproduced in these animals. The increased virulence of these tumors in repeated transplantations and their seeming immortality as carried on from year to year through a series of different hosts are features not seen in human tumors, but probably would be if the latter were subjected to similar treatment. Some of the animal tumors have a tendency to regress and to be absorbed. This natural disappearance should be kept in mind in all experiments having for their aim the artificial regression of tumors. Regression

*Read at 34th annual meeting St. Joseph Co. (Ind.) Medical Society, November, 1919.

or even complete disappearance of malignant growths in man has been noted.

One of the most remarkable of animal tumors is the chicken sarcoma of Rous (*J. Exper. Med.* xii, 696). It upsets many previous notions of neoplasms and even of biology. It was originally found in a Plymouth Rock hen and carefully transplanted to a series of chickens of the same strain. Its virulence was low at first, but with repeated transfers it became high, yielding nearly 100 per cent of takes. Subsequent work showed that the juice from this sarcoma after being passed through a moderate sized filter and entirely cell-free is capable of causing the development of another tumor when inoculated into another fowl. The same is true of the dried and powdered tumor tissue. Its vitality is destroyed by moderate heating (55° C.) and by antiseptics. (*J. Exper. Med.* xiii, 397). Whether this is a true tumor comparable to other sarcomas or is some unusual infectious process incited by a filter-passing virus is not quite clear. If the latter, it is difficult to see how this tumor is propagated in nature as it was only found spontaneously once. Two or three somewhat similar fowl tumors are known but they are not entirely like the original Rous chicken sarcoma.

The tumors most studied experimentally are essentially like those tumors of man which are beginning to be regarded as directly or indirectly due to chronic irritation, such as epitheliomas, carcinomas of the breast, uterus, and alimentary canal. Tumors which are obviously due to unbridled growth of embryonic rests, such as teratoid growths, or tumors like hypernephromas are not among those which have been experimentally studied, at least to any noteworthy extent.

The search for a specific parasitic cause of neoplasms has signally failed not only in the case of human tumors but also in that of the lower animals. The various bacteria that have been isolated appear to be accidental invaders of the neoplastic tissue. One remarkable retroperitoneal teratoid growth is recalled from which no cultures were made but which showed in many of the sections and without special stains very conspicuous large bacilli. No one could conceive that they had any part in causing the growth. The only reliable instance in which a bacterial organism has been shown capable of causing neoplastic growths is that of *Bacterium tumefaciens* of Smith (*Science*, n.s. lxiii, 871, 1916) causing tumor-like growths in plants, even growths of a teratoid nature. But the pathology of plants is quite different from that of animals. The search for protozoan organisms as causes of animal or human tumors has been equally unsuccessful. In this connection it must be remembered that in the case of the infectious granulomas there is found new production of tissue suggesting a neoplasm. There is also the very interesting case of Hodgkins' disease which is most tumor-like in its pathology. An infectious lymphosarcoma of dogs is also known.

Attempts to produce tumors in animals by mechanical means have been partially successful. The observation has been made that the parts of domestic animals subjected to constant irritation have developed malignant growths. Why all do not do so is as still unexplained as why all pipe smokers do not develop carcinoma. Some positive results have been obtained in the production of mouse adenocarcinoma (Marsh, *Jour. Cancer Res.*, ii, 427, 1917) by means of trauma and pressure. The trauma should be acute and discontinuous. Many attempts to produce epitheliomas in animals have usually resulted in causing no more than an obnormal proliferation of epithelium, even though substances such as paraffin and soot, supposed to be instrumental in the causation of some human epitheliomas, have been employed. When the irritation has been removed the epithelium has usually returned to the normal condition.

That a physical agent like the roentgen ray can excite tissue to develop into a malignant growth is shown by the unfortunate and unintentional experiments on man by the early workers with such rays. Sarcoma in the rat by roentgen ray irritation has also been reported.

The chemical substances that have been employed in an attempt to produce neoplasms experimentally are those which will dissolve fats or lipoids, or oily bodies themselves, or dyes soluble in fats or lipoids, such as Sudan III or Scharlach R. In the numerous attempts made by repeated injection of such substances into epithelial structures no true tumors have resulted. There are no records of their being inoculable from one animal to another. Certain tumor-like epithelial excrescences have resulted, but when the foreign substance has been removed or absorbed the excess production of epithelium has subsided. Recently Japanese investigators (Yamagiwa and Ichikawa, *Mitteil. med. Fak. Univ. Tokyo*, xix, 483, 1918) have caused the development of carcinoma by painting rabbits' ears with tar. A few of these tumors produced metastases.

Some of the most characteristic tumors that have been produced or discovered incident to experimental work are the well known gastric carcinomas of the rat, observed by Febiger, associated with the presence of the remains of a parasitic worm in them. This worm has for its intermediate host certain species of cockroaches. By feeding a series of rats on roaches infested with this worm, Febiger was able to see carcinomas develop in many of his animals. That they were true tumors is shown by their metastases in which remains of the worm do not occur. More recently others have observed the development of carcinomas in rats about the encysted stage of a tapeworm. Some of these tumors were successfully transplanted. The metazoan parasites in these cases can be considered to have acted only as physical and chemical irritants toward the production of epithelial proliferation.

From a series of careful observations of the action of an emulsion of cancer cells from animal tumors on the life of a protozoan organism, *Didinium nasutum*, *Calkins* (*J. Cancer Res.*, i, 205, 1916; ii, 399, 1917) has shown that such a cancer mush contains a stimulating and a lethal factor. Similar results were obtained when embryonic epithelium was substituted for the cancer cells, but not when adult epithelium was used. As irritants of epithelium cause a production of new and essentially embryonic epithelium, he conceives that by a proper adjustment of the lethal factor and the stimulating factor a vicious circle may be established, as a result of which an irritation and production of rap-

idly growing epithelium occur together with destruction of adjacent tissues.

The study of tumor statistics in man has not yielded positive conclusions as to the contagiousness of cancer, the existence of so-called cancer houses or communities, or as to the hereditary tendency of malignant disease. The study of tumors in animals on a large scale, and especially with animals which pass through many generations during the lifetime of a single observer, has shown an absence of anything like a contagious nature of neoplasms and an absence of anything corresponding to a cancerous house or community. On the other hand the observations of Maude Slye on an enormous number of carefully bred mice have shown a distinct hereditary tendency to malignant disease. This hereditary aspect involves a tendency for specific organs to develop malignant disease. From the rarity of gastric cancers found in mice and other animals the conclusion has been drawn that such cancer in man is associated with the heating of his food, the use of condiments, or some chemical change due to cooking. (*J. Cancer Res.*, ii, 401, 1917).

With respect to metastases experimental studies have shown that massage and manipulation of a tumor are potent factors in dislodging cells and starting them on their way to grow in distant parts. (Tyzzer, *J. Med. Res.*, xxiii, 309, 1913.) In a series of experiments involving over 600 rats Wood has lately shown (*J.A.M.A.*, lxxiii, 764, 1919) that the removal of small pieces of a malignant growth for preoperative diagnosis does not appreciably increase the liability to metastases. Metastasis depends mainly on the time the tumor has been growing in its host.

The experimental study of tumor immunity has yielded a few interesting results, but essentially none of practical importance in human therapy. As all animals including man are subject to a variety of chronic irritations, such as students of animal and human cancer have shown often result in malignant growths of certain types, the question as to why all are not victims of cancer remains to be explained. It can only be said that some individuals are naturally immune to malignant disease, whatever may be implied by the term naturally immune. That malignant disease is essentially one of animals past the prime of life has been demonstrated by human statistics and by observation on experimental animals. That young animals have no forces resistant against malignant disease is shown by the ease with which transplantable tumors may be inoculated into them. Natural immunity is well shown by those individual rats and mice in which successful takes fail to occur.

A more understandable form of immunity is that of species, although it is without an ultimate explanation. Mouse tumors are ordinarily not transferable into rats and vice versa. By special means a few cross species transfers have been made. A mouse tumor has been carried a short time in rats whose lymphocytes have been artificially diminished in number. A few workers have reported success in transplanting tumors in species distantly related to the original host. A few attempts have been made to transfer human tumors to anthropoid apes, but without success. If anthropoids could be obtained as readily as mice, and a large series used, perhaps some successful takes could be obtained.

The rôle of lymphocytes in producing tumor immunity has received considerable attention experimentally. In human pathology malignant growths are observed to be more or less surrounded of lymphocytes and related cells. It has been frequently noted that the zone of lymphocytes is more pronounced in less rapidly advancing neoplasms and essentially absent in the more rapidly advancing ones. Experimentally it has been shown (Murphy et al., *J. Exper. Med.*, xxii, 204, 1915.) that mice potentially immune to inoculable cancer develop a lymphocytosis after they have been inoculated with cancer grafts, and about grafts placed in immune animals there is a noticeable zone of lymphocytes. Potentially immune animals can be made susceptible to tumor grafts by a depletion of their lymphoid elements by appropriate doses of the roentgen ray or by benzol (Murphy et al., *J. Exp. Med.*, xxii, 1, 1919.) Smaller doses of roentgen ray cause a slight lymphocytic stimulation but not sufficient to render susceptible mice immune. (Murphy et al., *J. Exp. Med.*, xxii, 800, 1915.) Quite recently it has shown possible to produce a high grade of lymphocytosis in mice by subjecting them to a temperature of from 55° to 63° C. for 5 minutes. Such animals have a high degree of immunity against transplantable tumors and are also resistant to transplants which have been removed from them. (*J. Exp. Med.*, xxix, 25, 31, 1919.) The mechanism of lymphocytes in limiting tumor growth or in preventing succesful takes of experimental grafts is not clear and appears somewhat anomalous in view of the metastases that occur in lymph-nodes.

The tumor immunity in animals appears to be entirely cellular. Attempts to find in their serum immune bodies cytolytic for tumor cells has failed. Serum from potentially immune animals as well as from animals that have recovered from inoculation of tumor grafts has had no effect in immunizing or in lessening the growth of successfully implanted grafts when used prophylactically or therapeutically in experimental animals. In vitro tissue cultures of cancer cells can be as successfully made in the plasma of immune animals as in the plasma of susceptible animals.

Animals which have been successfully inoculated with tumors and in which the tumor has later undergone regression and disappeared are usually immune against subsequent inoculations of most tumors. Immunity against tumors has been produced in mice by inoculating them with skin from mouse embryos showing that an animal can be rendered immune against growth of foreign cells of various kinds. An analogous non-specific immunity exists in man in various infectious diseases, as children naturally immune against diphtheria have been shown to be more or less immune against other infectious diseases such as measles and poliomyelitis.

Two largely employed therapeutic agents have been subjected to interesting tests with animal tumors. Wood and Prime (*Ann. Surg.*, 1915, 751) report a series of experiments with the action of radium on mouse sarcoma and carcinoma. Varying quantities of beta and gamma rays together and gamma rays alone were used; alpha rays were not

used. One portion of the material used for the inoculations was subjected to the action of the rays and the other portion, untreated, was used as a control. Series of mice varying in number from 48 to 144 were employed in each of several experiments, being inoculated in duplicate with rayed and unrayed malignant tissue. These experiments showed a marked lack of ability of the rayed grafts to grow. In another set of experiments the tumors were rayed while in the animals, a part having previously been removed for a control. In this series the destructive action of the radium radiations was much less marked than in the series of experiments where the tissue was rayed in vitro. In many cases there was a marked delay in the development of the implanted grafts, sometimes no tumor being manifest in the inoculated mouse until after a lapse of five or six weeks while in the control mice tumors were evident at the end of a week or ten days. Later, Prime (*Jour. Cancer Res.*, ii, 107, 1917.) working with in vitro cultures of normal mammalian tissues and of mouse carcinoma, showed that radium produced a distinctly injurious effect on cell nuclei and prevented mitosis. No essential difference in its action on normal cells and on tumor cells was observable. Cancerous tissue is more susceptible to physical agents than normal tissue because of the rapidly dividing condition of its cells and its lack of a definite vascular supply.

Hill, Morton, and Witherbee (*J. Exp. Med.* xxix, 89, 1919) have recently carried on investigations regarding the effect of roentgen rays on transplantable tumors. The rays were applied in more powerful doses than can be applied therapeutically. The tumors were divided into two portions, one being rayed and the other used as a control. The effects of the radiations were somewhat injurious to the tumor cells but not markedly so. Starting with an original tumor growth, part being rayed and part not, they carried it through several generations, as many as fourteen in one series. The rayed generations of the tumor acquired a distinct immunity to the action of the roentgen rays and gradually grew to yield as high a percentage of takes as the unrayed control portions. Rays of low penetration appeared more harmful to the tumor cells than the more penetrating ones.

While the experimental study of malignant growths has not yielded the same valuable end results that have been obtained in other lines of experimental research in medical science, yet much valuable information has been obtained in regard to the etiology of tumors, their nature, some of the principles of immunity against them, and the action of certain physical agents on them. In view of the large number of animals of the same kind and in the same environment that can be studied with the same tumor, generalizations can be based on such results that in many ways are incomparably better than those drawn from a study of malignant disease occurring sporadically in human beings. It would be in the interest of conservatism and of the scientific spirit to test out by animal experimentation various theories and therapeutic measures with respect to neoplasms before drawing too generalized deductions in the case of human malignant disease.

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DENGUE: OBSERVATIONS ON A RECENT EPIDEMIC.*

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DURING the latter part of the summer of 1918 (August to November) we had the opportunity of observing and studying in a limited way probably the most widespread epidemic of dengue fever that has visited these parts since the memorable epidemic of 1897. No definite record of the number of cases occurring is available, but an estimate by several physicians placed the number between 4,000 and 6,000, approximately one out of every six people being affected.

At irregular intervals Galveston has experienced mild epidemics of this infection. Osler mentions the epidemic of 1897, and Graves in 1908 reported a mild epidemic occurring here. It is seen by these recurring flare-ups that most likely mild cases are here at all times—because of the mildness either not being recognized, or the patients not seeking medical attention. The condition becomes noticeable only when it assumes epidemic characteristics. A confusing point in the epidemiology of this infection was the arrival in Galveston a short while before the disease appeared, of a number of United States marines from the West Indies, where dengue is known to be endemic. It is possible that these marines introduced the infection into Galveston.

Dengue is definitely one of the mosquito-borne diseases, and formerly the *Culex fatigans* was supposed to be the only variety responsible for its transmission. Recent work, however, tends to incriminate the *Stegomyia calopus*. Both of these varieties of mosquitos are present in Galveston in abundance during the summer months, and the presence of one or two cases of dengue as a focus could easily result in a widespread distribution of the infection.

While opinion is fairly uniform as to the mode of transmission of dengue, the question as to the etiological agent is still in dispute. Graham, as far back as 1903, stated that he found a protozoal organism in the blood of patients ill with dengue, which he considered responsible for the disease. His results, however, have never been confirmed by any of the many reliable investigators of this subject. The work of Ashburn and Craig has proved that the cause of this disease is a filterable virus. Recently McMullin has suggested that a poisonous protein is injected by the bite of a mosquito, and subsequently another mosquito biting the same individual injects more of the protein—an anaphylactic reaction resulting, which exhibits itself as dengue.

The recognition of dengue is comparatively easy when attention is called to the matter, but it may frequently be confused with other conditions, such as influenza. That such confusion did arise is evidenced by the reports filed with the Bureau of Vital Statistics in Austin, of numerous cases of dengue occurring in the northern portion of the State. Dengue is essentially a coastal disease, and that this

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epidemic was confined to Galveston and its immediate vicinity seems to be borne out by the fact that very few cases came to the attention of the health officers in Houston, only 50 miles distant.

The clinical manifestations of the recent epidemic conformed in the greater degree to those noted in other epidemics. A noticeable feature, however, was the marked irregularity and variability of the symptoms in different cases. This point was impressed upon us by Assistant Surgeon General H. P. Carter, of the U. S. P. H. S., who was in Galveston during the height of the epidemic, and who saw several cases. To use his illustration, the dengue seen in Eastern countries is more or less regular and conforms in the majority of instances to one type, much like the staid and dependable Oriental, while in the Western Hemisphere the disease, in his experience, assumes the more erratic characteristics of the Occidental.

The onset in the cases observed by us was fairly abrupt, being ushered in with a sudden rise in temperature and headaches. The temperature was, with few exceptions, only moderately elevated, numbers of the students in the medical school not even being forced to stop attending classes. In others, however, the onset was rather stormy and was of the kind seen in an acute infection. The "saddle-back" temperature curve was observed in a large majority of the cases, but several showed a curve which was maintained two to three degrees above normal for several days. The marked predominance of the "saddle-back" curve is interesting when we consider Colonel McCullough's recent observations in this disease, wherein he doubts the appearance of the "saddle-back" curve of the temperature in most cases. The pulse was slow, as might be expected—the rate lagging much behind the proportionate increase to be expected with the elevated temperature. In no instance did we encounter the Faget type of pulse, a point also noted by Graves in his report of a previous epidemic. The pains complained of by patients were not so severe as one might be led to expect from some of the names given this infection. Eye pains, with associated headaches, were most frequent and most complained of, with the general body pains coming next. In not a single instance did we note the swollen joints mentioned by Osler—a similar finding being noted by Cleland, Bradley, and McDonald in their report of the 1916 Australian epidemic. The eye pains were extremely constant and frequently suggested the diagnosis. These pains were of a purely muscular nature, being caused by the movements of the eye ball, and were stated to be deep seated. The body pains were located chiefly in the lumbar regions, and to use the description of one of the students affected, felt as if an "elephant had walked across his back." Nervous symptoms were very prominent—chiefly exhibited as a marked depression, lassitude, irritability, or insomnia. In one case coming to our attention, well-marked hallucinatory symptoms were present. These hallucinations consisted of seeing and feeling a hand picking at the bed clothes and bed shirt; otherwise the case presented no symptoms out of the ordinary, and was not an especially severe infection, so far as the febrile reaction was concerned. The skin eruptions noted in the cases coming under our care were extremely varied—ranging from a large well-marked morbilliform type to a faint almost imperceptible scarlatiniform eruption. In most cases, where looked for, the preliminary rash or rather blushing of the skin was noted, and with the terminal rise of temperature the typical rash appeared. In several instances this rash was so much like that found in measles that Koplik spots were carefully looked for, but in the absence of these and other symptoms of measles a diagnosis of dengue was made.

A small proportion of our cases presented definite glandular enlargements, the inguinal, axillary and posterior cervical groups being involved in degree and sequence as given. These glands were only slightly painful. A great deal has been written on the blood picture in dengue, the characteristic changes being a more or less marked leucopenia with a reduction of the polymorphonuclear neutrophiles and eosinophiles and a relative increase of lymphocytes. In our perusal of the literature on the subject of dengue fever, the only mention made of any change in the erythrocytes was in a report by Bonne of a dengue-like fever in Dutch Guiana. In these cases the author found polychromatophilia with some basophilic degeneration of the red blood cells. McCullough states that he found no change in the red blood cells. In several cases which we have observed it was noted that, in addition to the usual leucopenia to be expected, there was a well-marked reduction of the red blood cells with a greater proportionate reduction of the hemoglobin, giving us a picture of secondary anemia. This change in the blood picture, it seems to us, might account for the marked lassitude and debility which is one of the most common of the after-results of dengue. In view of the fact that the toxin present in dengue must cause a depression of the function of the red bone marrow, as evidenced by the leucopenia, it seems logical to conclude that we would also observe a decreased formation of red blood cells.

As a rule, one attack of dengue is supposed to confer immunity, at least insofar as reinfection during the same epidemic is concerned. Instances, however, have been reported where repeated attacks have been noted during the same epidemic. We have observed several patients during this epidemic in whom reinfection undoubtedly occurred, as several weeks elapsed between the attacks. The symptoms in each attack were practically the same, although the pains in the second attack were of a milder nature. A rash reappeared during the second attack. That these were not relapses of the same attack is evidenced by the length of time intervening—three to six weeks.

The diagnosis of dengue is usually a simple matter, especially during an epidemic, although the differentiation from influenza, as in the recent epidemic of both diseases, frequently presents a very nice question. The absence of respiratory symptoms, the intermittent temperature, and the rash should serve to differentiate dengue from influenza. However, attention should be called to the fact that in some instances influenza may show a rash, which might be confused with that occurring in dengue. Scarlet fever is differentiated by the leucocytosis present; measles by the presence of Koplik spots, coryza,

and respiratory affection; acute rheumatic fever by the leucocytosis, acid sweating, and joint affection. At the present time yellow fever is not an infection which we are likely to see, but when present it may exhibit an extremely difficult question for differentiation. The jaundice, albuminuria, Faget type of pulse, and absence of marked blood changes should serve to mark a difference between yellow fever and dengue.

Our treatment of dengue has been entirely symptomatic. We have found that frequently, when aspirin and phenacetin would fail to relieve the body pains, large doses of sodium salicylate combined with sodium bicarbonate would meet with success. Occasionally small doses of heroin hydrochloride were necessary to relieve the pains. In view of the fact that dengue is definitely a mosquito-borne disease, efforts toward prevention by elimination of mosquitos would be more fruitful than trying to discover some remedy for the condition.

In the above presentation it has not been our intention to indite a complete symptomatology of dengue fever, but merely to call attention to some of the features of the recent epidemic which we have experienced. No mention was made of the gross pathology, as none of the patients have died.

In conclusion, attention is especially directed to the extreme variability of the symptoms presented and the entire absence of joint complications. The anemia, appearance of relapses of fairly frequent occurrence, and the not infrequent glandular enlargements are points which have not been stressed in reports of previous epidemics.

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CASE OF INFLUENZA COMPLICATED WITH STREPTOCOCCIC BRONCHOPNEUMONIA, ENDOCARDITIS, ARTHRITIS, AND PYEMIA; WITH RECOVERY.

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THE several points of interest in this case coupled with the fact that arthritic and serious heart complications in influenza have been reported very rare are the reasons for this description. In the combined reports of the epidemic from 72 army hospitals in the United States, serious heart complications and arthritis are mentioned as being extremely rare.

S. L., girl, age 19, single, doing housework in her own home, became sick with influenza during the second flare-up of the epidemic in 1919-1920. She had had measles in childhood and had then remained well until progressive loss of weight and feeling of fatigue two years ago caused her to consult a physician, who probably diagnosed incipient pulmonary tuberculosis and had her sent to a tuberculosis sanitarium for treatment. She said she never coughed or raised any sputum and that she felt well after several weeks of sanitarium life, although she stayed at the institution for six months, being then discharged as cured.

I saw the patient on January 20, 1920, the fourth day of her illness, and then the symptoms and physical findings were those of a violent, almost universal bronchopneumonia with pain and tenderness also beginning in the left shoulder. As the patient looked very sick and the lung findings were so extensive, hospital treatment was advised and decided upon. Upon entrance to the hospital the temperature was 104.8°, pulse 130, respiration 38. The facies was anxious, color cyanotic, eyes staring, lips dry and covered with dry dirty looking crusts, breathing labored and shallow. There was pain in the left shoulder and in the chest beneath the sternum, and in the sides on coughing. The cough was short and hacking and there was a scanty, tenacious, hemorrhagic sputum. Percussion showed areas of dulness varying in size scattered over both lungs with bronchial breathing over most of the chest and many coarse and fine crepitant râles on both late inspiration and expiration. The heart tones were clear and fairly strong. No murmurs were heard. The rest of the physical examination was negative. The blood showed a leucocytosis of 15,000. The urine had a trace of albumin, a few red blood cells and leucocytes, and also a few hyaline and granular casts. The sputum showed red blood cells, pus, streptococci, pneumococci, and staphyloocci.

The patient was treated by mustard plasters to chest and back twice daily, hot water bags to feet, liquid diet, tincture of digitalis 15 minims every four hours, heroine 1/12 grain when the cough became very troublesome, and sodium salicylate 5 grains every four hours. For the next seven days the patient's temperature varied from 101° to 104°, showing a fairly constant morning decline. The pulse came down to 100 and stayed around that point. There were also frequent attacks of perspiration preceded by chills of varying duration, from a few minutes to half an hour. During this time the chest findings became gradually more favorable and there was some diminution in the cough and expectoration. The left shoulder kept swelling and by January 31 was tense and very tender. There was also some swelling noticed around the region of the right shoulder about the 27th. Hot compresses were constantly applied to both shoulders. On January 31 the temperature suddenly climbed to 104.6°, the pulse became almost imperceptible, and the patient appeared to be dying. She was given hypodermoclysis of 500 c.c. of physiological salt solution containing 30 minims of adrenalin solution and this seemed to cause marked improvement. The following morning, after consultation, I opened the left shoulder joint and evacuated about a pint of green pus which showed the presence of *Streptococcus viridans* in pure culture. Two cigarette drains were left in the shoulder joint and the wound was subsequently dressed daily until healing took place. After this drainage was established the temperature dropped to 100° but started to go up again the next day. The right subdeltoid bursa was then opened and found to contain about 60 c.c. of the same kind of pus with the same organism. Following this there were three days of septic temperature with falls below normal on two days, then the temperature remained normal for three days and the patient appeared so much better that it was believed that convalescence had set in. However, on February 9 the cough suddenly became worse, precordial pain

was complained of and the temperature again for five days took on the septic curve, at one time rising to 105.4°. It should be stated that on the day the first shoulder was opened a cardiac systolic murmur appeared. It was rough and sharp and could be heard over the whole cardiac area, being loudest over the apex and in the fourth interspace to the left of the sternum. After five days of chills, septic temperature curve, and sweats the patient started to improve and the temperature would go down to normal and rise to 99° or 99.8° in the afternoons.

nausea and vomiting. For the troublesome cough 1/12-grain heroin tablets were administered very carefully and judiciously. The one time when the patient was apparently in collapse the hypodermoclysis of physiological salt solution with adrenalin seemed to tide her over. All the operating was done under local anesthesia with 2 per cent. procaine and adrenalin.

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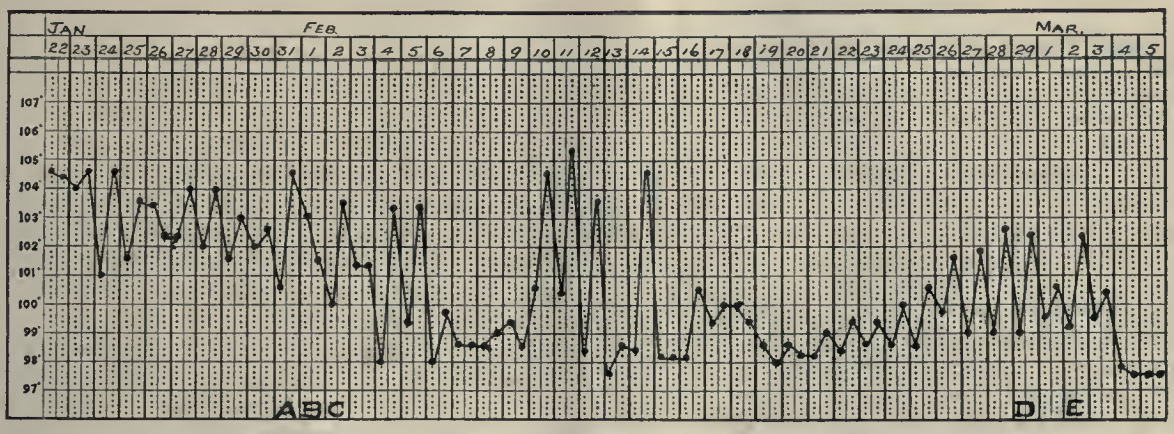

A, Hypodermoclysis of 500 c.c. saline solution containing 30 minims of 1-100 adrenalin solution.
B, Left shoulder joint opened and drained.
C, Right subdeltoid bursa opened and drained.
D, Left subdeltoid bursa opened and drained.
E, Abscess in sacral region opened and drained.

A glance at the chart will show the interesting fact that here it commenced to rise a little higher every day like in typhoid, dropping to about 99° in the mornings. While this gradual ascent was being accomplished, the left shoulder was swelling again and a large hard mass, the size of a grape fruit, was forming in the sacral region beneath the gluteal muscles. On February 29 the left subdeltoid bursa was opened and drained, the old incision into the joint having been closed for some time and remaining so. This new accumulation of pus was confined to the subdeltoid bursa and seemed to be not connected with the joint cavity. On March 2 the sacral abscess was opened and an astonishing amount of pus was evacuated. All the pus was of the same bright green color and contained the *Streptococcus viridans* in pure culture. After this the patient's temperature rapidly dropped to normal and remained so. During this time the chest had cleared up remarkably. There were no dull areas to be found, no bronchial breathing, and only a few crepitant râles in the left infrascapular region. The cardiac murmur was very faint and a few days later could not be detected at all. The general condition improved rapidly, all the wounds healed up, and the patient now appears to be on the road to health.

In the course of this case there appears a point in the chart from Feb. 6 to 9 when the temperature was normal. To aid recuperation I had prepared an autogenous vaccine and on Feb. 9 I administered a small dose, 200 million killed bacteria subcutaneously. The reaction appeared severe, the temperature promptly jumping to 104.6° although it promptly dropped again to 100.4°. The next day I administered 300 million of the vaccine and this apparently provoked a rise to 105.2° with nausea, vomiting, and aggravation of all symptoms. So after that the vaccine was abandoned. The main reliance in this case was placed on careful nursing, plenty of nourishment in liquid and easily assimilable, form, plenty of water, alkali in the form of sodium bicarbonate, small doses of sodium salicylate, and the steady administration of digitalis, stopped only several times to wait for the subsidence of

Medicolegal Notes.

Opinion Evidence as Against Positive Testimony.—In an action for malpractice it was insisted by the plaintiff that the defendant in performing a mastoid operation severed the seventh or facial nerve, which was unnecessary, in consequence of which the plaintiff sustained damages. The trial court directed a verdict for the defendant. On appeal, the question involved turned on whether there was evidence sufficient to carry the case to the jury. It was contended by the defendant that there was no evidence that the nerve was severed; hence a verdict was properly directed. Paralysis of the face was shown, and there was evidence that severance of the nerve would cause that condition. But the evidence also showed that the paralysis might well follow an operation skilfully and properly performed from various other causes. It was shown by the evidence that the paralysis might have been caused by a "dehiscence," or by bandaging after the operation, or by cold drafts, and possibly other causes. Although it appeared that after the operation one side of the plaintiff's face was paralyzed, it was held that in order to warrant the trial court in submitting the case to the jury there must be some evidence that the defendant severed the facial nerve; and the appellate court found none in the record. There was positive evidence, not only by the defendant, but by Dr. B., a Chicago specialist, that the nerve was not severed. Dr. B. opened up the old scar in an effort to relieve pressure on the nerve, and testified that it had not been severed. Claim was made by the plaintiff's counsel that Dr. B. admitted the nerve was severed. The evidence did not support this contention. The claim was based on evidence of one Mrs. H., but her evidence as to what Dr. B. said when he was not under oath was not competent, except as laying a foundation for impeachment. Moreover, Mrs. H. admitted on cross-examination that Dr. B. might have said that the nerve was injured, but not severed. Some reliance was placed on the opinion of another physician. But it was held that his opinion could not raise a conflict with the positive undisputed evidence that the nerve was not severed, and that other causes existed for the paralysis. Proof of bad result raised no presumption of negligence in this case. Judgment for the defendant was therefore affirmed.—Finke v. Hess, Wisconsin Supreme Court, 174 N. E. 466.

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THE VALUE OF CYSTOSCOPY IN CANCER OF THE UTERUS.

THE presence of certain lesions of the bladder observed in cystoscopy may confirm the suspicion of the cancerous nature of the lesion in the cervix uteri, but the only really specific vesical lesions resulting from uterine cancer are the little areas of cancerous granulations and carcinomatous nodules, deep ulcerative processes and vegetations the neoplastic characters of which have been identified. As to other lesions which have been thought to be a consequence of uterine cancer, they have been met with in numerous non-malignant affections of the uterus and adnexa reacting on the bladder, and also in certain varieties of cystitis. In the first phase there is a simple pushing back of the uterine growth causing an intravesical eminence. This is due to the tumor itself when it is large or to a serous collection in its neighborhood, which is an exceptional condition, although an undoubted instance has been reported by Violet and Murard. But simple retroversion of the uterus, fibroma of the cervix, or fibrous uterine polypi projecting into the cervix have been known to give rise to similar deformity of the floor of the bladder. A salpingitis prolapsed in Douglas' cul-de-sac may give rise to an elevation of the trigonum and projecting ureteral orifices. Retroversion is of special interest, because it frequently complicates cancer of the cervix, yet one must not be too hasty in attributing to cancer a marked projection of the floor of the bladder which, in reality, is a consequence of retroversion.

Deviations of the vesical floor, diverticula of the bladder, and folds of the mucosa are often due to a salpingitis adherent to the urinary reservoir. A pronounced diverticulum was seen by Cruet in a case of salpingitis which had formerly been connected with the rectum by a sinus. Finally, once the invasion is established, the mucosa becomes deformed, but at the onset it is respected. The neoplasm infiltrates the muscle and submucosa; there is a diffuse edema, or the mucosa lies in large folds, or bullæ form. All observers have regarded this edema as very important, and still it is not pathognomonic in any of its forms. Bullous edema has been met with in a case of a large pyosalpinx adherent to the bladder, and it is also present in inflammatory processes of the adnexa, in cases of uterine fibroids wedged in the pelvis, and in certain forms of cystitis. Bumm has described a bullous edema of the anterior vesical wall in a case of prevesical abscess following labor, which disappeared with the retrogression of the abscess. The same edema was seen by Cruet in a case of fibroma in a retroverted uterus, and in a case of antiversion there was edema of the vesical neck and trigonum. Bierhoff has seen bullous edema not only in cancer of the cervix uteri, but also in suppurating salpingitis adherent to the bladder; also in prolapsus uteri, simple and gonorrheal cystitis, ureteritis, simple ulcer of the bladder from a burn, and in cancer of the bladder itself. What is common to all these affections is the seat of the edema in the bladder; on a lateral wall in pyosalpinx; on the margins of the ulceration or around the neoplastic nodule in ulceration or vesical cancer; in the cases of urethritis and cystitis it is at the orifice of the neck of the bladder and apex of the trigonum that the maximum of edema is seen. Bullous edema has not exactly the same transparency in these affections as in uterine cancer; the bullæ are pinker and more opaque, while in the neoplasm the bullæ are whitish opaline elevations distinctly seen against a reddish background.

It is evident that in the majority of cases cystoscopy is unable to affirm the neoplastic nature of the involvement of the vesical walls, but in practice the question may be put differently. The diagnosis of carcinoma of the cervix uteri has been made by vaginal and genital examination which should always be done before cystoscopy. What we ask of cystoscopy is a diagnosis of the state of the vesical wall in order to ascertain if the neoplasm has extended to the bladder. Here a positive answer may be had. The retractions and circulatory disturbances indicate that the vessels of such a bladder pass through a mass of indurated and retractile tissue. The lesions seen by cystoscopy are not specific; it is impossible to estimate exactly how much simple mechanical compression, neoplastic infiltration, or inflammation is in play, because the adhesions and induration may be composed of newformed tissue or may be the inflammatory tissue which always accompanies or precedes cancer in its extension. The cystoscopy reveals these processes in the bladder; they therefore exist and that is all the surgeon wants to know. It is not essential to know exactly if the bladder involvement is inflammatory or neoplastic. We know it does exist and this will modify the operative prognosis. For this reason alone, cystoscopy should always be resorted to in completing the diagnosis of uterine cancer.

THE INTERPRETATION OF EXPERIMENTAL AND CLINICAL DATA OF COMPLETE ARRHYTHMIA.

IF it be admitted that, in the mechanism of complete arrhythmia, the type of activity of the auricles plays no determined part, in the same way as irregularity of the ventricular rhythm, from the

simultaneous action of several supraventricular foci of excitation, the following facts can be readily understood which have been derived from experimental and clinical observation. Firstly, ventricular arrhythmia may be accompanied by either fibrillation or paresis or paralysis of the auricles. In either case, the irregular excitations arising in the auricular portion of the primary fasciculæ none the less extend to the ventricle by its intermediary. Secondly, during a succession of completely arrhythmic systoles some contractions of sinus origin may reappear singly or in series with a normal succession and coordination of ventricular or auricular systoles; or some contractions corresponding to a known type of extrasystolia may occur if the sinus or an ectopic focus has been momentarily able to control the action of other foci and to assume the exclusive direction of the cardiac rhythm, either for a single contraction or a more or less prolonged series of systoles. These are difficult to explain if it be admitted that there is effective action of fibrillation on the ventricles, because it would be difficult to understand the cessation and return, which are sometimes almost instantaneous.

In the mechanism of complete arrhythmia, the auriculoventricular fasciculus remains not merely the organ of generation, but also of selection and transmission to the ventricles of supraventricular excitations. When an obstacle is interposed on its track, its division or destructive lesions will retain their rôle of a more or less effective *barrage*, protecting the ventricles and completely isolating them from irregular auricular excitation. The ventricular arrhythmia will then either be moderate or replaced by a slow and regular automonous rhythm, the auricular orifices remaining in a state of fibrillation or of paralysis. The fasciculus will also form an obstacle to the effects of excitation or inhibition of the pneumogastric, as well as to the action of atropine, digitalis, etc.

It is understood that, by the simultaneous action and the interference of several foci of excitation of ventricular and not auricular origin, one may conceive the possibility of complete arrhythmia of ventricular origin which have been demonstrated by experiments only. It may be likewise conceived that, from the effect of such excitations, the ventricular myocardium—either from exhaustion or some other cause such as an interference of the extracardiac nervous system—may present dissociated and irregular contractions, analogous to auricular fibrillation, but having as a consequence sudden or rapid death on account of the paramount physiological part played by the ventricles. Finally, the experimental production of auricular fibrillation with complete arrhythmia produced by paralyzation of the right auricle, may also be explained, perhaps, by the fact that electrization will only determine the production of multiple foci of excitation in the auricle having for effect fibrillation of the auricles on the one hand and complete ventricular arrhythmia on the other.

Do cases of complete arrhythmia purely of sinus origin exist? In other words, are there cases in which the sinus gives rise to stimuli unequal in both strength and time instead of equal strength and given out at regular intervals? Such an action on the part of the sinus cannot be regarded as impossible, but the existence of a sinus arrhythmia can be affirmed only if the auricular contraction regularly precedes the ventricular systole. Cases of this description are well known, but do not respond to the definition of complete arrhythmia in the strict sense of the term, because, although the cardiac contractions occur at irregular intervals, their energy remains the same. It would therefore seem logical to regard this as a special form of arrhythmia and not as complete arrhythmia, such as many observers are inclined to do, a term which implies a disturbance of all the elements entering into cardiac contraction. As to the sinus varieties of arrhythmia with inefficient auricular contractions or auricular paralysis, their existence is admissible, but it is impossible to recognize them clinically or to differentiate them from complete arrhythmia.

VARIABILITY IN THE NON-PROTEIN NITROGENOUS CONSTITUENTS OF HUMAN BLOOD.

As the use of the chemical examination of the blood became more prevalent it was found that the various nitrogenous constituents exhibited a variation that was often quite marked, and in a more or less casual fashion many authors have indicated what appeared to them to be the normal limits within which these variations occurred. But very few investigators have presented the results of an investigation that could be considered complete so that a satisfactory study of these variations has not been made. Hammett has been studying this point especially for some time and has recently published (*Jour. Biol. Chem.*, 1920, xli, 599) his figures together with a number of very interesting conclusions which he has drawn from them. In examining blood from the same individual from week to week he found that, while the composition varied, the level of the concentrations of the various substances was individual in character. He further is inclined to think that the sum of the average deviations of the constituents for any given individual may be an index of the metabolic stability of that individual. But this latter theory is one that will need a great deal of investigation before it can be substantiated. Individuals will have to be observed under many different conditions of mental and physical activity before dependable conclusions may be drawn.

It is interesting to note that in a very general way these substances vary in the blood much as they do in the urine. The creatinine exhibits the greatest stability, as Folin long since noted, while the urea nitrogen and the rest nitrogen show the greatest variations. With diminishing amounts of total non-protein nitrogen the urea nitrogen de-

creases both absolutely and relatively when compared with the other constituents, and it appears to vary reciprocally with the rest nitrogen. The changes which are found with these two substances result in a relative stability of the total non-protein nitrogen. Hammett further found that there was no practical difference in the constitution of the blood taken before breakfast and that taken three and one-half hours after that meal. This point is of practical importance in the selection of a time to draw blood for chemical examination.

It is of importance to emphasize the extent of these variations, for the average physician is only too prone to accept certain figures as the normal and to consider relatively slight deviations from them as evidence of some pathological condition. If he can remember that the non-protein nitrogen may vary from 27.3 to 45.5 mg. per 100 c.c., and the urea nitrogen from 9.7 to 25.1 mg. per 100 c.c. without necessarily indicating anything abnormal, he will be better able to appreciate the significance of the figures reported to him. Naturally our ability to detect any change in the figures in a given case would be greatly increased if we could know what the normal figures for that person had been. Since this is rarely possible, we must content ourselves in demanding relatively great deviations from the normal before we insist upon the presence of a disease condition.

THE ROENTGEN RAY AND TUBERCULOSIS.

It has been rather definitely shown that the lymphatic tissues, spleen, lymph nodes, and bone marrow are the ones which suffer principally after exposure to the *x*-ray, and there is a certain amount of evidence that the lymphocytes are the cells which are most active in protecting the body against tuberculous infection. On these theories it is easy to conclude that the use of the *x*-ray in the presence of tuberculous infection is strongly contraindicated. Such a conclusion was supported by the work of Morton, who found that guinea pigs that had received intraperitoneal injections of urine containing tubercle bacilli succumbed to the disease in a much shorter time when they were exposed to massive doses of the *x*-ray shortly after the inoculation. Morton's work seemed to be in harmony with that of Murphy, who studied the effect of the *x*-ray upon the lymphocytes. But much evidence soon began to appear on the opposite side of the subject. Lewis and Margot found that white mice that had been subjected to splenectomy showed increased resistance to the development of tuberculosis after inoculation, and it has recently been announced that the roentgen ray offers a hopeful method of treatment of tuberculous adenitis. It has apparently been shown quite clearly that antibody formation is interfered with by exposure to these rays, for Hektoen's work in this direction has not been successfully controverted, but the subject is still in a chaotic condition.

Recently Weinberg has attempted to reproduce Morton's results. In this he has been unsuccessful and reports that exposure to the *x*-ray has but little effect upon guinea pigs that have been inoculated with the tubercle bacillus (*Archiv. Int. Med.*, 1920, xxv, 565). It is impossible to reconcile the findings of these two investigators and the question must be settled by further studies. Weinberg found the same systemic response to the *x*-ray as other students have seen. There was a consistent drop in the white cell count, the number of lymphocytes being especially reduced. On microscopic examination he found that in the roentgenized animals there were fewer polymorphonuclear leucocytes and lymphocytes in the blood vessels and there were very few lymphocytes in the outer zone of the tuberculous lesions. The problem is an exceedingly cessful in clearing up some of the obscurity which important one in its practical bearing upon therapy, and it is hoped that early investigation will be sucnow surrounds it.

African Sleeping Sickness.

In the present and in the future Africa will have more need of the outer world to assist in the development of her resources, and the outer world will have more need of her products. These changes will multiply the avenues of traffic by road, rail, and steamer, and will also greatly increase the possible number of victims of tropical diseases and their spread from the regions to which they have been confined. Of these plagues, sleeping sickness is among the most dangerous. For over a century it has been recognized as a specific affection, but attracted but scanty attention until 1901. The opening of the Uganda led to its introduction—probably by human carriers—from the Congo, and the mortality from it assumed vast proportions. It was found in 1903 that the carrier was a tsetse fly which lived only near water, and in 1907 the epidemic was checked by the removal of the natives from a two-mile zone bounding Lake Victoria. But although the attempt had been made to eliminate all human carriers of this infection, some flies remained infective. Either many natives had broken the cordon, or there was a non-human carrier. Experiments made by Sir David Bruce in 1910 with captive antelopes showed that these animals artificially infected by the fly could in turn give the trypanosomes to clean flies by which they were bitten. It had long before been shown that the wild game of Zululand formed a permanent reservoir of the trypanosomes of sleeping sickness, which were carried by the tsetse fly to domestic animals and thus a menace to human beings. Suddenly sleeping sickness began to appear in Nyasaland and Rhodesia, and there was a natural alarm lest the fate of Uganda should be theirs. The great authority of Sir David Bruce supported the opinion that wild game should be exterminated in all regions bordering on human habitation and trade routes. A committee was appointed to sift the evidence and offer recommendations. The report, published in 1914, shortly before the war, summed up the facts as they were known, made specific recommendations, and also suggested further research. The committee held that Uganda sleeping sickness and Nyasaland sleeping sickness were dis-

tinct infections, due to different trypanosomes, carried by different species of tsetse fly, and requiring different prophylactic measures. It appeared to be certain that man himself was the permanent reservoir of the Uganda disease, whereas in the case of the Nyasaland form competent authorities were at variance. In the five years of war there must have been many changes in the distribution of the fly and of the diseases. It would be of great value were a competent authority now to traverse the whole region from the West Coast, through Central Africa to Uganda and down by Nyasaland to Rhodesia, to collect the facts and arrange for the correlation of research and of prophylactic measures. It is possible that, although on the retired list, Sir David Bruce may be asked by the British Colonial Office to undertake this investigation, and no man could be found more competent in the matter.

The Pathology of Senile Angiomata.

When a senile angioma is completely developed it forms a small, well-limited lenticular mass of cavernous tissue, situated exactly over the subpapillary vascular stratum of the dermis. The ectatic vessels which compose it have a well-marked contour and are lined with flat endothelium. Their walls are composed of fibrous connective tissue deprived of muscular elements and very poor in elastic fibers. Only a small number of cell elements are found: fixed cells of the connective tissue and some large cells containing much granular protoplasm, usually offering the general shape of plasmatic cells whose granulations stain in the same way as mast cells. The walls are rather thin, the lumen generally fairly regular—sometimes perfectly circular—but more often irregular on account of the vascular entanglement. In specimens removed the vessels contain red blood corpuscles and white cells. The latter consist of polynuclears with some lymphocytes and may even outnumber the red cells, so that some vessels, usually of small caliber, seem to be stuffed with white cells. These may form in piles or cover the walls of the vessels, forming a cuff, in the center of which are the red corpuscles. This condition is due to the sluggish circulation in the angioma. The cavernous tissue forms a compact mass and well defined, separated from the epidermis by a thick layer of connective tissue, immediately surrounded on the sides and underneath by normal dermic tissue. The epidermis covering the angioma is unchanged, but the dermoepidermic limit is flattened; the papillæ above the little tumor have about completely disappeared, as well as the interpapillary epithelial prolongations. However, on the circumference of the growth long epidermic prolongations may be observed which make a framework around the tumor and dip under it. The circumference of the angiomatous mass is not always perfectly regular, as there is a certain lobulation formed by somewhat thicker fibrous septa which dip into its mass and come from either its margin or surface. Some ectatic vessels may be observed at the margin of the angioma. When very small the angioma is not so distinctly outlined nor is it so compact in structure. It is made up of some clusters of ectatic vessels situated in the subpapillary stratum, but they do not offer the distinct characters of cavernous tissue. Their development is as follows: A small group of dilated capillaries will be seen, immediately surrounded by a narrow zone of round cells, resembling leucocytes. These cells form tracts of one or several rows which, starting from the already ectatic capillaries, dip into the interstices of the fibrous tissue and appear to be the commencement of newly formed capillaries. The process of vascular neoformation is usually presented in limited areas. The angioma consequently appears to grow by small successive masses or glomerulæ, which corresponds with the finely lobulated aspect of the lesion observed clinically. It is to be especially remarked how the pathological process is confined to the vessels. The neighboring dermis and overlying epidermis show no morbid changes, they being purely and simply pushed aside by the vascular neoplasia.

Enemata of Bile in Constipation.

Bensaude and Vicente read a paper on this subject last November before the Société Médicale des Hôpitaux which is condensed in the *Journal de médecine et de chirurgie pratiques* for January 25, 1920, xci, 2. Of interest is the fact that the resource is very old, if not one of the oldest known in medicine, for 1300 years before Christ a mixture of beef bile and milk in the proportion of one-third bile to two-thirds milk, was used as an enema for constipation by the Egyptians. Bile by the mouth may be shown to accelerate greatly the food passage through the small intestine as a result of direct contact with the latter, but in the present case the bile only reaches the colon. The authors have made the following demonstration: the patient ingests a barium meal—200 gm. gelatinous baryta with food—and 8 hours later a liter of water containing 10 gm. of extract of bile is injected into the colon. At this moment the barium is shown to be in the cecum and ascending colon. In from 2 to 3 minutes the barium is seen to move and in another minute is traversing the transverse colon. By the fifth minute the patient is at stool by reason of the urge. In the experiment the subject selected is one suffering from habitual constipation. The substitution of simple warm water without bile addition used for control shows that the first contractions are delayed to 8 or 10 minutes and that the fecal mass does not move. By deep massage the mass is moved to the hepatic flexure but does not clear this beyond the middle of the transverse colon and the contractions set up by the water alone die out. Bile thus is able to excite the colon as well as the small intestine, even when greatly diluted with water. A single dose of 10 gm. of bile causes colicky contractions. The authors have used the remedy in a number of different ways and prefer a dry extract which dissolves freely in water. Half a liter is plenty of addition and the fluid is allowed to enter by gravity from a vessel at an elevation of 30 to 40 cm. The interval of latency as already shown is not over 5 minutes. Thus far there have been no cases of "enema habit" developed and the authors note that the intolerance, which so often results from a long continuance of the use of suppositories, is never caused by bile enemata.

Differentiation Between Influenza and Epidemic Encephalitis.

Fornos of Valencia has compiled 18 points of differentiation between these two maladies, his paper having been read before the Royal National Academy of Medicine in February last (*La Medicina Ibera*, April 24, xi, 129). Grippe begins brusquely, encephalitis slowly; grippe in epidemics is highly contagious, the other slightly if at all; the grippe patient is lucid at the outset the other is not clear-headed; the grippe subject has a tendency to bradycardia which is never seen in the encephalitic; the grippe patient is albuminuric and the other never is; the grippe subject suffers from a toxemia and in encephalitis there is no evidence of toxemia; grippe gives no immunity to encephalitis and the converse holds good; in uncomplicated grippe there is a prompt defervescence but in encephalitis the fever subsides gradually; the fever is much higher in influenza of moderate type, for in the other malady 38° C. (100.4° F.) is seldom passed; in grippe there are pronounced gastroenteric symptoms not seen in encephalitis; the characteristic tongue, throat, etc., of grippe are absent in encephalitis; in encephalitis there are characteristic eye symptoms never encountered in grippe; the bacteriological finds are quite different in the two maladies. The author continues the tabulation of differences but his method is hardly just, for the comparison should be made between epidemic encephalitis and grippal encephalopathy. Cases have been reported in which diagnosis between these two affections was most difficult.

Antigonococcic Vaccine Per Os.

Some years ago a New York physician shocked his colleagues by an article in the Medical Record recommending the administration of the patient's own pus by the buccal route in gonorrhea, this being an outgrowth of the use of autogenous vaccines. It would appear that the idea was not so new or outlandish as to escape the attention of others, for we read that in 1913 Lumière and Chevrotier began to experiment with the use of sterile cultures of gonococci given *per os*. In this case the vaccine was stock vaccine prepared from urethral discharges not necessarily from the patient's own pus. The Frenchman obtained the idea from the previous use of typhoid vaccine by the mouth. Results from the use of this vaccine were not reported until 1916. The discharge was at first aggravated but later the gonococci steadily diminished in the discharge until bacteriolysis was complete. The idea was next taken up by Jacob, who treated 49 cases in this manner and obtained satisfactory results in two-thirds of them. An Italian, Doctor Georgis, assistant to the chair of skin and venereal diseases in the University of Turin, has recently reported his results with this resource (*La Riforma Medica*, January 31, xxxvi, 5) in both male and female gonorrhea and claimed a good result in about a third of the cases treated. Dr. Duncan, the American author referred to above, recommends a filtrate of live cultures (pus) for hypodermic use, but by the mouth the pus is to be administered as such, shaken up in water or given on sugar or in other vehicles.

News of the Week.

Psychiatric Social Workers Wanted.—The United States Public Health Service has appealed to the American Red Cross to begin a national campaign for volunteers to be trained as psychiatric social workers among the 50,000 World War veterans suffering from nervous and mental diseases in Public Health Service hospitals. Nearly two hundred workers will be needed before fall to care for such cases. There are today only 150 such workers in the country, and it is obviously inexpedient to take them from their present tasks. In accordance with this request, the Red Cross seeks volunteers for these positions at salaries ranging from $1,500 to $2,100 a year, offering summer school courses, on a scholarship if necessary, to provide trained workers by fall.

Fund for University of Rochester.—George Eastman and the General Education Board have given the sum of $9,000,000 to the University of Rochester for the schools of medicine and dentistry. Of this amount pledged, the General Education Board gives $5,000,000 and Mr. Eastman $4,000,000. Mr. Eastman's other gifts to the University of Rochester include a $4,500,000 school of music, the only one of its kind in the world; the Eastman scientific laboratories, $500,000 to the endowment raised in 1913 and $100,000 to the $1,000,000 Victory fund.

Another General Hospital Discontinued.—It is announced that the Surgeon General of the Army has been directed to arrange to discontinue U. S. General Hospital No. 31, Carlisle, Pa., as a general hospital on June 30, 1920, and has been authorized to utilize for Medical Field School purposes the Carlisle Barracks Military Reservation, Pa., and the acreage adjacent thereto now occupied and controlled by the War Department by virtue of permit from the Secretary of the Interior, dated August 22, 1918, the school to be designated as "Field Service School, Medical Department, U. S. Army."

Trading in Drugs Light.—According to *Drug and Chemical Markets*, trading in crude drugs has been greatly restricted lately. Many manufacturers of heavy chemicals are curtailing production, it is said, in anticipation of declining prices.

International Medical Conference.—Dr. Simon Flexner, director of the Rockefeller Institute, will represent the United States at a conference of the world's leading medical scientists at Geneva, July 5, the first formal meeting of the Medical Advisory Board of the League of Red Cross Societies. Representatives from other countries who will attend the international conference in July are: Belgium, Professor Brodet; Denmark, Professor Madsen; France, Professor Roux, Professor Albert Calmette and Dr. Leon Bernard; Great Britain, General Lyle Cummins, Sir Walter Fletcher and Sir George Newman; Italy, Professor Bastianello and Dr. Castellani; Japan, Dr. Kinnostke Miura; South America, Dr. Chagas.

Sanitation in the Virgin Islands.—A statement by the chief municipal physician of St. Thomas and St. John, Virgin Islands, shows that the death rate for the first three months of 1920 is the lowest on record, being about one-half the death rates recorded for the English, French and Dutch West

Indian Islands, and four below the 1919 rate of the registration area in the United States. In addition, the birth rate is said to have exceeded the death rate by over 133 per cent., while infant mortality was 76.9—less than half the infant mortality recorded in the surrounding islands, and considerably below the rate in the States. Health and sanitary work is under the supervision of the American naval government of the possession. The American Red Cross, during the last two years, spent nearly $44,000 for the equipment of hospitals on the island. Funds for the administration of the island are limited, but in spite of this, in two years the general death rate has been lowered from 39.5 per 1,000 to 13.6, and the infant mortality from 251.7 to 76.9.

Tuberculosis in Albania.—A survey just completed by American Red Cross doctors in Albania shows that there are over 300,000 cases of tuberculosis in that country, 80 per cent. of the entire population being affected.

Physicians' Exchange.—At a recent meeting of the Sedgwick County (Kansas) Medical Society at Wichita it was voted to establish an exchange in which addresses of doctors are to be kept and through which physicians may be located at any time.

More Rockefeller Donations to Medical Education.—The following institutions are to benefit by appropriations aggregating $20,261,000, recently announced by the Trustees of the General Education Board and of the Rockefeller Foundation: Washington University Medical School, St. Louis, $1,250,000; Yale Medical School, $1,000,000; Harvard Medical School, $650,000; Johns Hopkins Medical School, $400,000; Dalhousie University Medical School, Halifax, N. S., $500,000; various universities of Southern States, $287,350; negro schools, $943,500; American Conference on Hospital Service, $15,000, and the National Committee for Mental Hygiene, $25,000.

Fifth Avenue Hospital Planned.—Plans have been filed for a new eleven-story fireproof hospital to be erected at a cost of three million dollars on the east side of Fifth Avenue between 105th and 106th streets. It is to be known as the Fifth Avenue Hospital, and is to replace the Hahnemann.

Brooklyn Hospital Drive.—A drive to raise one million dollars for the erection of a hospital has been inaugurated by the residents of the Bay Ridge, Borough Park, Bath Beach, Kensington, Mapleton, and Flatbush sections of Brooklyn. The proposed hospital will be known as the United Israel-Zion Hospital.

Major-General Gorgas Honored.—The insignia of Knight Commander of the Order of St. Michael and St. George were bestowed by King George upon Major-General William C. Gorgas during the latter's recent visit to Millbank Hospital, London. The honor was conferred in recognition of General Gorgas' services to Great Britain and the rest of the world. He is en route to the west coast of Africa, where he will conduct researches concerning yellow fever for the Rockefeller Foundation.

Dr. George De Schweinitz of Philadelphia was recently given the degree of Doctor of Letters by the Moravian College and Theological Seminary, Bethlehem, Pa.

Obituary Notes.—Dr. French Austin Smith of Mullins, S. C., died at Johns Hopkins Hospital May 13, at the age of forty-eight. He was graduated from the Medical College of the State of South Carolina in 1895.

Dr. A. F. GREEN died at his home in West Jefferson, Ohio, May 21, in his sixty-first year. He was graduated from Starling Medical College, Columbus, Ohio, in 1894.

Dr. WALTER S. HATFIELD of Cincinnati, Ohio, died May 25, at the age of sixty-six. He was graduated from Hahnemann Medical College and Hospital, Philadelphia, in 1882, practising in Covington, Ky., for twenty-five years and latterly in Cincinnati.

Dr. HARRY D. TODD, police surgeon of Akron, Ohio, died May 25, at the age of forty-four. He was graduated from the Eclectic Medical College, Cincinnati, in 1898.

Dr. THOMAS NORMAN PEARSON of Morrill, Me., died May 28 after a prolonged illness, at the age of fifty-five. He was graduated from the University of Vermont College of Medicine in 1893.

Dr. CLARENCE M. GODDING, for more than thirty years a practising physician of Providence, R. I., died May 28, in his sixty-third year. He was graduated from the Medical School of Harvard University in 1883. He was surgeon in the out-patient department of the Rhode Island Hospital, visiting physician and surgeon, Providence Lying-In Hospital, and attending physician Dexter Asylum.

Dr. H. J. MILLARD, veteran physician of North Adams, Mass., died May 31, at the age of eighty-four. He was graduated from the Berkshire Medical College, Pittsfield, Mass., in 1864. He served in the Civil War, and was a charter member of his Post of the G. A. R. He was a member of the North Berkshire Medical Association.

Dr. WILLIAM W. HICKS, who was a doctor of divinity as well as of medicine, died June 1, at Cambridge, Mass., at the age of eighty-three. He was the first Methodist minister to become a missionary to India, organizing the Methodist mission field in that country in 1860. Dr. Hicks took an active interest in Republican politics, and was widely known as a lecturer and author.

Dr. EDWARD H. CURRIER of Manchester, N. H., died June 1, at the age of seventy-three. He was graduated from Dartmouth Medical College School in 1881.

Dr. EDWARD D. MCGIVERIN of Jersey City, N. J., died June 7, while en route to Los Angeles, Cal., for his health. Dr. McGiverin, who was born in 1886, was graduated from University and Bellevue Medical College in 1909.

Dr. WILLIAM S. JONES, Superintendent of the Soldiers' Home in Vineland, N. J., and New Jersey State Medical Examiner of Institutions, died June 8, in his sixty-third year.

Dr. EDWARD HERMAN M. SELL of New York City died June 7, at the age of eighty-seven. Dr. Sell, who was graduated from Bellevue Medical College in 1866, was the last of the seven physicians who organized the American Academy of Medicine in 1876.

Dr. VIRGIL THOMPSON of New York City died June 8. He was graduated from the New York Homeopathic Medical College and Flower Hospital in 1862.

Correspondence.

THE AFTER CARE OF ADDICTS.

To the Editor of the Medical Record:

Sir: At the recent annual conference of the correction and charities organizations much disappointment and surprise were expressed that no discussion developed on a subject so vital to public interest as the after care of addicts, for there are in New York City at all times many physicians well qualified to discuss the subject. But perhaps it was best that no time was allowed for free discussion as personalities and pertinent facts could hardly have been avoided.

The newspaper reports probably would have included mention of one "lay-medical" institution and a so-called "normal cure." Information as to how addicts have been directed to such places and also might have been disclosed the real reason why the Board of Health closed its clinic for addicts.

The reading of a paper on the "After Care of Addicts" at the above referred to meeting was a plea for sympathy for addicts and a proposal for New York State to buy Lebanon Shaker farm for a colony of addicts. If the colony plan is the after care proposed there is nothing new or original about the scheme, for the Department of Correction has been running the Riker Island Municipal farm for years. Here real constructive work is being done for the addict, thousands being rehabilitated. They stay from three to six months and leave with from 30 to 50 lb. gain in weight and not 10 per cent. but 100 per cent. cured. They are cured unless they desire to return to their old companions.

Here, at this point of leaving the custodial care of any institution or farm colony, is the *great unsolved problem.* Those unfamiliar with the subject believe that compulsory registration and a regular examination, perhaps once a month, of every addict should be enforced for three years after leaving the custodial care. One can readily see what an opportunity is here presented on a large scale for medical profiteering. The Cotillo Bill recently presented at Albany forcing "all addicts to be sent to a sanitarium" was a brazen attempt, it is charged, on the part of certain interests to profiteer on these unfortunates.

The paper referred to stated that 200 out of 2,300 patients were cured of addiction, 90 per cent. being failures, and the cost to our city was $200 for each case. Anyone familiar with addicts must know that a short treatment, such as received at North Brother Island, is a joke so far as permanency goes. Not a day less than three months is necessary to reconstruct an addict, and farm life with good food and air under custodial care is a prime requisite.

My criticism of sanitariums and profiteering physicians I hope may provoke discussion and bring forth some clever and constructive ideas which are really new, and particularly which pertain to the after care. By after care is meant that given to the addict after leaving the custodial care of the farm, and the question what is *then* to become *of the patient?* This has been our great problem in the correction department of our city, and will continue to be until addiction is recognized as more of a disease than a habit, and until some form of follow up constructive moral treatment or supervision is carried out.

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OUR LONDON LETTER.

(From Our Own Correspondent.)

London, May 21, 1920.

American Hospital in London.—Some months ago the plans for the establishment of an American Hospital in London were described in a London Letter in the Medical Record. It was then stated that the idea of such an institution originated in the brain of Mr. Philip Franklin, a nose and throat specialist of American birth residing in London. Sir Arbuthnot Lane, Sir John MacAlister, the late Sir William Osler, Sir John Bland Sutton, Sir Humphry Rolleston and many other well known members of the British medical profession, enthusiastically supported the movement. The plans are now considerably advanced. Ex-President Taft has accepted the offer of president in America; Lord Reading is president in England, with Lord Bryce as vice-president. American residents in London have formed themselves into a committee, which includes in its membership many prominent names, and steps are now being taken to incorporate the institution in conformity with the laws of the State of New York. It is hoped to open a temporary building for free patients before the end of the year. As previously pointed out, the hospital is intended to become the principal research center in Europe for American medical graduates, and later on a vigorously conducted campaign will be opened to raise a large endowment fund. The committee in the United States consists of Dr. George W. Crile (nominated by the American Academy of Science on International Relations), Dr. W. J. Mayo and Dr. Charles H. Mayo of Rochester, Minn., Dr. A. H. Ochsner of Chicago, Dr. Rudolph Matas of New Orleans, and Dr. Franklin Martin of Chicago. The British and American committees will work together. One of the most important aims of the establishment of the hospital is to act as a link in binding together the two nations for the advancement of medical science as affecting the welfare of humanity. It is also actually and primarily intended to serve as an important part of the scheme to render London the European post-graduate medical center for Americans. Before the war few American medical men cared to pursue their post-graduate studies in London because it was lacking in opportunities and facilities to do this with advantage. They betook themselves naturally to Berlin and Vienna where they found exceptionally good facilities for professional instruction and opportunities for social life. Since the end of the war, of course, conditions have changed and the leading members of the American colony and the leading members of the British medical profession in London have resolved that American graduates who come to this country

shall find in London the facilities they were formerly offered on the continent. Thus it may be asserted without exaggeration that the organization of the American Hospital bids fair to become of international value and importance while, at the same time, it possesses great possibilities for the advancement of science.

War Disability Pensions.—The Minister of Pensions has circulated recently the following statement of the rates of pension approved by the Government for present war cases, which term will include only: 1. Men discharged with disability during the war, and 2, men discharged after the war on account of disability recognized by the Ministry of Pensions under the war warrant as attributable or aggravated by service in the war. Basic rate of pension for men discharged during the war for disabilities not attributable to service: Navy, over 10 years of age, one shilling a day; over 14, one shilling and sixpence a day; over 16, one shilling and ninepence a day; over 18, two shillings a day; over 20, two shillings and sixpence a day. The daily rates set out above will be applicable in the case of the following classes of soldiers: 1. Re-engaged men; 2, men re-enlisted to complete a term of service which, with former service, makes a total of at least 21 years; and 3, men who have had the above periods of continuous service with the colors, although they may not have re-engaged. Scale of service allowance in addition to disablement pension in attributable or aggravated cases: The disability pension will be paid in full and in addition the following service allowance will be paid to those men who come within the above mentioned categories: Over 10 years of age, seven shillings a week; over 14, eight shillings a week; over 15, eight shillings a week; over 16 and up to 18, nine shillings a week; over 18 and up to 20, ten shillings a week; over 20, eleven shillings a week, and over 21, eleven shillings a week.

State and the Blind.—The Government bill to promote the welfare of blind persons, the text of which has just been issued, provides that every blind person who has attained the age of 50 shall be entitled to receive such pensions as, under the Old Age Pensions Acts, 1908 to 1919, he would be entitled to receive if he had reached the age of 70, that is, about fifteen shillings weekly. County and Borough Councils are authorized to provide and maintain or to contribute towards workshops, hotels, homes or other places for the reception of blind persons, and, with the approval of the Minister of Health, to make such further arrangements for promoting the welfare of blind persons as they may think fit. This section applies to the city of London. Subject to certain modifications, the War Charities Act, 1916, shall apply to charities for the blind as if it were re-enacted. The measure which applies to Scotland and Ireland and whose short title is the Blind Persons' Act, 1920, will, if passed, come into operation on June 4 next. The bill was introduced by Dr. Addison on April 26 last.

Progress of Housing.—The present position in England and Wales with regard to housing schemes may be summarized as follows: Housing schemes submitted to the Ministry of Health, 9,821; approved, 6,041. Area of sites in acres, submitted, 68,000; approved, 47,000. Replying to a letter a few days ago Dr. Addison said that the total amount required for housing purposes during the year was estimated at £120,000,000; but it was not possible to say how much of that sum must be raised by means of local housing bonds. So far as returns at present show, the sum raised for housing is about £15,000,000, of which £2,000,000 has been raised by local bonds.

Bequests by Sir William Osler to Oxford and McGill Universities.—Sir William Osler, regius professor of medicine in the University of Oxford since 1905, who died on December 29 last, left an estate of the gross value of £15,565 with net personality £11,650. The testator left his medical and scientific library to the medical faculty of McGill University, Montreal. All other property to his wife, but after her death or earlier if she should wish, he left his residence, 13 Norham-gardens, Oxford, to be given to the dean, canons and governing body of Christchurch, as the residence of the regius professor of medicine.

Scientific Inquiry to be Made With Respect to Shell Shock.—In the British House of Lords on April 28 last, a discussion of shell shock took place. Lord Southborough, after calling attention to the different types of hysteria and traumatic neurosis, commonly called shell shock, from which many soldiers suffered during the war and after referring to the death penalty inflicted upon men by courts-martial on the charge of "cowardice," moved that the Government make inquiry into the expert knowledge derived by the army medical authorities, and the medical profession with the object of recording for use in time to come the experience of the war, and to advise whether by military education or otherwise some scientific method of dealing with such cases could not be devised. He asked if it were not possible to prepare the minds of soldiers against the disasters of hysteria and neurosis. He pointed out that Dr. Morton Prince of Boston, Mass., had given great attention to the subject at home, at the base, and in the hospitals of France and England. He was of the opinion that it might be driven into a soldier's mind as part of his ordinary training that "shell shock" was a form of hysteria due to his own thoughts and fears, and external suggestion arising from the condition of the modern battlefield, and that as long as he received no physical injury there was little danger to be apprehended from the occurrence of shell shock. The speaker thought the efficiency of an army might well be impaired by shell fear, and it was worth while considering whether some method of giving confidence by training and education might not be devised by a committee. He therefore recommended the appointment of a committee. Lord Haldane, who took part in the discussion, remarked very aptly that it had too often been the custom because a man was a very eminent medical man, to ask him to investigate a branch of a very great science which had ramifications with which he was not familiar. In a matter of this kind they ought to get together a small body of picked men of the highest eminence in the particular branch of investigation. The Under Secre-

tary of War said as regards the request for an inquiry, the view of the Government was that great advantages might be obtained from such an investigation. Many of the nervous and mental conditions encountered were entirely new to many of the medical men concerned, and there had been a great many expressions in different medical journals of their individual views on the subject. It was thought that it would be of great value if these different views could be gathered together and thoroughly investigated by such a committee as had been suggested. The request for a governmental inquiry into shell shock was granted.

Post-Graduate Students and Practical Midwifery.—Medical post-graduates in London who wish to obtain experience in practical midwifery are notified in the Bulletin of the Fellowship of Medicine and Post Graduate Medical Association, May 8, 1920, that vacancies for maternity assistants will be available in the district of the London Hospital, Whitechapel Road, during the next four or five months. The appointments extend for one month, but it is probable that the hospital authorities may be able to consider an appointment for shorter or longer periods if desired. Maternity assistants are instructed in their work by the resident accoucheur, and are under his control during the time they are holding the appointment. During the tenure of the appointment they are provided with free board and residence. A fee of five guineas, or about $26, is charged for the course. Applications for further particulars may be made to the secretary of the London Hospital Medical College, Turner Street, Mile End, London, E. C. Attention is drawn to this notice because those who may be thinking of coming on have made up their minds to come to London for post-graduate instruction may like to know that there are extremely good facilities there for training in midwifery. The London Hospital, the largest hospital of Great Britain, is situated in the midst of the East End, the poorest and most thickly populated district of London. Probably there is no other district of the world where the opportunities for practical training in midwifery are so good.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

June 3, 1920, clxxxii, 23.

1. The Clinical Importance of Anatomical Anomalies in Billary Surgery. Daniel N. Eisendrath.
2. Caesarean Section Under Local Anesthesia Combined with Morphine and Scopolamine Narcosis. Frederick C. Irving.
3. Some Surgical Aspects of Syphilis. William Pearce Coues.

1. The Clinical Importance of Anatomical Anomalies in Biliary Surgery.—Daniel N. Eisendrath presents an illustrated discussion of the various anomalies of the blood vessels and bile ducts, pointing out that the increase in the number of operations for the removal of the gall-bladder has been accompanied by the report of many accidents due to anomalies of the bile ducts and blood vessels of this region. The occurrence of such variations receives either no mention at all or only a brief one in nearly all standard works of anatomy and even in those of operative surgery. The anomalies discussed are presented under the following heads: 1. Variations in the relation of the right hepatic artery to the main hepatic duct. 2. Variations of the gastroduodenal artery. These are of especial importance in operations on the common duct but may also be of equal interest if the only cystic artery arises from the gastroduodenal, or if such an anomalous vessel constitutes one of two cystic arteries. 3. Anomalies in origin of a single cystic artery. 4. Relation of a single cystic artery to the main hepatic duct. This is of the utmost importance in cholecystectomy especially if the operator attempts to ligate the cystic artery close to the hepatic duct. If the vessel should retract behind the duct while bleeding, it is easy to see how a blind thrust of the blades of artery forceps could include the hepatic duct. 5. Two cystic arteries. 6. Variations in the course and mode of union of the cystic and hepatic ducts. 7. Variations in the hepatic ducts.

New York Medical Journal.

June 5, 1920, cxl, 23.

1. Some Immediate Aftereffects in the Use of Radium for Nonmalignant Uterine Bleeding. William P. Graves.
2. A Preliminary Report on the Endocrine Therapy of High Blood Pressure. Samuel Wyllis Bandler.
3. Some Interesting Experiences in Obstetrics. George I. Brodhead.
4. Technic of Vaginal Palpation of the Ureter and Ureterotomy. Their Advantages and Possibilities. A. M. Judd.
5. The Relation of Appendicitis to Intrapelvic Disease in Women. Frank C. Hammond.
6. Preservation of the procreative Function in Women. Francis Ward Langstroth.
7. Pregnancy in Advanced Carcinoma of the Cervix. George Erety Shoemaker.
8. The Care of the Patient During the Puerperal Period. Ross McPherson.
9. Bloodless Removal of the Vulvovaginal Glands. Douglas H. Stewart.
10. Uterine Hemorrhage. J. Thompson Schell.
11. Case of Uterus and Both Ovaries in Indirect Inguinal Hernia Sac. Nelson A. Ludington.
12. Gonorrheal Vaginitis in Children. Charles Wachs and Charles Mazer.

5. The Relation of Appendicitis to Intrapelvic Disease in Women.—Frank C. Hammond holds that appendicitis occurs with sufficient frequency in women to make it important to the gynecologist as well as to the practitioner. Clinical experience shows that the diagnostic problem is often a perplexing one, when it is necessary to differentiate between inflammation of the appendix and involvement of the internal organs of generation of the female. The diagnosis prior to puberty is comparatively easy. It is important to bear in mind that appendiceal and adnexal disease coexist in a great number of cases. Appendicitis in the female may be mistaken, among other conditions, for pyosalpinx, ovarian abscess, suppurating ovarian cyst, torsion of the pedicle in ovarian cyst, ectopic gestation, abortion, or even for dysmenorrhea. Those who have not had a large experience will find that what at first seemed to be a straightforward disease has become one of the most difficult and treacherous. The only means of distinguishing the different types of the disease is a large experience, and even then it is frequently difficult. A careful history should be taken of every patient. The right chest in every instance should be carefully studied. A bimanual or rectoabdominal examination should be made as part of the physical examination of every female patient beyond the age of puberty. At the time of operation, if an incision is made for the exposure of the appendix, irrespective of the physical condition of the appendix, the surgeon's finger should be passed down into the right pelvis to palpate the right adnexa.

12. Gonorrheal Vaginitis in Children.—Wachs and Mazer report the results of the use of Dakin's oil in a series of fifty-eight cases of chronic gonorrheal vaginitis in children. The preparation was of one per cent. strength, freshly prepared. The method employed is as follows: The child is placed in a partial Trendelenburg position, the vulva cleansed with boric acid solution, and the vagina filled with the oil, by means of a medicine dropper, the capacity of which is two drams. On withdrawing the dropper the labia are compressed for a few minutes, so that the vaginal mucous membrane is thoroughly bathed in the oil. The medicine dropper is boiled after each treatment and dried with ether. This treatment was administered every other day in the clinic, and the mother was in-

structed to do likewise on the days she did not come to the clinic. The patients treated thus, though somewhat irregular in attendance, showed marked improvement, both clinically and bacteriologically, within a month. Smears were taken regularly every two weeks. At the end of three months Wachs and Mazer were able to discontinue treatment in twenty-five cases with instructions to report for examination every other week. At the end of four months they had discharged thirty-nine patients, the remaining six patients, while much improved clinically, still showed pus cells and many bacteria on microscopic examination. In these cases they used one-quarter strength of the standard Dakin's solution in the form of douches in the clinic, with instructions to the mother to continue the oil at home.

Journal of the American Medical Association.

June 5, 1920, lxxiv, 23.

1. Official Methods of Control of Remedial Agents for Human Use. G. W. McCoy.
2. Significance of Etiologic Factors in the Treatment of Peptic Ulcer. Frank Smithies.
3. Surgery of the Thyroid. John F. Barnhill.
4. Heart Disease as a Public Health Problem. Lewis A. Connor.
5. Outline of a Scheme for Writing the Natural History of Syphilis. Sanger Brown.
6. Radium Treatment of Cancer of the Esophagus under Roentgen-Ray Control. R. Walter Mills and John S. Kimbrough.
7. Tumors of the Renal Pelvis. William E. Stevens.

3. Surgery of the Thyroid.—John F. Barnhill discusses this subject from the point of view of the relationship of laryngology to disease of the thyroid body. His operative experience is based on 150 cases. In more than ninety per cent. of the cases examined disease of the tonsils was clearly evident, and, judging them from the most modern point of view as to what constitutes a diseased tonsil, he thinks practically all might reasonably have been classed as having foci of infection in the tonsil. In more than fifty per cent. of his goiter cases in which operation was performed during this period, the tonsils were removed before the thyroidectomy, sometimes as long as a year previously, in the hope that the goiter operation might thus be avoided. It seems certainly true that after the thyroid is once diseased the removal of the tonsils has little appreciable beneficial effect on the thyroid disease. Indeed, he has seen the thyroid rapidly enlarge and the thyrotoxic symptoms increase after the performance of a most complete tonsillectomy. These observations, however, do not form a good argument against the possibility that the diseased tonsil may have been the original focus from which the thyroid received its infection. The frequent presence of infected tonsils in thyroid cases points almost certainly to a connection between the two diseases. He emphasized the point, however, that clinical experience seems to justify the belief that when the thyroid is once diseased, from whatever source, the removal of the tonsils has but little effect on the future course of the thyroid ailment, but does, of course, improve the physical condition of the patient, and that tonsillectomy is, therefore, to be recommended as a preoperative measure of great value.

The Lancet.

May 15, 1920, I, 22.

1. An Oration on the Rev. John Ward and Medicine. Being the Annual Oration of the Medical Society of London, delivered on May 10, 1920. Sir D'Arcy Power.
2. The Application of Bone Grafting in the Treatment of Fractures. Ernest W. Hey Groves.
3. Notes on a Case of Resection of Tibia with Grafting. With Plating of Fractured Graft. L. E. Barrington-Ward.
4. A Clinical Study of Infections of the Hand. H. W. L. Molesworth.
5. Specificity and Evolution in Disease: A Historical Retrospect. Sir William Job Collins.
6. A Case of Gastro-colic Fistula. Douglas Firth.

4. A Clinical Study of Infections of the Hand.—H. W. L. Molesworth analyzes 168 cases of infections of the hand as seen in working men and women, from which he concludes that these infections are too frequently the cause of grave disability. The cases fall most naturally into the following groups: Group 1.—(1) Perionychia (infections around the nail); (2) abscess in the pulp of the finger; (3) abscess on the palmar aspect of the hand and fingers. These three constitute the most important primary infections. Group II.—(4) Suppurative tenosynovitis; (5) bone and joint infections; (6) fascial space abscess in palm and forearm. These constitute the most important grave secondary infections. Group III.—(7) Abscess on the dorsum of the hand and fingers; (8) "carbuncular infections"; (9) trivial infections (chiefly subcuticular abscess); (10) lymphangitis and glandular abscess; (11) cellulitis. The lesions in Group I, while remaining in that group, are relatively trivial; but they readily give rise to the Group II infections, which are responsible for nearly all cases of sever crippling. From this study Molesworth found that it was very unusual for a case to develop a severe infection if it had been first seen while it was in the Group I stage. Part of the blame must be attributed to the prevalent impression in the minds of the lay public—and it is to be feared in the minds of some members of the medical profession—that a "whitlow" is a suitable object for treatment with poultices, ink, ointment—in fact, anything but free drainage. The time to treat these conditions efficiently is in their early stages. When tendon sheaths, etc., have become infected the hope of a useful finger is a thing of the past; the object of treatment then becomes to save whole hands, forearms, and even lives. The outlook of the public and the profession towards hands is much the same as it was toward the appendix twenty years ago. If localized tenderness became the danger-signal in the hand, as it has become in the abdomen, and if suppuration in the hand, however small the area involved, were regarded as an indication for immediate operation, the morbidity of infected hands would fall in much the same way as the mortality of infected appendices has fallen.

British Medical Journal.

May 15, 1920, 3098.

1. Observations on the Nutrition of Articular Cartilage. T. S. P. Strangways.
2. On the Use of Polarized Light in the Detection and Investigation of Suture Materials Embedded in the Tissues. M. J. Stewart.
3. A Clinical Lecture on Gall Stones. R. P. Rowlands.
4. Air-way Infections. T. H. C. Benians.
5. Loewi's Adrenalin Mydriasis as a Sign of Pancreatic Insufficiency. W. L. Cockcroft.
6. Vagasthenia. James A. W. Watts.
7. Acute Suffocative Catarrh. J. A. Smyth.

2. On the Use of Polarized Light in the Detection of Suture Materials Embedded in the Tissues.—M. J. Stewart holds that many of the suture materials in common use by the surgeon are optically active, and that the polarizing microscope affords a ready means for their detection in the tissues as well as for their subsequent investigation. Since the optical activity of these substances is unaffected by treatment with the usual dehydrating and clearing agents, paraffin sections are all that is required for the demonstration of the phenomenon. If such a section be viewed microscopically between crossed Nicol's prisms, the particles of suture material present will, in certain instances, show up brilliantly illuminated on a dark background, and in this way they can often be picked out with great readiness, even when their presence has not been previously suspected. The material on which Stewart based this study consisted of twenty-six specimens containing suture relics. Most of them were from portions of tissue which had been excised during life by the surgeon; a few were obtained post mortem. Eighteen specimens were found to contain silkworm gut, five catgut, and six silk. The age of the various specimens, that is, the length of time the sutures had been in the tissues, varied between wide limits. The silkworm gut periods varied from three weeks to six years, the catgut from four to five months, and the silk from three weeks to three years. The only serious source of fallacy is the presence of small, air-borne particles of cotton-wool and the like on the surface of the section, since many of these—for example, cotton-wool itself—are optically active. It is usually easy to differentiate. Suture fibers are obviously embedded in the substance of the tissues; extraneous materials lie in a plane above (or below) that of the section, and are seen to be overlapping the cellular structure of the part. Sutures tend to be

focally distributed more or less in relation to scar or granulation tissue, possibly with giant cells in their immediate neighborhood; air-borne fluff may be found on any part of the slide. Very dense fibrous tissue, striped muscle, and the stratum corneum of squamous epithelium, all possess slight optical activity, but the degree of luminosity is so slight and the anatomical arrangements are so obvious that no difficulty should arise. Stewart summarizes his studies as follows: 1. Sutures or ligatures of silkworm gut, silk and linen thread—that is, all the ordinary suture materials except catgut—are intensely active, and the polarizing microscope affords a ready means of determining their presence in tissue sections. 2. These various materials may retain their optical activity in the tissues for years, and in the case of silkworm gut even after the fibres have been broken down into tiny pieces and ingested by foreign body glant cells. 3. Catgut is much less optically active than the other substances named, and the property tends to be speedily lost in the tissues. For this material, therefore, the method may be inapplicable. 4. Ordinary paraffin sections are all that is required for the demonstration of the phenomenon.

5. Loewi's Adrenalin Mydriasis as a Sign of Pancreatic Insufficiency.—W. L. Cockcroft presents the histories of two patients studied in 1914, the publication of which was delayed because of the war. In one case, in which the pancreas was completely free from disease and quite efficient, Loewi's reaction was completely negative on three separate occasions. In the other case, in which the pancreas was almost completely disorganized, the reaction was markedly positive, also on three separate occasions.

Le Progrès Médical.

March 27, 1920, xlviii, 13.

Alimentary Poisons.—Loeper refers to the increasing importance of this subject, which has such multiform ramifications. The first to suggest itself is poisonous mushrooms; even the colleagues of the author, who are both mushroom fanciers and botanists, are repeatedly deceived when they are on their holiday in the country. Most of the confusion is due to two poisonous species which closely mimic edible mushrooms. Next come the species of poison beans which imitate edible species and cause socalled favism. Here belong especially a species of poisonous haricot. There are also poisonous potatoes which may cause solanism. Substances which may obtain poison through their oxalic acid content are rhubarb, sorrel and chocolate. Poisoning from shell fish may be of two types, according as the mussels, etc., are originally sound or diseased. Poisonous fish along the French coast are rare, but the herring is sometimes accused. Meat and milk unless decomposed are seldom poisonous, and when such poisoning occurs there is a special reason—in the case of milk the animal has fed on a poisonous substance—the goat, for example, on the euphorbia. We next pass to the class of decomposed foods, chiefly articles imperfectly preserved, which have been attacked by saprophytes, as caviar. Diseases of cereals give rise to ergotism and analogous conditions. Much food poisoning of various kinds formerly obscure can now be accounted for by paratyphoid fever, especially egg poisoning. In putrid meat numerous complex substances form, not all of which are nitrogenous, which can poison in almost infinitesimal quantities. In some cases these can be recognized by their physiological action as ptomatropine, which behaves almost exactly like atropine. Strangely, the author neglects to mention in this connection botulism. He concludes with food idiosyncrasy and anaphylaxis, the toxic action of mineral matter in food and drink, etc.

Hygiea.

March 31, 1920, lxxxii, 6.

Milk Injections in Infectious Diseases.—Bratt has made a series of intramuscular injections of fresh and boiled milk, including milk from the market which had been boiled four minutes. The latter as a rule caused chills, malaise and high transitory fever and locally swelling, sensitiveness and pain. With fresh milk the results, although of a similar type, were much milder. The total number of cases treated was thirty-eight. One group of eight cases comprised miscellaneous infections—scarlet fever, erysipelas, acute rheumatism, prostatitis, pyelitis, etc. Save for two cases of scarlet fever the material all showed rapid fall of temperature and subjective improvement. The second group was uniform and comprised thirty cases of influenza. In sixteen of these there were seen within three days after injection fall of temperature and collateral improvement. In five cases the improvement followed promptly upon the first injection and recovery after the second injection. This leaves nine others to account for. Of these four were in pregnant women, while the other five showed physical signs of implication of the lungs. Generally speaking, these nine cases were not benefited and two patients died, although two showed transitory response to treatment. Apparently the parenteral injection of milk is of benefit in benign uncomplicated infections, cutting short the process to some extent; but there is no evidence that it possesses any power for good in severe and complicated infections.

Revista Medica Cubana.

November, 1919, xxx, 11.

Twenty Years of Obstetrical Literature in Cuba.—Dr. Huguet y Lopez has found that during the period 1901-1918 some 276 articles on obstetrical subjects have been published by local medical men in the medical press of the island. The number of periodicals involved is 14 and the majority of the articles have proceeded from the pens of thirteen men who are especially interested in obstetrical practice. Five men have written 10 or more articles and three of these over 20. The *Revista Medica Cubana* and the *Revista de Medicina y Cirugia* have published over one-half of the papers. Twenty-one leading subjects have figured with three or more papers each. The favorite appears to be teratology with 16 papers. Eclampsia is represented by 11 and ectopic gestation with 13. Puerperal fever has 8 and cesarean section the same number. Pituitrin is represented by 7 and analgesia by 6 titles, while rupture of the uterus claims the same number, as does also abortion. Multiple births has 7 titles and placenta previa 5. Vicious presentations of various kinds add up to ten, chiefly those of the trunk and shoulder. There were three papers on symphysiotomy and five on forced extraction with three on basiotripsy.

Hospitalstidende.

February 4, 1920, lxiii, 5.

The Pandemic of Influenza in Iceland.—Matthiasson emphasizes three points in connection with this visitation as follows: by means of isolation and quarantine the disease (two waves) was limited to the southern and western parts of the island and about half the population escaped the infection; at the close of the visitation sporadic cases were seen over a period of 2 or 3 months. Some months after the second wave another influenza-like epidemic appeared, which was limited chiefly to children and which spread from the capital over the entire island. The first wave reached Iceland in July, having been brought from England by trawlers. During the first 3 months the epidemic was widely diffused in Reykjavik and here and there throughout the island. The second wave or "true Spanish sickness" reached Iceland on October 20, having been carried there from Copenhagen by the mail steamer. The first wave seems to have been mild and must have exerted an immunizing action on the public. The second wave ran its course quickly and was practically over within a month. No statistics are given for the capital city but in Byen with 15,000 inhabitants there were 260 deaths. By the middle of February the disease was apparently nonexistent, but the quarantine was maintained another month. It was after this period that the third outbreak—if it was realy influenza—appeared in young children as an epidemic bronchitis. The author believes that it was influenzal because of similar behavior after the epidemics of 1890, 1894 and 1900.

Book Reviews.

THE AMŒBÆ LIVING IN MAN. A Zoological Monograph. By CLIFFORD DOBELL, M.A., F.R.S., Assistant Professor of Protistology and Cytology in the Department of Biology, Imperial College of Science and Technology. London, New York: William Wood & Company, 1919.

THE author is not a medical man and has written his monograph from a zoological standpoint. He has had a wide experience in his subject, especially during the war and is evidently a tireless and careful student. Much of his time is devoted to a consideration of the nomenclature of the amœbæ belonging to this group and he presents a strong argument for his ideas, though he is at times forced to make some ingenious twists in order to justify his conclusions. His critical review of the literature on the subject is illuminating and exceedingly interesting, though he does not hesitate to express his disagreement with his predecessors. His words do not indicate that he possesses the judicial temperament to any great degree, but he gives what appear to be excellent reasons for his statements and is apparently very familiar with his authorities. It would require an expert in this particular branch of zoology to construct any argument against him. The genera discussed are the *Entamœba, Endolimax, Iodamœba,* and *Dientamœba* and chapters are added on the finding of amebas in the urine and discussing other ameboid organisms described from man. The work is written in a very fascinating manner and will interest zoologists especially.

PRINCIPLES AND PRACTICE OF PHYSICAL DIAGNOSIS. By JOHN C. DACOSTA, JR., M.D., Ex-associate Professor of Medicine, Jefferson Medical College and Assistant Visiting Physician, Jefferson Hospital; Consulting Physician, Northwestern General Hospital; Fellow of the College of Physicians of Philadelphia; Fellow of the American Academy of Medicine; Member of the American Therapeutic Society, etc. Fourth edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company, 1919.

AS is the case with all new books and new editions of the present time, this fourth edition of DaCosta's well known and highly prized work on physical diagnosis shows the influence of the war lessons. Among the additions to the book treating of subjects brought prominently to notice by war-time experience, we find sections on gas edema, gas pneumonia, the effect syndrome, and aviator's heart. Other additions, such as sino-auricular heart block and hilus tuberculosis, have been made and the discussion of various minor subjects has been modified to conform to the newer knowledge. So long as the succeeding editions of this standard work are subjected to as careful revision as this one appears to have been, it will continue to hold its own as an authoritative treatise on physical diagnosis.

ON GUNSHOT INJURIES TO THE BLOOD-VESSELS. Founded on Experiences Gained in France during the Great War, 1914-1918. By GEORGE HENRY MAKINS, G.C.M.G., C.B., President of the Royal College of Surgeons of England; Surgeon to St. Thomas's Hospital; Honorary Major-General, and late Senior Consulting Surgeon to the British Expeditionary Force in France. New York: William Wood & Co., 1919.

MAKINS' previous book, founded on his experience in the Boer War and entitled: "Surgical Experiences in South Africa," has been very widely quoted and this latest addition to the literature of war surgery should be equally appreciated. In this book almost every conceivable form of injury to the blood vessels has been discussed, both individual blood vessel injuries and those in connection with injuries to nerves and other structures. From his extensive personal experience and also because of his position as Senior Consulting Surgeon to the British Expeditionary Forces, so that all sources of investigation were at his command, Makins is particularly well qualified to cover this very important subject, and he has covered it very thoroughly, as all who read this book must admit.

In the introductory chapter he says of gunshot injuries to the blood vessels that the chief information gained during the present war will be found to consist in "a more accurate knowledge of the signs of injuries to the arteries; such as the indications to be gleaned from an examination of the peripheral and vasomotor nervous system; the value of ausculation, both local over the artery, and of the precordial region; and as to the actual mode of development of some of the consequences of arterial injuries. Further, opportunity has been afforded of judging the effect of obliteration of the main vessels upon the vitality of the parts supplied by the peripheral branches affected, . . . An increase in exact cognizance of the nature of the primary anatomical lesions of the vessels, and in the arrangement of the vessels in relation to the various forms of traumatic aneurysm, has been acquired. Lastly, experience has been gained as to the relative advantages attained by obliteration of the main vessels by ligature, by simultaneous occlusion of artery and vein, and the attempt to maintain their viability by suture, respectively." These observations seem particularly well founded when one comes back to this chapter after finishing the book.

The work covers statistical records as to the distribution and anatomical characters of gunshot wounds of the vessels; symptoms, signs and diagnostic considerations pertaining to immediate and remote periods and in all sorts of simple and complicated cases; methods of treatment in general and with special types of injury to the larger individual vessels as well as of the blood vessels as a whole; finally, there are countless references to series of cases of various types, as well as detailed histories of about one hundred cases, while throughout the book is a running commentary of the very greatest value.

This is a book which should be in the hands of every surgeon who has to deal with blood vessel surgery, traumatic or otherwise.

YEAR-BOOK OF PHARMACY. Comprising Abstracts of Papers relating to Pharmacy, Materia Medica, and Chemistry, contributed to British and Foreign Journals from July 1, 1918, to June 30, 1919. With the Transactions of the British Pharmaceutical Conference at its fifty-sixth annual meeting held in London, July 22 and 23, 1919. Editor of the Abstracts, J. O. BRAITHWAITE. Compiler of the New Remedies Section, THOS. STEPHENSON, F.R.S.E. Editor of the Transactions, C. H. HAMPSHIRE, B.Sc., F.I.C. London: J. and A. Churchill, 1919.

THE contents of this volume are indicated by the title-page as transcribed above. The first part, dealing with the contributions on Pharmacy, Materia Medica and Chemistry, is particularly valuable. The abstracts are well done, and are arranged under the general heads of: Alkaloids; animal products; bacteriological and clinical tests; coloring matters; essential oils; fats, fixed oils, and waxes; glucosides, ferments, and sugars; gums and resins; inorganic chemistry; organic chemistry, and plant analysis. The book is well indexed, but the addition of a table of contents would add to the value of a really useful book.

PRAKTIKUM DER MEDIZINISCHEN CHEMIE einschliesslich der forensischen Nachweise für Mediziner und Chemiker. Von Dr. SIGMUND FRÄNKEL, Professor der medizinischen Chemie an der Universität in Wien. Berlin und Wien: Urban & Schwarzenberg, 1918.

THIS volume is intended for use as a laboratory manual and contains methods for qualitative and quantitative analysis of inorganic substances, for the preparation of certain organic materials, for quantitative organic analysis and some of the methods used in physiological, pathological, and forensic chemistry. It is not intended to present a full set of methods for each examination but only those which, in the judgment of the author, have proved to be the most valuable. The book was published more than two years ago and therefore is not up to date in many instances, but even considering this fact it fails to present methods which we are accustomed to find reliable and convenient. The brevity with which the methods are presented is such that the book would be useful only to a chemist of fairly broad experience. On the other hand, such a chemist would be more apt to desire to consult one of the more complete handbooks, such as Abderhalden's. It is not likely to prove a very popular work.

Society Reports.

AMERICAN ASSOCIATION FOR THORACIC SURGERY.

Second Annual Meeting, Held in Atlantic City, N. J., June 9, 1919.

(*Continued from page* 1023.)

THE PRESIDENT, DR. WILLY MEYER OF NEW YORK, IN THE CHAIR.

III. Pleura; Empyema: 1. Empyema Cases Treated at the Rockefeller War Demonstration Hospital, New York.—Major GEORGE A. STEWART, M. C., of Walter Reed General Hospital, Washington, D. C., said it had been their custom, in empyema cases, to operate as soon as fluid was found in the chest and organism or pus cells could be demonstrated with the microscope, or gross pus found on aspiration. The operation in the majority of cases consisted of rib resection, about 1½ inches of rib being removed. At the time of operation exploration of the pleural cavity and the insertion of tubes was practised, as instillation tubes and not drainage tubes. Instillation of Dakin's solution was started at the time of operation; from 80 to 100 c.c. of solution, in the average case, was given every hour during the day and every two hours during the night, the size of the cavity and the infection present making this change necessary. The pus and secretions after operation were rapidly clorinated by the solutions; all odors disappeared. The patients were placed on full diet and lung exercises were begun as soon as the condition of the patient warranted. Sterilization took place rapidly, in some cases the cavity was sterile in five days. In the first series of cases no secondary sutures were attempted. In the second series secondary closures were made by various methods after sterilization. In 80 per cent. of the cases they had complete success. Dakin's solution, taking care of the excess fibrin formed, prevented thickening of the pleural linings and allowed the lung to expand freely as soon as the cavity was closed. The cases when discharged from the hospital were able to return to full duty. The army and navy cases were returned to full duty and many of them saw overseas duty. Autopsy reports in all fatal cases showed at least one complication, more often two or three, as multiple kidney abscess, tuberculosis, intestinal ulceration, pericarditis, adenitis, etc. In the cases operated on early they did not find many pockets; they did where aspiration had been tried. In the later cases the patient was always in very bad condition and the operation was more difficult because of numerous pockets formed. This was particularly so in the series of 1918, and it was frequently necessary to reoperate for pockets at a distance from the original operation. In the early operation a free cavity was found, and the solution prevented the formation of adhesion with with pockets. After a year a number of these patients had returned for examination. By looking at them without seeing the scar it was practically impossible to say that they ever had had empyema. Their chests were fully expanded. *X*-ray examination showed practically no change in either lung, a few showed a slightly thickened pleura. The *x*-ray examination in the cases of secondary closure showed the lung expanded and filling the entire chest cavity. In the chronic cases the plan had been to first improve the general condition and then to proceed more or less in the same manner as in the acute cases. The case arriving was treated with preliminary sterilization, or better, partial sterilization, later operation, removal of foreign bodies, removal of necrotic rib, excision of sinus tracts, sterilization and closure secondarily. The larger extensive operation in the small series of cases was never found to be required. Streptococcus was the prevailing organism. In the first series where repeated aspirations were tried they came to operation in a moribund condition and proved fatal. In the 1918 series aspirations were done, multiple pockets were formed, one fatal case. This was only a brief sketch of the cases, unfortunately in changing stations it had been impossible to give a complete follow-up record.

2. A Series of One Hundred Consecutive Cases of Acute Empyema.—Dr. WYMAN WHITTEMORE of Boston, Mass., presented, by invitation, this series of 100 consecutive cases of acute empyema which extended over a period of a year and eight months, dating from the middle of last April, 1919. Of these cases 92 were operated on at the Massachusetts General Hospital, and 8 outside. During this time he had operated on every case offered to him with one exception. This one case died within half an hour of the time he was seen. Because these were his own personal cases, he felt that he could criticise the results and mistakes very freely. The three techniques considered in this paper were: (1) Dr. Lilienthal's operation; (2) The Carrel-Dakin technique; (3) The closed suction method. In 14 cases Dr. Lilienthal's operation was performed with extremely good results, 12 of the patients doing very brilliantly. Only 11 cases were operated on by the Carrel-Dakin technique, and the results were not very remarkable. At present he was using this technique only in small encapsulated empyemata. Sixty-six cases were operated on by a closed airtight method. The success of this method and the method itself were his main reasons for bringing this subject before the association. About two years ago Dr. Meyer, in reading a paper in Boston on bronchiectasis, dropped a hint about drainage of the pleural cavity by this method. At about the same time an electrical suction pump was perfected by a Boston surgeon's chauffeur. It had been used in other surgical cases, and he was interested to try it in the acute empyemata. The principles of this method were based on: (1) Early operation; (2) The necessity of allowing the fluid to escape slowly; (3) The sterilization of the pleural cavity, by means of Dakin's solution; (4) The suction of the pleural cavity; (5) The prevention of a considerable pneumothorax. When the cases in which the technique had been carefully carried out were sterile and the sinus closed, the *x*-ray had failed to show any pneumothorax at all in many cases, and in others a very small one in the space between the diaphragm and the costal border. The operation had always been done under local anesthesia, with the exception of two or three children. It had been done with many babies a year or more old with perfect ease. It did not take more than five or six minutes and there had never been any shock. A larger trocar—the canular of which will admit a twenty-one or a twenty-two French catheter—was introduced between the eighth and the ninth ribs after a small incision had been made through the skin and usually the external intercostal muscle. The catheter, being shut off with a hemostat, was rapidly slipped through the canula. At this time the canula was filled with fluid rushing out, and he did not believe that any air could enter into the pleural cavity. The catheter was sewed in tight and connected with a long rubber tube going into a bottle containing water, and the end of the tube was kept under the surface of the water. The success of the after-care depended on intelligent individual treatment. The fluid was allowed to escape slowly, this being regulated by the hemostat. When the fluid had stopped coming out by itself, which in large empyemata might take twenty-four hours, the suction pump was attached and the cavity sucked dry. At this time Dakin's solution irrigations were started and kept up every two hours.

He did not want to give the impression that he considered this method a final cure for every acute empyema, as occasionally there was a case whose count at the end of four or five weeks stayed as high as four or five organisms per field—just why he did not understand. In these cases a rib had been resected under gas-oxygen, and a very small cavity had always been found. When packed open with gauze it had promptly healed. He had found that the best rib to resect was the one just above the sinus, although it was the eighth, as the diaphragm had always been found at the level of the drainage. Of the sixty-six cases, fifty-four got well without further operation. Six needed a secondary operation and promptly healed. Two streptococcus cases had become chronic and left the hospital with small drainage tubes. Four cases died. Three of these he would not have touched had he been anxious about his statistics, as they were moribund

when seen. This series was remarkable for its freedom from complications following operation. Six patients in this series of 100 cases died. Two of them, he was convinced, should not have died. In one of these, death was undoubtedly due to the bad management of the suction apparatus, and in the other case, if the closed suction method had been done under local anesthesia, the patient probably would have been alive to-day. One infant died of cerebral embolus and the other three were moribund at the time of operation. There might be some one who was skeptical as to the efficacy of this method, and to him he would say that even if it had not cured every case it had a distinct contribution to make toward ultimate recovery, as it would often tide a patient over the extreme septic condition, and any operation that was needful could be done later on. In conclusion, he emphasized his firm belief in early operation by means of a closed airtight suction technique, done under local anesthesia, and followed by the intelligent use of Dakin's solution.

3. **The Treatment of Empyema.**—Dr. JOHN A. HARTWELL of New York said the purport of this paper was to call attention to the fact that the pathology of empyema as seen in the pandemic of influenza and hemolytic streptococcus pneumonia was essentially different from that seen under more normal conditions of pneumococcus lobar pneumonia. In the former, the empyema was very often an expression of a general invasion by the streptococcus, it developed while the patient was still desperately ill with the lung and other infections, the fluid for a considerable time was thin and contained a relatively small amount of coagulable matter. Further, while the streptococcus was exceedingly virulent, it tended to die out rather early and hence permitted an earlier return of the pleural surfaces to a normal condition. In this disease the empyema was a menace more because the excessive amount of fluid mechanically embarrassed the respiration of a desperately sick person than because of toxic absorption or immediate irreparable damage to the pleural and pulmonary structures. Therefore, the practice of treating the disease by repeated aspiration to relieve pressure was sound. This procedure, in many cases, might result in a cure, because the thin fluid was completely withdrawn, and if the patient established a satisfactory immunity the infecting organisms died out, the inflammation of the pleura subsided and a restitution to the normal took place. In the latter—true lobar pneumonia empyema—the pathology was essentially different. The disease developed at the end, or after subsidence of the pneumonia, when the patient had recovered from the toxicity of the primary infection. The fluid from the start was a thick pus containing, as a rule, mixed organisms. It was rich in coagulable matter and tended to produce mass fibrin. This spread itself over visceral and parietal pleura, thickened them, and thereby crippled the lung action. The pneumococcus itself tended to die out, but the secondary invaders lived and a chronic inflammatory picture was present. Here aspiration alone failed because it could not completely empty the chest of the thick coagulated bacteria harboring masses. The chest, therefore, rapidly refilled, and in contrast t othe other form of empyema, each time this happened the more were the pleura and the lung damaged. Therefore, aspiration was a failure. A strong plea was made for the differentiation of the two diseases, and for adherence, in the usual forms of empyema, to the pathologically sound treatment of rib resection, ample drainage and an orderly clearing up of the infection while at the same time the recovering lung was aided toward expansion by pulmonary exercises. This expansion took place even in the presence of an operative pneumothorax, unless, as demonstrated by Graham and Bell, the chest opening was unduly large; to be exact, having an area in the adult male of more than 8 square inches. The history of empyema during the past five decades showed that from time to time there had arisen advocates of the socalled less radical forms of treatment, who had enjoyed a short period of success. Failure, however, had always succeeded this period. Gradually, through the constant teaching of thinking masters, this disease had recently been handled along sound lines of therapeutic technique, founded on a full comprehension of its pathology. Any falling away from this would only result in a period of again learning old lessons with its resultant suffering. The argument might be summed up in the statement that no form of treatment for empyema which disregarded the thorough drainage of the chest cavity by a rib resection, and the gradual reexpansion of the lung by respiratory effort, met the requirements. Other means would cure a certain number of cases, particularly in such times as the disease occurred in abortive forms, which it had done during the past two years.

4. **The Treatment of Empyema in the Army.**—Captain CONRAD GEORG, JR., M. C., U. S. A., of Ft. Sheridan, Ill., presented this paper. (See MEDICAL RECORD, November 29, 1919, xcvi, 22, p. 883.)

5. **New Problems in Empyema.**—Dr. EMIL G. BECK of Chicago, Ill., said now that the epidemic of influenza had subsided, there remained an accumulation of chronic suppurations. We had learned and were still learning new things about empyema and its treatment as a result of this last epidemic. It was timely, therefore, to bring this subject before the Association again this year for discussion. The following questions were most pertinent: 1. We should try to explain the great mortality in operations of empyema during the recent epidemics. 2. We should define the term "Empyema." When was a fluid in the chest cavity called and pronounced empyema? 3. Multiple encapsulation of pleuritic exudates, what were the causes? 4. What was the proper procedure in bilateral empyema? 5. We should define the indications for rib resection, aspiration, or other catheter drainage. 6. Let us study the advantages over preepidemic methods. Flush or not to flush was the question. 7. Let us discuss the treatment of the cases which had persisted in drainage of pus after operation and flushing. Since there were only a few minutes allotted to the presentation of each paper, and instead of reading a paper, he would throw on the screen a few slides which would suggest the points mentioned for discussion. He would not try to answer all of these questions, but would initiate the discussion by raising the questions. The high mortality in operations was mainly due to the inability of the surgeons to choose the right time for the operation. As a rule he believed they operated too early, probably in the stage of acute pneumonia with effusion. The effusion was thrown out by nature to immobilize the lung during the acute stage, and in the removal of the fluid the immobilized lung again followed the respiratory movement and thus the condition was aggravated. One might say the surgeons operate on acute pneumonia instead of an empyema, and nobody would think it wise to operate in an acute stage of pneumonitis. The proof of the inference might be gained by reading the report of Major Max Ballin of Detroit of his surgical service at Camp Grant, (*Journal of the American Medical Association*, lxxii, 5, 335), from which the writer quoted: "The results of such early operations in streptococci empyema were so lamentable that the surgeon general sent an empyema commission to Camp Lee to study the question. The report of this commission brought out several points: 'First, not to operate as long as the pneumococci process was in existence. Second, to aspirate if the quantity of serous exudate in the chest was such as to interfere mechanically with respiration. Third, to operate only after the pneumococci process has subsided, when real pus has formed.' These rules were observed in twenty-three consecutive cases at Camp Lee, and there was only one death, whereas previously the mortality had been as high as 50 per cent." Colonel A. Moschkovitz divided empyema into three stages: First, the formative; second, the acute; third, the chronic. He had made one interesting observation, namely, that small perforations from the lung lead to the infection of the pleural sac, just as general peritonitis is due to perforation of some intraabdominal organ. He also regarded the operative treatment in this stage as a mistake, and now that time had given a chance for reflection, it might be put down as law *never operate in the formative stage of empyema*. The word "empyema" was derived from the Greek, *em*-inside, *peon*-pus, meaning pus inside. Only those cases, therefore, should be regarded as empyema in which the exudate was true pus. What constituted pus? We would have

to arrive at some definite rule as to when the fluid might be called pus, semi-purulent, or serous fluid. The term pus had been used in a somewhat indefinite sense, in such descriptions as "a purulent substance," "a sero-purulent discharge" or "a pusy discharge." The fact was that a serous exudate, such as was found in these acute cases of empyema, would gradually become purulent and finally become a creamy thick substance, designated as true pus. At what particular state of purulization should we regard this fluid as pus? In his paper on the "Empyema Problem," he had put down an arbitrary rule for himself, and it might be here considered whether such a rule would stand. If one withdrew about 10 cubic centimeters of this fluid every 24 hours and poured it into a test-tube it would be noted that the sediments of these samples varied. The amount of the grayish purulent material settling at the bottom of the tube would be greater each day, so that the fluid drawn on the tenth day might contain as much as 30 to 40 per cent. of sediment and 60 to 70 per cent. of clear serous fluid. If the fluid withdrawn contained more than 20 per cent. of sediment after standing for 24 hours, it might be considered true pus. He regarded the multiple encapsulation of pleuritic exudates as due to the character of the infection, namely, the streptococcus, which caused adhesions of the lung to the costal pleura. The more acute the condition the more likely that multiple encapsulation would occur. The reason that formerly this condition was not met so often was the fact that one rarely had to deal with very acute pleurisies as one did in these recent epidemics. In some instances surgeons had found blebs on the surface of the lung containing pus. It was likely that these peripulmonic small abscesses did not break and empty their contents into the pleural cavity, but that they became adherent to the costal pleura and gradually enlarged and formed real abscesses. Another reason for multiple encapsulation was advanced by Major Moschkovitz, namely, that when patients were not operated upon, the pleural surfaces would adhere around the accumulations of pus. Bilateral empyema had occurred more frequently for two reasons: In the first place the pneumonia was very frequently bilateral, which was not quite as often the case in ordinary times. Secondly, among a large number of cases it was likely that more than one case would fall into the hands of one man, which in former times was very unusual. He cited the following interesting and unusual case of bilateral empyema in a pregnant woman; childbirth normal during acute stage; recovery. Mrs. S., aged 35 years, developed a severe case of influenza in September, 1918, followed by bilateral pneumonia and consequent pleural pus effusion on both sides. The house physician punctured the right chest repeatedly, withdrawing small quantities of pus. She was then in the eighth month of pregnancy and gave birth to a normal child while both pleuræ were filled with pus. On December 21, under local anesthesia, a catheter was introduced in the interspace of the eighth rib on the right side in the axillary line. This relieved her somewhat, as she was moribund at the time this was performed. She rallied and on January 11, one inch of the right eighth rib posteriorly was resected and a large tube introduced. Stereoradiograms at this time showed that there were multiple abscesses in the left as well as the right side. Temperature kept up from 99 to 101 daily, respirations 40, pulse 130 to 150. On January 14, another operation was performed on the left side, the counter-drainage operation described recently in *Surgery, Gynecology and Obstetrics* (April, 1919). After this operation the lung began to expand and both cavities were injected with bismuth paste. The fever gradually disappeared and patient gained in strength and weight. At the present time both sides were closed and she was gradually regaining her health. Whether there would be any recurrence could not be stated at present. It was not necessary to resect a rib in every case. The treatment with introduction of a catheter through a cannula and gradual withdrawal of the pus by gentle suction should be given a trial on a large scale before deciding that a resection of a rib must be done in every case. The question as to whether flushing would have a permanent place on the treatment of empyema was a large one, and he was sure it would be discussed on the basis of some other papers on the program. His own experience had been very limited, but its greatest utility in the cases in which he had employed it was in the solving of fibrinous adhesions and in decreasing the toxicity of the pus when present, so that the patients were put in better condition for recuperation. The discussion of the after treatment which should follow in the cases which resisted the flushing and operative treatment had been brought before this Association by him last year, and he wished to report progress in this line by citing a few cases. He had demonstrated to this Association a number of cases at the last meeting in Chicago, in which either the bismuth treatment or the skin-sliding operation had been performed to take care of the resistant cases. During the past year he had had a greater opportunity than ever to carry out this treatment in a large series of cases. With proper technique about 80 per cent. of the cases, the residue left over after all the usual methods of drainage and flushing had been tried, were closed by the injection of the bismuth paste. In the remainder, the skin-sliding operation had been employed and carried out with some improvement in the technique. The following improvements had been made in this operation: 1. Instead of taking two or three ribs, he had taken as many as six or seven, so that the the cavity might be most widely exposed. This wide exposure promoted the growth of skin from the edges of the wound. 2. It was not necessary that the skin flaps should cover the entire area of the pleura exposed. He had made them shorter than previously. He had also found that it was better to decide on the size of the flaps after the cavity was fully exposed. In many instances it was necessary to cut away about one-half of the pectoralis major muscle. This would not interfere at all with the function of the arm and would very much aid in the quick regeneration of the skin flap into the cavity. Since his last report this skin-sliding operation had been employed by many of his confrères, and their reports indicated that this operation was more likely to be effective than similar types performed in previous times.

Dr. HOWARD LILIENTHAL said that he had never heard a subject more adequately and efficiently covered than the subject of empyema as Dr. Hartwell had demonstrated it. It was very soul-satisfying to him. Dr. Hartwell had said just what he wanted to say, and had said it better than he could have done. He had had good luck with the chronic empyemas with sinuses which he had treated in France. Among these was a group of thirty-one patients, who had just landed at St. Nazaire from America, with pneumonia and subsequent empyema. All had been operated upon by rib resection drainage and they were poor miserable fellows who wanted to get to the front and who knew they would be sent back to America without having had any war experience. An average of about two months had elapsed since operation. The wounds were infected and all had pyocyaneus. On careful examination ten were selected as proper subjects for surgical operation, the others being treated by various disinfecting procedures. Of these ten he operated upon three by a method which left the chest symmetrical and prevented the necessity of Estlander and other collapsing operations. The remaining seven were operated upon under his direction by Captain J. A. Duff of Baltimore. The speaker had perfected this operation before leaving America and was well satisfied with his results. Only one of the ten cases died. his second one, the cause of death being edema of the opposite lung soon after operation. The remainder of the thirty-one cases, with the exception of two, recovered without operation. One died following operation for a lung abscess of the other side, the other was still in the hospital seven weeks later when he left this hospital. This meant a recovery of over 90 per cent. in the thirty-one cases. All had symmetrical chests. The lung function was restored in all these cases. On his return to America he found that the Empyema Commission had pinned its faith on the Carrel-Dakin treatment and he began to wonder whether he had performed unnecessary surgery. After careful thought it was his conclusion that the Carrel-Dakin treatment would do good only when one could absolutely and completely disinfect every part of the infected chest. Dr.

Hartwell had stated this and he did not need to amplify the point. In the cases of old fibrosis in which the lung had been glued to the back bone, he had had an opportunity to take out tissue and have it examined histologically. It was pronounced absolutely fibrosed. In such a case no matter how forcibly one might blow into the trachea or pharynx the lung would not expand, and if one happened to nick the lung air would whistle through it, demonstrating the patency of the air passages. These were the cases in which the Estlander and other operations and the skin-flap sliding operation were justifiable. But in view of the fact that in all the cases he had had there were only two such, it must be a very unusual condition. In regard to aspiration he believed in withdrawing thin fluid when it was present early in the chest, rather than doing an immediate operation. His method of fluid removal was without vacuum suction. A fine trocar and cannula should be used—never a needle—and a rubber tube for siphonage should be attached to the cannula. Puncture was made at a suitable point and the rubber tube hung down beside the bed, thus acting as the long siphon arm. Gravity was the only suction used. The fluid at first ran out slowly and evenly; then there was in intermittent flow, and finally the flow ceased and air entered the tube in collapse with air in the chest. If one wanted to rest the lung one could draw out the cannula at once. If one wished to expand the lung one could have the patient intermittently strain, with grunting respiration, and pinch the tube during inspiration, letting it go with each expiratory effort. The end of the tube should be submerged, and when no more bubles appeared on expiratory effort the cannula was quickly withdrawn. The method was perfectly safe. A needle was dangerous. If he coughed the patient might pierce his lung with the needle. He could heartily recommend this method of emptying a chest of serum or thin pus. The idea was not original, but the method of carrying it out was devised by him and he believed he was the first to demonstrate the possibility of expanding the lung in this manner.

Dr. Carl A. Hedblom of Rochester, Minn., had felt uncertain as to what constituted the best treatment of acute empyema. He had been greatly impressed by the high mortality in the military camps in the early months of the streptococcus epidemic. He had also been in a quandry often as to the treatment in cases of large chronic cavities with practically complete collapse of the lung. It had seemed to him that the major considerations had been first of all the life of the patient, and second, the expansion of the lung. A year ago he had used the socalled trocar and cannula method with aspiration and irrigation of the cavity with Dakin's solution, in a case of streptococcus empyema. The patient, though desperately ill at the onset, got well. Last November he had begun using the method as a routine in cases of acute empyema and as a preliminary to operation in chronic cavities. As a rule the cavity was emptied of pus at once by aspiration wtih a glass syringe. He was impressed with the fact that if one aspirated two litres of pus one had expanded the lung by a corresponding volume. When the cavity was emptied the lung was practically completely expanded. It could not be otherwise. If air was excluded the lung would remain expanded and probably become more or less adherent, provided secondary pockets did not become walled off. They had tried to obviate this by partly filling the cavity once or twice daily by gravity pressure of a few inches of fluid. By this method they had succeeded in most of their acute empyemas in getting partial—as a rule, probably 90 per cent.—obliteration of the cavity. In the majority of cases some type of operation had been necessary to complete the cure. These operations had been of minor extent. There had not been a single death in any case during the continuance of the closed method. One patient had died while he was making preparations for inserting a catheter. All cases recognized were operated. Some cases of acute empyema were not recognized clinically and were found only at postmortem. The closed method had this to recommend it, that the lung would be expanded in proportion to the volume of the fluid evacuated and that if air could be excluded and reaccumulated pus aspirated, the lung would remain expanded. If the Dakin's solution were brought into contact with all parts of the walls of the cavity pockets would also be obviated. The treatment was especially to be recommended in acute cases with dyspnea and cyanosis with toxemia. In such cases the mortality would certainly be lower following this treatment than following rib resection with its incident pneumonthorax.

Major Ethan Flagg Butler of Walter Reed General Hospital, Washington, D. C., said a large series of cases of empyema had been observed at the Walter Reed Hospital, and as a result of these observations he would speak rather emphatically on the inadvisability of using formalin and glycerin in the pleural cavity. It had led to confusion in regard to the bacterial control of these wounds. Dakin's solution, when introduced into the pleural cavity, expended its chemical energy in approximately ten minutes, and from that time on bacteria might grow in the secretions. Formalin did not expend its energy in that period of time, and when direct smears or cultures were made at the end of twenty-four hours or even longer, the results did not give a true indication of the conditions within the cavity. Enough formalin would remain to inhibit the growth of the organisms. That had been found true from experience. Cases had yielded sterile cultures for a week or longer. They had been allowed to close and had then had recurring empyemas. Case records had shown that again and again. In their series they had to reopen and drain many cases that had been considered sterilized and cured by formalin and glycerin. Large amounts of pus and living organisms had been recovered on these secondary operations. In cases where "closed tube" drainage was used secondary complications and recurrences had been noted in a sufficiently large number of cases to raise a question as to the advisability of that method of treatment. Negative pressure, if it be continuous, was a vastly different proposition from the intermittent effect that was gained by the "closed tube" procedure. In regard to the cases of chronic empyema, which they were treating at the present time, they had noticed four main reasons for their chronicity: mechanically imperfect drainage, necrosis of the ribs, occurring in some cases after even a simple intercostal thoracotomy; pleuro-pulmonary communications or bronchial fistulæ; foreign bodies. They had endeavored to meet the situation created by these cases by an intensive use of Dakin's solution—meaning by Dakin's solution the solution of sodium hypochlorite conforming to the requirements as to strength and reaction as defined by Dr. Dakin—and only using it after careful surgical preparation of the case. It was valueless to try to effect chemical sterilization if foci of infection were still active. From 100 to 150 c.c. of Dakin's solution were given hourly by day and two hourly by night. It was too early to state what the final results would be in the whole series, but a small group had been so treated in March, and the following results had been obtained: The group consisted of 21 cases; 15 had no pleuropulmonary communication, and of these 8 had their tubes removed, after a week of sterile cultures, in an average of 23½ days after commencing the intensive irrigation, and the wounds were allowed to close spontaneously. Of the 21 cases 6 gave evidence of pleuropulmonary communication. The communication ceased to cause trouble in 4 of these cases, and in 2 it was possible to remove the tubes, after a week of sterile cultures, in an average of 25 days, the wounds closing spontaneously thereupon. A larger series of 150 cases were under observation at present, but it was too early to say what the final accomplishments would be in this series.

Major George A. Stewart of Walter Reed Hospital, Washington, D. C., said the Carrel-Dakin method was frequently misunderstood, especially the first step or the preparation of the wound for the reception of the Dakin solution. The wound, or in empyema cases the empyema cavity, was the test-tube of a chemical experiment and must be prepared to receive the chemical, Dakin's solution. With sinus tracts leading to pockets one could not expect Dakin's solution alone to take care of them; an operation was necessary first. It was surprising to go into hospital after hospital and see attempts to use the Carrel-Dakin method or rather to use Dakin's solution. They did not know what Dakin's solution

was and very little about how to use it. Until one knew the principles of the method one was not in a position to judge the results one might obtain with a hit or miss use of Dakin's solution. As Major Butler had said, we could not expect to do the impossible. The Carrel-Dakin method in empyema cases would not cure 100 per cent. of cases. It was a valuable addition, used correctly it gave good results. The extensive operation described by a previous speaker was not always successful, as shown by one case at least. This boy was operated on by the previous speaker while in France and returned to this country with a cavity containing 250 c.c. of pus, this after a most extensive operation. Under treatment this cavity was reduced to one containing 50 c.c. at the time the hospital closed. In any discussion of the Carrel-Dakin method it must be remembered that it meant something more than pouring Dakin's solution into the wound or the empyema cavity in this case. One should not attempt to cure one's cases by merely using a solution. One could not cure a hernia by ligation of the sac and a skin suture; neither could one cure empyema by pouring in a solution without an understanding of the principles involved.

Captain Conrad Georg, M. C., U. S. Army, General Hospital No. 28, Ft. Sheridan, Ill., thought a great deal had been said during the discussion of this subject concerning the use of Carrel-Dakin solution. It had been stated that good surgery and the proper preparation of the cavity was a part of the Carrel-Dakin technique; this was not true because good surgery had been used in the treatment of empyema long before the Carrel-Dakin technique was developed. We all knew that it was good surgery to remove a foreign body if it was the cause of the empyema. Drainage of secondary abscesses was also required before the Carrel-Dakin or any other treatment was used. There were cases at General Hospital No. 28 which had been treated by the Carrel-Dakin method and allowed to close spontaneously and later on had to be opened up again. Furthermore, in a series of fifty chronic cases operated upon overseas or at other military hospitals in this country, in which there was pus still draining so that further treatment was required, some having been treated by the Carrel-Dakin method and some by rib resection, the Carrel-Dakin treatment was continued until it found that the cases became stationary, as shown by the fact that the discharge continued and the patients did not get well. During this stage of the disease the use of formalin-glycerine gave very good results. They had not had to do a rib resection in any case in which this treatment had been carried out. Some cases required rib resection for other reasons than the infection itself, for example, when a foreign body was present or when there was inadequate drainage. Of course a foreign body might have to be removed whether one used the Carrel-Dakin, formalin-glycerine or any other method of treatment. The results were always satisfactory when the removal of all sources of infection was properly carried out, foreign bodies removed and pus pockets that formed aside from the general cavity aspirated.

Dr. James F. Mitchell of Washington, D. C., said the experience of the Empyema Commission was interesting because it covered both acute and chronic cases. They arrived at Camp Lee just in the middle of the empyema epidemic in 1918, and had there a series of 140 cases, all due to the hemolytic streptococcus. There were no exceptions. The reports showed that at first there was a terrific mortality and that all operated cases died. Gradually the mortality declined to about 40 per cent. The Carrel-Dakin method had been tried and discarded as worthless. Operation was done as soon as fluid containing streptococci was found and a rib resection was always made and adequate drainage established, and under this method the mortality was about 40 per cent. At first they were merely observers. Finally they were given entire charge of the cases. During this period they had a series of twenty-three cases with one death. These cases were all extremely sick men, terrifically ill, and it soon occurred to them that a much better procedure was to try and get these ill men into the condition to which we were accustomed in civil life. The matter had now been threshed out and he thought it was generally agreed that if one aspirated and tided the patient over his virulent active pneumonia until he got up some resistance, then operation was attended with better success. They had immediately started aspirating frequently. As soon as the chest would fill up they would aspirate, and finally when frank pus was obtained they would operate. Whether resection or intercostal thoracotomy was done, mattered little. After operation they had used suction and forced Carrel-Dakin treatment, and the results were wonderful. The one case lost was a case of pericarditis, and both pericardium and pleura were drained. This man promptly died of a streptococcus septicemia and pus was found about his liver and spleen. The process had passed through the diaphragm on both sides. They had wasted some time in the chronic cases which had survived operation and were still draining, in testing out the various solutions and trying different methods. They had given Dichloramin-T a long trial and had abandoned it. They had concluded that the proper application of the Carrel-Dakin treatment gave the best means of treatment at our disposal, and he thought the points brought out by Major Stewart and Major Butler were very important in this regard. The Carrel-Dakin treatment was not a cure all, and to use Carrel-Dakin did not mean all; one must have the real, genuine article. The use of frequent flushings, recognizing the fact that the chemical life of the solution is extremely short, was an essential point. The socalled closed method with infrequent injections of small amounts of the solution had never appealed to them at all. In the chronic cases, aside from the removal of foreign bodies, the thorough exposure of the cavity for the application of tubes and the reception of the solution was the most important thing. This was very well illustrated in the second series of 160 cases at Fort McPherson. In August he had had cases running from the previous November, and a thorough opening of the cavity for the reception of the Dakin solution was the procedure adopted. Some cases had had extensive operations, plastic procedures on the chest wall, or decortications, and the results that he saw there were not good in that line. It was found that by preparing the cavity, getting rid of sinuses and obtaining a free opening for ample flushing, and the application of the Dakin solution, many of these cases got well. They had operated on a number of them in this way. It was nothing new, simply getting at them. Late results at Camp Lee and Biltmore had demonstrated the practicability of one thing which he had opposed at the beginning of their experience, but which was insisted upon by Dr. Moschcowitz, namely, leaving an actual cavity in the chest and allowing the chest wall to close. The results were startling by getting the cavity clean first and then allowing the chest wall to close. To see these cavities gradually disappear and the apparently hopelessly thick pleura come out and fill up the chest was a remarkable experience. In all this series of cases they had had no big disfiguring operations. The fact brought out by Dr. Moschcowitz that the cavity would take care of itself should lead one to avoid a great many of the larger operations. They had had experiences with bismuth paste, which called for warning. It was not the bismuth paste, it was the method of application. At McPherson, in one instance, he had removed something over a pint of bismuth paste, which had been forced in with the hope of curing an infected cavity. It made a terrific complication when one had to dig it out of the chest. The late history of these cases would be extremely interesting. The recent epidemic of influenza was an example of this point. He had learned from McPherson that the old empyema subjects were extremely susceptible and numbers of the apparently healed and well cases had died from influenza. One of the most interesting cases opened up an important field, that of transfusion of blood. A man operated at Camp Lee in February had come under their care in April. He then had a cavity in his left chest which held about two litres. He had streptococcus infection of his right wrist, elbow, and back, and innumerable abscesses over his body. He was practically dying from February to June when he was moved to Biltmore. He was then in much the same condition. Then a single transfusion was made from a recovered case of empyema.

and from that day the man proceeded to get well. It gave him resistance, and in ten days he was sitting up, eventualy his cavity was sterilized, and the chest wall was allowed to close. He was now well.

Dr. JOHN A. HARTWELL of New York judged that his language evidently had not been clear in reference to the Carrel-Dakin. He did not mean to give the impression that he did not approve of the Carrel-Dakin treatment; he did approve of it, with the restrictions which Major Butler had put upon it. He did not think it a cure all, and he did not think it should be so relied upon. It was doing throughout the United States at the present time more harm than good because so many men who did not comprehend principles were using it inadequately and improperly and wondering why they did not get good results. They were relying upon it to do the impossible. That offset its undoubted value when rightly used. The second point which he had brought out was the postoperative treatment. Close supervision was the most important factor and was being generally neglected in very many hospitals. He did not mean the members of this association, who were all trained thoracic surgeons, but he meant other men who had recently had the responsibility of taking care of a large number of these cases and had never enjoyed full training in thoracic surgery. These patients remained in bed for a few days after the operation and it would be noted that they would lie and sit in an improper attitude because the position was more comfortable. If allowed to remain that way they would have more or less permanent defect in a curve of spinal column. He ventured to state that one might go through any of our hospitals, where many cases of empyema were found, and by standing them on their feet and placing a straight edge down their backs one would find this condition. An essential part of the treatment, therefore, began in maintaining proper attitude with a straight spinal column and the orderly expansion of the lung on the part of the patient, usually by calisthenics and blow bottles, as soon as the patient was able to undertake that effort. If this were done results would justify it. He asked that the members of this society watch the younger men throughout the country and caution them against the neglect of this very important treatment.

Dr. NATHAN W. GREEN of New York thought the subject altogether too wide for one to cover it in a short discussion. He could add to Dr. Hartwell's suggestions that perhaps the Carrel-Dakin method was blamed for doing a great deal of harm. It was not the Carrel-Dakin method which was doing harm, but the ignorance of the medical mind; all knew that many medical minds were not schooled to think analytically. The attempt was made to improve on the matter, with the result that the essentials were not carried out. His experience with internes was that they attempted to carry out this method in some way to conform to their own ideas, instead of taking this beautifully crystallized procedure that Dr. Carrel had worked out; they went ahead in a slipshod way and could not see why they did not get good results. Everyone had spoken of the empyema of influenza; it was a very acute streptococcus infection. The early operations upon these had been very fatal, pus had not been found until late. One thing had been impressed upon us during the last year, viz., that an empyema was not an emergency and did not call for immediate operation. One could tide over the critical condition by aspiration and then if it did not clear up one could go in with Kenyon's drainage, or by taking out a rib, or doing Lilienthal's procedure upon it. But the first thing to do when empyema was acute was to consider well the general condition and the second thing was to allow it to become subacute before operating. One could do a tapping any time when one first discovered it. Where the pus was thick the procedure differed from that in which it was thin. When one got an acute streptococcus infection there was a thin pus that would draw off through a tube no larger than a little finger. The Dakin solution helped to bring the lung down because it had proteolytic action and tended to thin out the adhesive lymph exudate. The bacteriology of infections ought to be worked out more thoroughly. The average interne did not appreciate the bacteriology of infections. He let most of the pus that comes out of abscess cavities get wasted. The speaker had tried again and again to get the internes to culture the pus from various cavities, but generally it was reported sterile pus. One would know better how to treat a case if one knew the bacteriology. Streptococci would rarely cause metastatic abscesses. Intelligent treatment early was the key to success in empyemata, and there could not be intelligent after treatment unless one kept after the interne and nurse who were following it up. Dr. Mitchell had spoken of chronic cavities reducing in size; cases which one would think would have to have a further plastic would often close entirely without more ribs being taken out or further plastic operation being done if the drainage was adequate and blow bottles were used faithfully. This was something one should bear in mind, and one should put in a good sized tube and drain and wait to see if the lung did not come down.

Dr. HEYD asked Dr. Hedblom if he had understood him correctly when he stated that in his cases of empyema there had been no deaths.

Dr. HEDBLOM replied that since November, 1918, there had been no deaths in cases treated by the closed methods during the continuance of that treatment.

Dr. LILIENTHAL asked Dr. Hedblom what class of cases he had dealt with. Were they the kind that originated about Rochester? One hundred per cent. of cures was so astonishing that he thought the association ought to hear all about it.

Dr. HEDBLOM was sorry he could not give a detailed report, but he could easily get the case numbers of all the cases he had had. The patients were mostly from the middle west, some from more distant points east and west. There had been a small mortality in empyema cases but none in the acute cases treated by the closed method during the continuance of this treatment. In several chronic cases the patients had died of pneumonia. One had developed brain abscess following rib resection for drainage of residual cavity. There had been some instances in which the treatment had to be changed owing to development of bronchial fistulas or hemorrhage, or both, but none of these patients had died from the complications. Several had become chronic and had required prolonged treatment.

Dr. WILLY MEYER of New York had frequently wished, in the course of the last two years, to be called into active service. It must have been fascinating to treat "*a series of early cases*," occurring in strong younger men, an experience of which Dr. Mitchell had just given such an excellent report. All knew what an amount of good the Rockefeller War Hospital had done for the medical profession and for suffering mankind. In the hospital with which he was connected they were most grateful to Major Stewart for having allowed their doctors, chemist, and nurses to get there a thorough training, as quickly as such a training could be had, in the proper application of this method. As much as he had seen, he would subscribe to what Dr. Stewart and Dr. Butler had stated; it must be "Dakin's fluid" that one used, and its application must be properly, faithfully, and enthusiastically carried out. He recalled, to illustrate, the case of a man in whom bismuth oil had been injected for showing the extent of an old empyema cavity. The doctor who used it had read about the good roentgenographic result of the same. Here the "clinical" result was a pronounced bismuth-poisoning and the repeated *x*-ray showed that there was a big deposit way up in the chest. The case had been originally operated on months ago. He had great difficulty in removing this bismuth oil. After a severe reaction the patient soon had a steady evening temperature of almost 102° and was generally sick. Then they used Carrel-Dakin. It was a revelation. He was sure that no other solution could have effected such a complete change of the picture within twenty-four to thirty-six hours. The temperature dropped quickly to normal and remained normal, and the patient declared that he had never felt better. He agreed with Major Hartwell that we must teach the younger men to use it thoroughly and correctly, and certainly never to throw it overboard. These cases were hospital cases; they should not be treated privately—a point that should be emphasized—unless the patient had most

faithful nurses and could get the solution freshly prepared every day. Before using Carrel-Dakin he had followed the late John B. Murphy's advice and injected formalin-glycerine. He had seen results from it that other antiseptics had not given. One word about blowing up the lung at once after the evacuation of the empyema fluid. Several years ago he had taken a boy to the differential pressure apparatus, had made an incision, had evacuated the fluid and had blown up the lung. It was most interesting to watch how the lung gradually came up to the surface. He confessed that he had felt his heart beating a number of times faster in doing this. In a child of seven years they had ventured to use plus 14 to plus 16, before he ordered the further increase in air pressure stopped. He could see that 16 plus did not do more than 14. It proved the still present inflammatory infiltration of the lung, which latter organ stayed away from the chest wall about 1½ inches. They covered the wound with sterile rubber-dam and applied a dressing. For almost fourteen days the little patient was in a happy condition, up and about with normal temperature. On the twelfth or thirteenth day, the temperature went up to 104°-105°. He thought of retention of secretion. Under differential pressure he made the first change of dressing. There was no discharge. Again he slowly blew up the lung, when, suddenly there spurted a fountain of serosanguinolent fluid, surely 12 to 15 inches high. The cause of the fever had been retention. The patient made a quick recovery. He had had a similar satisfactory experience with this method in a second child. There often existed lung infiltration after pneumonia which only gradually dissolves.

Most interesting to him was the statement that in spite of a surely present pneumothorax the external wound healed and the throax remained closed. He had had the same experience lately in a child with old empyema fistula. The impression he had after listening to the experiences of Drs. Whittemore and Hedblom, and from what he had seen personally in the after-treatment of thoracic operations he firmly believed in draining *"every case"* of thoracic operation, inclusive of empyema. Not only should one drain, but one should drain *"air-tight."* Those who had the privilege of working at the battle front and behind it, had seen that complete closure of the throacic wound was of great benefit to the patient. It stood to reason that if one could add to air-tight closure a proper and air-tight thoracic drainage, it must mean a tremendous step forward in the after treatment of throacic cases. No matter what kind of thoracic case had come under his hands, whether an exploratory incision, a resection of the chest wall, a lung case or an esophageal resection, in every instance he drained, and drained air-tight. From this point of view he ventured to say that, if called upon to treat *"an early case"* of empyema, it would be an advantage to let out the fluid, install air-tight drainage and make the tube dip into the water, thus syphoning the cavity. Every one of us should study the splendid paper of Graham and Bell (*American Journal of the Medical Sciences*, December, 1918). What they said on the basis of careful experimentation, must open the eyes of every one. From this point of view the experience of Dr. Whittemore and Dr. Hedblom seemed to him to be of great importance. We must learn to find out which case of empyema could be subjected to the closed operation to advantage, and which must be operated on and drained according to the older methods.

(*To be continued.*)

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, April 28, 1920.

THE PRESIDENT, DR. HERMAN B. ALLYN, IN THE CHAIR.

The Postinfluenzal Chest.—Dr. ARTHUR C. MORGAN presented two young men demonstrating the points he desired to develop. He confined himself chiefly to the physical signs in the chest, with their interpretation bearing upon the differential diagnosis between pulmonary tuberculosis and post-pneumonic pathology. The primary and chief pathology of the lungs in pulmonary tuberculosis, he said, was located in the apex and progressed downward and outward by continuity of structure. In an ordinary case of lobar pneumonia, the usual pathology was located at the base of the lungs, more frequently on the right side. In postinfluenzal pneumonia, especially following the epidemic of 1918, evidence of post-pneumonic pathology might be shown in either the upper or lower portion of the chest. When affecting the upper portion it might be confused with pulmonary tuberculosis, in which the lesion was apical and spread by direct extension. In pneumonia it might have been localized or generalized, and its after effects were patchy areas of relatively normal tissue between. In tuberculosis the pathology was progressive. In pneumonia the pathology was most severe during the height of the attack. The clinical symptoms in tuberculosis become progressively marked and more severe, which was just the reverse in post-pneumonic conditions. Patches of adhesive pleurisy or of localized empyema were more frequent posteriorly, their frequent sites of location being subscapular, high up or under the axillary space, or at a point one or two interspaces below the inferior border of the scapula. These areas could be determined by physical signs, confirmed by exploratory puncture with the needle and after removal of only a small amount of pus the condition would frequently go on to recovery without further operative interference. Adherent pericardium to lung or diaphragm might be detected by a peculiar tugging sound on auscultation after having the patient hold his breath following deep inspiration, differing from a physiologic rhythm disturbance of the heart as was sometimes seen physiologically. This was confirmed by the fluoroscope.

Dr. JOSEPH SAILERS said the postinfluenzal conditions were largely governed by the fact that the influenza organism, whatever it might be, seemed to predispose to subsequent infection. These infections were usually either of the streptococcus or pneumococcus variety, and when they occurred they were to be treated as such without reference to the preceding influenza, excepting in so far as it appeared to increase the severity of the disease. He could not agree with Dr. Morgan that postinfluenzal pneumonias were almost invariably at the base of the lung. He could not recall the exact figures because his records, unfortunately, were sent to Washington before he could get hold of them all, but he would estimate that at least one-third of the pneumonias that followed influenza were in the upper lobe of the lung. Empyemas were common and were invariably streptococcic or pneumonic. Very frequently they occurred in the interlobar space and were nearly always encapsulated. Only a smaller proportion were the massive empyemas found after the acute croupous pneumonia. In one case there seemed to be a typical postinfluenzal pneumonia. During the course of the disease the Pfeiffer bacillus was found in pure culture in the sputum and at the autopsy obtained in pure culture from the tissues of the lung. In reference to tuberculosis, it must be obvious that the attacks of influenza did not actually cause the subsequent attacks of tuberculosis. There must have been an infection previously existing but latent, which the influenza organisms, in common with all the other organisms causing acute inflammatory conditions of the lungs, rendered active. It was conceivable, of course, that the patient might be infected upon a damaged lung with the tubercle bacillus subsequent to the attack of influenza. He had not, however, ever seen a case in which this appeared to be likely. He merely did not deny that it could occur. Returning to Dr. Morgan's paper, he emphasized the fact that a careful physical examination was the most important feature in the diagnosis of pulmonary conditions, and particularly a careful inspection. The methods that Dr. Morgan had suggested of placing lines on the lungs in order to detect localized restriction of movement seemed to him particularly good. He had not used it, but expected to do so in the future. It was not, however, impossible to recognize localized restriction by careful inspection, and he thought of all the methods of diagnosing, careful inspection of the thoracic movements was perhaps the most frequently neglected. As for the other postinfluenzal conditions such as bronchiectasis, fibrosis, etc., they were usually not manifest immediately after the

disease, particularly bronchiectasis, and it must always be a question, at a later stage, whether the attack of influenza was directly responsible.

Dr. F. F. BORZELL believed there was perhaps no other acute respiratory infection resulting in more varied pathology, immediate and remote, than influenza, or so-called influenzal pneumonia. With the "flu" infections they found a condition, primarily starting in one or both hiluses, but giving a picture during the height of the attack of varied distribution. Complications might be divided into immediate and remote. The immediate conditions more often found are areas of delayed resolution, pulmonary abscess, interlobar empyema, encysted empyema, pleural thickening, pleural adhesions, pericardial adhesions or mediastinal adenitis. It should be emphasized that studies in the infection should be both radiographic and radioscopic. A most important phase was seen in the patient who presented himself to the physician because of persistent ill health. Probably the problem most frequently confronting the pathologist was that of differentiation between beginning pulmonary tuberculosis and uncomplicated post-influenzal pathology. Careful stereoscopic study of the chest, however, would, if tuberculosis were present, clearly show the lesion.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NEBRASKA STATE BOARD OF MEDICAL EXAMINERS.

November, 1919.

(*Concluded from page* 982.)

GYNECOLOGY.

1. Describe the operation of curettement. When is such an operation necessary?
2. Differentiate between uterine tumor and pregnancy.
3. Name five diseases peculiar to women and two causes of each.
4. Describe in detail the phenomenon of menstruation.
5. Define vulva, clitoris, labia minora.
6. What is meant by circumcision of a female? When is the operation necessary?
7. Diagnose and treat a case of vaginismus.
8. Diagnose and treat elephantiasis and varicose veins.
9. Name five malformations of the vagina.
10. Diagnose and treat (a) cystocele and (b) retocele.

SURGERY.

1. Define a tumor and name four varieties of malignant and four varieties of benign tumors.
2. Differentiate between carcinomas and sarcomas and name two varieties of each.
3. Describe a hernia, give some of the predisposing causes, and name six varieties.
4. Describe the aseptic and the antiseptic methods of treatment of wounds.
5. How would you operate for the radical cure of complete fistula in ano?
6. Give symptoms of gallstones in the common duct and your method of treatment.
7. Give the differential diagnosis between fracture of the neck of the humerus and dislocation of the shoulder joint.
8. What is Colles' fracture and how would you treat it?
9. Define a dislocation and give two exciting causes for dislocations.
10. What are the symptoms of septic surgical fever?

ANSWERS.

GYNECOLOGY.

1. *Curettage.* All antiseptic and aseptic precautions are necessary, the patient should be in the dorsal position, the vagina is to be disinfected, and the cervical canal dilated; a speculum is introduced into the vagina and the cervix is drawn down with volsella; the uterine cavity is irrigated with solution of creolin or lysol; a curette is inserted to the fundus and moved down to the internal os; the operator should begin at one cornu and go in the same direction all around till he reaches the starting point, and if necessary repeat till no more spongy or hyperplastic tissue appears; the fundus should be scraped separately by moving the curette along it from side to side; in going towards the fundus no scraping should be done, and care must be taken not to perforate the uterus; should this happen no fluid must be injected; otherwise the uterus and vagina are again irrigated, and one or more strips of iodoform gauze are inserted into the cavity to act either as a hemostatic plug or as a drain, which is diminished with two days' interval and withdrawn on the sixth day. A hemostatic tampon should be placed in the vagina and withdrawn the following day. If any fever arises, the tampon is at once removed and the vagina douched with antiseptic fluid every three hours. If not, the vagina is only swabbed with the same every day, and packed loosely with iodoform gauze. After the final removal of the gauze the antiseptic douche is given twice a day until there is no more discharge. The patient should remain in bed for a week.

Curettage is indicated: (1) For removal of placental débris (2) hemorrhagic endometritis, (3) in some forms of dysmenorrhea (membranous), (4) for diagnostic purposes, (5) in some cases of puerperal sepsis, (6) sometimes to check hemorrhage, due to fibroids.

2. *Pregnancy:* The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor, and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine tumor (for example, fibroid): Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

3. FIVE DISEASES PECULIAR TO WOMEN.—(1) *Salpingitis*, caused by sepsis, or gonorrhea; (2) *Endometritis*, caused by sepsis, or gonorrhea; (3) *Displacements of the uterus*, caused by adhesions, or congenital deformity; (4) *Abscess of Bartholin's gland*, caused by gonorrhea, or sepsis; (5) *Uterine fibroids*, cause unknown.

4. *Menstruation* is a periodic discharge of blood from the mucous membrane of the uterus, due to a fatty degeneration of the small blood-vessels. Under the pressure of an increased amount of blood in the reproductive organs, attending the process of ovulation, the blood-vessels rupture, and a hemorrhage takes place into the uterine cavity; thence it passes into the vagina. Menstruation lasts from five to six days, and the average amount of blood is about five ounces. It begins at puberty and occurs periodically at about 28 days interval, until the menopause; it is absent during pregnancy and early lactation.

Changes in the uterus during menstruation. "The endometrium, in the four or five days preceding the flow, becomes rapidly thicker and its superficial layers are congested with blood and, in places, small collections of blood may be noticed. Opinions differ very much as to the change undergone by this thickened membrane during the flow. According to some authors, most of the membrane is thrown off and the blood escapes from the denuded surface mixed with pieces of the membrane. According to others, no material destruction of the membrane occurs, the blood that escapes being due to small capillary extravasations or perhaps mainly to a process of diapedesis. It would seem that the amount of destruction of the endometrium must be subject to individual variations. After the cessation of the flow the mucous membrane is rapidly repaired by regenerative changes in the tissues; the surface epithelium, if denuded, is replaced by proliferation of the cells lining the uterine glands and the thickened, edematous condition of the membrane rapidly subsides during a period of six or seven days. The mucous membrane of the uterus may be said to exhibit a constantly recurring menstrual cycle which falls into four periods: (1) Period of growth in the few (five)

days preceding menstruation, characterized by a rapid increase in the stroma, blood vessels, epithelium, etc., of the membrane. (2) The menstruation or period of degeneration (four days) during which the capillary hemorrhage takes place and the epithelium suffers degenerative changes and is cast off more or less. (3) The period of regeneration (seven days) during which the mucous membrane returns to normal size. (4) the period of rest (twelve days) during which the endometrium remains in a quiescent condition."—(Howell's *Text-book of Physiology.*)

5. *Vulva* is the name given to the external organs of generation in the female, including the labia majora and minora, hymen and clitoris.

Clitoris is a small erectile organ, analogous to the penis in the male, but does not contain urethra or corpus spongiosum.

Labia minora are two triangular folds of tissue situated between the upper part of the labia majora.

6. *Circumcision in the female* consists of separation of the adhesions between the hood or prepuce of the clitoris and the glans clitoridis, and removal of the redundant prepuce. The operation has been recommended by a few as a cure for masturbation.

7. *Vaginismus* is a condition of painful and spasmodic contraction of the vaginal orifice, which renders coitus either painful or altogether impossible. The slightest touch causes painful spasms, and examination may be impossible without an anesthetic. Its *causes* are irritable hymen, ulcer, or fissure anywhere in the immediate vicinity, urethral caruncle, carunculæ myrtiformes, a long perineum with vaginal orifice placed too anteriorly. The *treatment* consists in removing the cause when possible, tonics and general constitutional treatment, dilatation of the vaginal orifice; local application of a 5 per cent. solution of cocaine will relieve the hyperesthesia and allow coitus. The condition is sometimes incurable.

8. *Elephantiasis of the vulva.*—"This disease, primarily a chronic recurring lymphangitis, may be associated with hyperplasia of the connective tissue, skin, mucous membrane, and epidermis of the vulva. The whole process results in the formation of a tumor, sometimes of large size, and most frequent between the years of puberty and the menopause. An organism called the *filaria sanguinis hominis* is found early in the disease in the lymph-vessels of the affected part, and is the exciting cause; it may not be found later, for the vessels are blocked by fibrous deposit. The tumor may involve the whole or a part of the vulva, most frequently the two labia majora, less frequently the clitoris, and least frequently the nymphæ. The growth, when large, is apt to be quite pendulous. The surface may be smooth, rough, fissured, warty, or ulcerated. The tumor, especially if ulcerated, gives forth a sero-albuminous exudate, which may be so profuse as to demand frequent change of clothing. Ulceration is common as the result of friction. Both labia are involved simultaneously. The inguinal glands on both sides are enlarged. Chyluria is a frequent complication. The disease does not directly impair the general health; it is, however, disabling from its mechanical interference with urination, walking, and coitus.

"*The treatment* is excision. The numerous dilated lymph channels increase the danger of septic absorption, and in the operation renders the most extreme asepsis imperative."—(Dudley's *Gynecology.*)

Varicose veins of the vulva.—"Varix is an aggregation of dilated or varicose veins in the erectile tissue of the bulbi vaginæ. The varicose state is caused by obstruction to the circulation. This obstruction often arises from direct pressure upon the venous trunks by the gravid uterus. The pressure may be exerted by tumors or by inflammatory exudates. Habitual constipation, portal obstruction, and visceral disease may underlie and perpetuate the disorder; it belongs rather to advanced than to early life. The tumor is oval, globular, or serpentine, and may grow to the size of a child's head. The surface is irregular and of dark-blue color. The mass temporarily disappears on pressure. The subjective symptoms include a variable pruritus and, especially on walking or standing, a sensation of fulness and weight. Rupture of the distended veins often occurs during parturition; it may be the result of traumatism or may be spontaneous. External rupture may cause dangerous, even fatal, hemorrhage. Subcutaneous rupture into the cellular tissue gives rise to an accumulation of blood called hæmatoma.

"*The treatment* includes mechanical support of the uterus, if displaced, regulation of the bowels, removal of waist constriction, the application to the varix of a pad held in place by a T bandage, the use of astringent lotions, and, especially during pregnancy, frequent rest. The radical surgical treatment is the same as would be indicated by the general principles of surgery for varix in any other location."—(Dudley's *Gynecology.*)

9. *Five malformations of the vagina.*—Double vagina, absence of vagina, persistent cloaca, stenosis of vagina, and the presence of blind pouches or canals in the vagina.

10. "*Cystocele* is really a hernia of part of the bladder into the vagina, the vagina mucous membrane forming its outer covering; or it may be expressed as a deflection of the vesicovaginal septum toward the vagina. It forms a smooth rounded swelling, which bulges through the vulvar aperture when the patient coughs or strains.

Rectocele is a hernia of the rectum into the vagina, covered by the mucous membrane of the posterior vaginal wall. It forms a swelling resembling that produced by a cystocele, except that it is on the posterior aspect of the vagina. If the finger be introduced into the rectum it can be passed into the pouch in the vagina, and similarly a sound introduced into the bladder can be passed into a cystocele. A rectocele is nearly always associated with a deficient perineum; and, further, cystocele and rectocele are often found together. When this is the case the vulvar outlet, when patient strains, is occupied by two smooth swellings placed one in front of the other; between them the finger can be passed up to the cervix."—(Sutton and Giles' *Diseases of Women.*)

For radical cure of cystocele.—"The patient is placed in dorsal position. The posterior vaginal wall is kept out of the way with a weighted speculum. The cervix is drawn down with a bullet-forceps. With a pair of tenacula the sides of the prominence are drawn together in the median line in order to see how much of the wall is redundant and these points are marked with small nicks. Next, the whole surface is put on the stretch between four pairs of forceps—one at each of the sidemarks, one near the cervix, and one at the transverse ridge at the inner end of the urethra. With a pair of scissors curved on the flat, a strip about ¼ inch wide is cut out of the mucous membrane. Similar strips are removed on both sides until an oval is denuded. Finally a running suture of chromicized catgut is passed under the whole pared surface, uniting the edges from side to side." If necessary, a perineorraphy should be done at the same time.

Operation for rectocele.—The operation of posterior colporrhaphy is thus described by Sutton and Giles: "The patient is secured in the lithotomy position, and the vagina thoroughly exposed with retractors. An elliptical incision, one end of the major axis being close to the cervix, the other near the vulvar orifice, is made in the mucous membrane of the posterior vaginal wall, taking care not to cut deeper than the recto-vaginal septum, lest the bowel be opened. The vaginal mucous membrane is then cautiously dissected off; the amount to be removed is estimated by the laxity of the parts and the degree of narrowing which the operator regards as necessary to meet the needs of the case. After removing the vaginal wall and securing the bleeding vessels the cut edges of the mucous membrane are brought into apposition by a continuous silk suture or interrupted suture of silk-worm-gut, or such other material as the operator thinks well to employ. The patient is kept in bed for at least two weeks; her bowels are regulated, and the bladder should not be allowed to become overdistended. The sutures should be removed in about ten days."

SURGERY.

1. A *tumor* is a pathological new growth which tends to persist independently of the structures in which it lies, and which performs no physiological function.

Tumors are classified as follows:

I. Those derived from mesoblast:
(*a*) *Benign:* Lipoma, fibroma, chondroma, osteoma, myxoma, myoma, neuroma, glioma, angioma, lyphangioma.
(*b*) *Malignant:* Sarcoma.
II. Those derived from epiblast or hypoblast:
(*a*) *Benign:* Adenoma, papilloma.
(*b*) *Malignant:* Carcinoma.
III. Cystic tumors.
IV. Teratomata.

2.

	Sarcoma	Carcinoma
1. *Origin.*	Entirely mesoblastic (connective tissue type).	Epiblastic and hypoblastic. (Epithelial tissue type.)
2. *Stroma.*	Intercellular. Rarely forms alveoli.	Vascular connective tissue which surrounds and forms the walls of the alveoli; these communicate with one another, and contain masses of epithelial cells.
3. *Cells.*	Granulation tissue or embryonic connective tissue cells; shape and size vary.	Epithelial cells contained within alveoli; shape and size vary.
4. *Intercellular substance.*	May be present.	Absent, or merely fluid.
5. *Vessels*	Embryonic in character. They are in direct contact with, or may be formed by, the special cells, slightly modified, of which the tumor is composed.	Well developed; entirely contained within the connective tissue stroma, and supported by the walls of the alveoli. Seldom in contact with the cells.
6. *Spreads.*	Primarily and secondarily by blood vessels, rarely by the lymphatics.	Primarily by lymphatics, except in the later stages, when it may also spread by blood vessels, in which case it spreads with very great rapidity. Secondarily by blood vessels.

(*Cyclopedia of Medicine and Surgery.*)

Two varieties of carcinoma.—Squamous carcinoma; columnar carcinoma.

Two varieties of sarcoma.—Round-celled sarcoma; giant-celled sarcoma.

3. A *hernia* is the protrusion of a viscus from its normal situation through an opening (normal or abnormal) in the cavity in which it is contained.

Predisposing causes.—(1) Male sex; (2) age—active years of life; (3) nonobliteration of the funicular process of peritoneum; (4) late descent of the testis; (5) abnormal length of the mesentery; (6) phimosis; (7) inherited weakness of the abdominal walls; (8) general ptosis of the abdominal viscera.

Varieties of Hernia.—Hernia may be classified:

I. *Anatomically:*

1. Inguinal
   - Oblique
     - Acquired
     - Congenital
     - Infantile or encysted
   - Direct
     - External
     - Internal
   - Interstitial
     - Intraparietal
     - Interparietal
     - Extraparietal

[Incomplete, or Bubonocele.]

2. Femoral

3. Umbilical
   - Congenital
   - Of infants
   - Of adults

4. Ventral. 5. Lumbar. 6. Obturator. 7. Diaphragmatic. 8. Pudenal, etc.

II. *Clinically.*—Reducible irreducible, obstructed or incarcerated, inflamed, and strangulated.

4. The *antiseptic* plan of treating wounds has for its object the prevention of bacterial development in wounds by the use of *chemical agents*, some of which are true germicides, capable of destroying the bacteria, while others merely prevent or inhibit their growth. Among the multifarious antiseptic agents which have been used, the most prominent are carbolic acid, corrosive sublimate, biniodide of mercury, iodine, iodoform, formalin, boric acid, salicylic acid, etc.

The *aseptic* method of treating wounds consists in the elimination of chemical antiseptics as far as possible, and the substitution of heat, dry or moist, as a sterilizing agent. Every efficient antiseptic is more or less toxic and irritant and the less they are introduced into wounds the better. Of course, there are two elements which can never be sterilized apart from chemical antiseptics—*viz.*, the skin of the patient and the surgeon's and assistant's hands—and thus the most complete aseptic precautions can never entirely eliminate chemical agents."—(From Rose and Carless' *Surgery.*)

5. *Operation for complete fistula in ano.*—This consists in "the conversion of the fistula into an open wound so that it may heal from the bottom. A grooved director is passed through the fistula into the rectum, and the overlying tissues severed with a bistoury. The sphincter should never be cut more than once, because of the danger of incontinence. All branching sinuses likewise should be opened, and all fibrous tissue, with undermined skin, cut away with scissors. The bleeding is then checked, and the wound packed with iodoform gauze. If the fistula is lined with mucous membrane it must be completely excised. A blind external fistula may be excised and the wound sutured. A blind internal fistula may be converted into a complete one and treated as above. The bowels are confined for the first three or four days, and the wound dressed after each defecation, being irrigated with creolin and repacked with iodoform gauze." (Stewart's *Surgery.*)

6. *Gallstones.*—"While the calculus remains free in the gall-bladder, usually there are no symptoms. Impaction of the stone in the common duct gives rise to intermittent jaundice, following sharp pain in the right hypochondriac or epigastric region, frequently radiating toward the right scapula, nausea, vomiting, sweating, depression, and often intermittent fever (Charcot's intermittent fever). When the stone is impacted in the cystic duct, jaundice is less common, but the hepatic colic is severe, and dropsy of the gall-bladder may occur. The diagnostic points are the age, sex, history of previous attack, with jaundice and intermittent fever, location of the pain, dark, amber-colored urine, containing bile, and sometimes the finding of the stone in the feces.

Surgical treatment.—Cholecystotomy is done through an incision parallel to and 1½ inches below the costal margin over the gall-bladder. The liver is drawn up and the intestines packed away with gauze. If the gall-bladder is distended the fluid is removed by tapping it with a trocar and cannula. The opening is then enlarged, and the stones are removed with a scoop. The bile-ducts are examined along their whole course by a finger externally, and by a long probe internally. If the interior is fairly healthy, the opening is sutured with two layers of continuous sutures and the abdomen is closed. Usually it is necessary to drain the gall-bladder for a time, in which case the margins of the opening are stitched to the peritoneum and transversalis fascia of the abdominal wound. The fistula thus established soon closes if there is no obstruction to the passage of the bile into the intestine. If not, it must be closed by a plastic operation or cholecystenterostomy."—(*Aids to Surgery.*)

7. In *fracture of the surgical neck of the humerus*, the head of the humerus will be found in the glenoid cavity, but it will not rotate with the shaft; the arm will appear shorter; and crepitus and abnormal mobility will be elicited unless there is impaction.

In *dislocation of the shoulder joint*, the glenoid cavity will be empty, and the head of the bone will be found in an abnormal position; the arm will appear longer; there will be no crepitus, and no abnormal mobility.

8. *Colles' fracture* is a transverse fracture at lower end of radius; it is due to falls on the outstretched palm. The line of fracture is about an inch above the wrist, and runs obliquely downwards from behind. The lower fragment is driven backward and upward, and rotated to the radial side, carrying the hand with it into the position of abduction, and leaving the tip

of the radius at the same level as, or higher than, the tip of the styloid process of the ulna. The internal lateral ligament of the wrist is ruptured or the styloid process torn off. The fracture is usually impacted, the upper fragment being driven into the lower. The deformity is characteristic, viz.: (1) the hand is abducted; (2) the styloid process is on the same level as, or lower than, the tip of the radius; (3) the upper end of the lower fragment projects above the back of the wrist; on the front is a corresponding depression, while above it the upper fragment projects forward. Union occurs readily, but it is common to get deformity and adhesions about the site of fracture. *Treatment:* Disimpaction and reduction are brought about by grasping the hand by the "shaking-hands" grip, extending and adducting the hand and lower fragment. The arm is then fixed on a splint. It is very important in this fracture to start massage and passive movement not later than the end of the first week, to prevent stiffness. Union is firm in three weeks.—(*Aids to Surgery.*)

9. A *dislocation* is a condition in which the ends of the bones which enter into the formation of a joint are displaced. *Two exciting causes* are: External violence and muscular force.

10. SEPTICEMIA. "The *symptoms* may be noticed a few hours after a wound, or not for several days. There is usually a chill, with a rapid rise in temperature to 104° or 105° F.; the fever persists, being less in the morning and greater in the evening; in many cases there are violent chills at irregular periods, followed by high temperature and drenching sweats. The pulse increases in rapidity and decreases in tension. In severe cases the pulse rate reaches 150 or more, finally becoming so rapid and weak that it cannot be counted. There is often marked depression of the nervous system, the patient being stupid and quiet (typhoid state); or delirium, restlessness, picking at the bed clothes and twitching of the tendons; in either case coma precedes death. Although the respirations are quickened, signs of imperfect oxygenation of the blood are often seen in the face, which may be cyanotic. The tongue is dry, coated, red at the edges, pointed at the tip, and sordes are present upon its dorsum and upon the lips. There are loss of appetite, occasionally vomiting, often diarrhea. Petechiæ may appear in the skin and mucous membranes, and, owing to the disintegration of red blood cells, hematogenous jaundice may develop. The skin may present eruptions also in the form of vesicles or pustules, or simulating urticaria, measles, or scarlet fever. The urine is scanty, high colored, and contains albumin, toxins, and frequently bacteria; the spleen and often the liver are enlarged, and there may be leukocytosis. Bacteria may be discovered in the blood by cultural methods. The *local manifestations* vary from slight inflammation to the graver forms of cellulitis and are not always characteristic, although in many cases the wound discharges a thin pus, while the activity of the lymphatic vessels is shown by red lines of lymphangitis running to the nearest lymph glands, which are swollen and tender, or even suppurating. The veins about a suppurating wound may become inflamed, and blocked with coagulated blood (thrombophlebitis). Bacteria may invade and soften this thrombus, portions of which may be washed into the blood stream as emboli."—(Stewart's *Surgery.*)

Treatment of Senile Debility.—Many men between sixty-five and seventy have well preserved vital organs and good appetite and digestion, yet have small physical and mental vigor and tire easily. The mental state is apt to be one of depression and discouragement. Some of these patients will later show cerebral softening, while in others the disturbance is functional and due to diminished endocrinic activity. The best drug for these subjects is some form of phosphorus, preferably the glycerophosphate of magnesia. The diet should be restricted to the calory requirements. The writer believes in the formation of an issue on the shoulder to avert the probable cerebral hemorrhage in the organic form of debility, and he seems not to regard it necessary to caution against any danger of sloughing of the skin.—*Il Policlinico.*

Miscellany

Emigration to Morocco.—Europe has not "gone dry" and Morocco is not "wet," yet there is such a concerted movement from the Mediterranean countries of Europe to Morocco that authorities are seeking the motive. Even during the war the movement was active. In Casablanca, the chief port, there are now 44,000 indigenous inhabitants inclusive of 8,000 Jews, with 22,000 French, 9,000 Italians, and 9,000 Spanish, not to mention small colonies of Portuguese, Greeks and Britons. The word "French" here, is however, misleading for it comprises many Algerians and Tunisians who are in reality Jews or Italians or Spanish. Rabat, another city, also contains a very mixed population of Europeans. The British population of Morocco cities is also deceptive for it comes from Malta and other Mediterranean localities and the people are really Arabs, Spanish, etc. The migration to these African cities can hardly be due to climatic considerations, for on the coast the weather is very humid throughout the year and torrid in the summer. In the interior the climate is quite different and there are mountains which are from 3,000 to 12,000 feet above sea level where with hot summers the winters may be delightful and even cold. There is no doubt that with peace and under the protection of France the mountains and high ground of Morocco will come into extensive use for winter resorts and sanatoria. There are already tuberculosis sanatoria at an altitude of 4,500 feet. Beautiful forests of cedar will add to the popularity of the winter resorts. For permanent residence, however, it does not appear that the climate will suit French migrants by reason of the hot summers, the humidity of the litoral, and other drawbacks.—*La Presse Médicale.*

Death of Engstrom.—Otto Engstrom, the well-known Scandinavian gynecologist, recently died suddenly and his obituary appeared in the *Finska Läkaresällskapets Handlingar* for November-December, 1919, lxi, 11-12. He was born in Sweden, in 1853, and took his degree at Stockholm in 1876. He did not undertake any foreign post-graduate studies until 1882, when he took courses under Schroeder, Winckel, and Martin, in obstetrics and gynecology. After some years in Stockholm he was offered the chair of his specialties at Upsala, in 1890, and the same chair at Lund, in 1901. In 1897 he acquired international prominence by the annual publication in German of his "Mittheilungen," to which he personally contributed one hundred and twenty-five articles. This was followed by membership in the Deutsche Gesellschaft für Gynäkologie and the Società Italiana di Ostetricia e Ginecologia. He was noted for his regular attendance at the various International Congresses and was active in the Norse Surgical Society, which is a sort of Pan-Scandinavian body of surgeons. The date at which he assumed the chair of obstetrics and gynecology at Helsingfors is not stated; apparently he had received the unusual distinction of a professorship in all four of the Swedish universities. He was honored by two "Festschrifts" on the occasions respectively of his fiftieth and sixtieth birthdays.

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OLIVER WENDELL HOLMES AND THE MEDICAL STUDENT.*

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NEW YORK.

IT is suggestive that the ancients represented Apollo, the tutelary deity of our profession, as bearing in his hand the lyre, to show that he was also the patron of the arts of song, and made him the friend and close associate of the muses. It need not surprise us therefore to find that many of the sons of Aesculapius have done homage to the god of healing in his dual capacity, and while laying their garlands before his shrine, have not disdained also to woo the difficult favors of the sisters nine, so that the scrolls of literature record the names of not a few of our brethren whose pens have earned for them enduring fame. Rabelais, the robust humorist-philosopher; Fracastorius, syphilographer and poet; Linacre, the scholar and humanist; Sir Thomas Browne, the moralist and mystic; John Locke, philosopher and philanthropist; Goldsmith, the Beloved Vagabond of literature; Keats, cut off untimely "before his pen had gleaned his teeming brain; Crabbe, the singer of rural lays; Smollett, the scapegrace hero of his own picturesque romances; Eugène Sue, the aristocrat fallen upon evil days; John Brown of Edinburgh, friend of Marjorie Fleming and his own immortal Rab, down to the beloved Weir Mitchell and Sir William Osler of our own times—the list is a long one of our colleagues who through the centuries have sharpened the quill with the scalpel, and have written pages that have endured though their prescriptions are forgotten. Not all, indeed, of them have touched the heights, and some of them, soon forsaking the practice of their profession showed but little of its influence in their writings, but we are glad to number them as initiates in our mysteries. Of all of these and of their fellows whom I have not named, none has a greater claim on the affections and esteem of medical men than Oliver Wendell Holmes. Throughout all his long life his connection with medicine was intimate and fruitful and his professional work alone is sufficient to command our admiration, while his other writings through their sparkling wit and gentle humor, and their keen appreciation and kindly tolerance of the foibles and weaknesses of his fellows have charmed and delighted countless readers. The example he has given as a student and teacher of medicine, and as a student and recorder of the lights and shadows of life is so inspiring and instructive that no medical man, and especially no young practitioner, should be unfamiliar with the story of his work. No one has shown more clearly than he that scientific writing need not necessarily be dull reading, and that a truth is no less convincing for being gracefully expressed.

In his student days at Harvard in the "famous class of 1829," as it used to be called, Holmes already showed the charm of personality and grace of mind for which he has always been remembered. He held a leading place in the social life of his class and was often called upon to contribute verses on suitable occasions, while the odes he regularly wrote for the class reunions have been considered some of his best work. Some of these early writings were printed, including the stirring "Old Ironsides," which is to be found in most school readers, and this led him afterward to say that "there is no form of lead poisoning which more rapidly and thoroughly pervades the blood and bone and marrow than that which reaches the young author through the mental contact with type metal." At this time he described himself as "a plumeless biped of exactly five feet three, when standing in a pair of substantial shoes, having eyes which I call blue. I am rather lazy than otherwise and certainly do not study as hard as I ought to. I am not dissipated and I am not sedate. I stand at the humble rank of seventeenth scholar." After graduation he studied law for a year, but soon found the toga less appealing than the lancet, and entered the Harvard Medical School at twenty-one. Three years later he arrived in Paris, eager to acquire the finish of continental study, at that time deemed absolutely essential to a proper medical education. Paris had then displaced the supremacy of London and Edinburgh as the favorite post-graduate schools for medical men, in its turn a generation later to be succeeded by the lure of the German and Austrian universities. A fourth era in the trend of medical education is perhaps now dawning, and we may yet see the current setting toward instead of away from our native shores. Young Oliver found congenial fellow students sharing his period of foreign education—young men whose names have become well known in the annals of American medicine. Jackson, Bigelow, Hooper, Warren, Gerhardt, Morse, Shattuck, Stillé, were all his intimates and worked and played by his side. He lived in the Latin Quarter, and at once threw himself into the spirit of a life as different

*Read before the Nu Sigma Nu Fraternity, October 15, 1919.

as possible from the staid New England surroundings in which he had grown up. His letters home are filled with vivacious and enthusiastic accounts of his experiences, and his delight in the scenes he witnessed in the hospitals, streets, and theaters. He describes his day as beginning at seven in the wards of La Pitié, where he attended lectures and clinics until eleven, when he breakfasted. He studied until five, and then dined at some café in company with his fellow students. The Parisian cooking won his warm approval, and he comments on the food as being "so different from the crude joints, the massive puddings, the depressing pies, and the hard cider which marvelously nourished New England in its era of development."

The spirit of the times was such as to fill a young student with enthusiasm. It was a period of transition when the serpents of the caduceus were sloughing their dusty skins of the old polemical, disputatious days, and emerging in the brighter colors of exact clinical observation. Bichat had already led the way by his epoch making insistence on the autopsy table as the correct means of verifying diagnoses and studying the manifestations of disease, instead of the endless abstract discussions which till then had so befogged the understanding of morbid processes. The great Corvisart, Napoleon's physician, had preached and demonstrated the value of close clinical observation, and his no less great pupil, Laennec, had developed the art of physical examination by the invention of the stethoscope and the application of Auenbrugger's principles of percussion, which till then had received scant attention. Louis, the teacher with whom Holmes came in closest contact, placed the study of disease on a firmer basis by emphasizing the value of statistical reports, in which deductions were drawn not from single patients, but from whole series of similar cases. In his farewell address to the Medical School of Harvard Holmes speaks of some of his teachers at this time. Louis, whom he especially admired, he says was the object of the reverence, almost the idolatry, of his students. He made rounds with Larrey, Napoleon's favorite surgeon, who was still strong and sturdy, and he was thrilled by the eloquence of Dupuytren. Broussais he compares to "an old volcano which has pretty nearly used up its fire and brimstone, but still bubbling and boiling in its exterior." Piorry, percussionist and poet, he terms "expert alike in the resonances of the thoracic cavity, and those of the rhyming vocabulary." Velpeau, Andral, Trousseau, and Alibert were others of the great men of the time who were favorites of the American students. For Lisfranc he cared less, saying of him, "he was a great drawer of blood and hewer of members. I remember his ordering a wholesale bleeding of his patients, whatever might be the matter with them, one morning when a phlebotomising fit was on him. I recollect his regretting the splendid guardsmen of the old Empire, for what? because they had such splendid thighs to amputate." Ricord, the genito-urinary surgeon, he calls the "Voltaire of pelvic literature —a sceptic as to the morality of the race in general, who would have submitted Diana to treatment with his universal specifics and ordered course of blue pills for the vestal virgins."

He recounts with delight how he and a frien would each day go to the morgue as if marketin for the day's provisions and for fifty sous apiec get a body on which to practice operative surger and which by night they would have slashed t bits. All in all he must have had a splendid tim both at work and play, and when the time for hi return arrived he pleaded with his father for fu ther funds to prolong his stay, reminding him i an ardent letter that "a boy is worth his manur as well as a potato patch."

On his return to Boston he started in practic and was moderately, but not unusually successful Perhaps the staid New Englanders were no greatly drawn to a young doctor who was know to be guilty of the offense of writing poems, an good ones to make it worse, and the Bostonia sense of humor was not equal to such witticism as his announcement of "small fevers gratefull received." At any rate he found time to carr on scientific work and between 1836 and 1837 wo three out of four Boylston prizes with his essay on "Indigenous Intermittent Fever in New England"; on "Neuralgia," and on "The Utility of Direct Exploration in Medical Practice." He was on of the first physicians in this country to make extensive use of the microscope, and also inventec a hand stereoscope which it is said would have added greatly to his revenues had he patented it After spending a year or two as Professor o Anatomy at Dartmouth, at the age of 38 he was made Professor of Anatomy, Histology, Physiology, Microscopy, and kindred subjects at Harvard In fact, his teaching duties were so numerous that he said his place on the faculty "was not a chair but a whole settee." This post he held for 3 years, though in 1871 a separate chair of Physiology was established. As might be expected, his lectures were a delight to his hearers, for he combined the skill of the sympathetic teacher, understanding the needs of the student, with the charm of the practiced raconteur, and his lecture was always the last on the day's list, for it was known that he was the only one who could hold the jaded attention of the students at that hour. His fertility in apposite comparisons was inexhaustible: in speaking of the pelvis he pointed to the pubic synchondrosis and said: "This is the triumphal arch under which every candidate for immortality has to pass." "These are the tuberosities of the ischia on which man was designed to sit and survey the works of creation." No one but Holmes could have had the whimsical conceit of comparing the infinitesimal convolutions of the sweat glands to the coils of a fairy's intestine.

A graphic picture of the conditions under which the Bob Sawyers of that day received their instruction is given by Professor Dwight, Holmes' successor in the Chair of Anatomy. "The amphitheater, the seats of which were at a steep pitch, was entered by the students from above through two doors, one on each side, each of which was approached by a steep stairway between narrow walls. The doors were not usually opened until some minutes after the hour. The space at the top of these stairs was a scene of crowding, push-

ing, scuffling, and shouting indescribable, till at last a spring shot back both bolts at once, and from each door a living avalanche poured down the steep alleys with an irresistible rush that made the looker-on hold his breath. How it happened that during many years no one was killed, or even severely injured, is incomprehensible."

The description is continued by Dr. David Cheever, Holmes' demonstrator of Anatomy, who says of the Professor that "He enters and is greeted with a mighty shout and stamp of applause. Then silence and there begins a charming hour of description, analysis, simile, anecdote, harmless pun which clothes the dry bones with poetic imagery, enlivens a hard and fatiguing day with humor, and brightens to the tired listener the details of a difficult, though interesting study. We say tired listener because, will it be believed? the student is now listening to his fifth consecutive lecture of that day, beginning at nine o'clock and ending at two; no pause, no rest, no recovery for the dazed senses, which have tried to absorb Materia Medica, Practice, Obstetrics, and Anatomy all in one morning, by five learned professors. One o'clock was always assigned to Dr. Holmes, because he alone could hold his exhausted audience's attention." It is little wonder that through the many years until he finally withdrew from active teaching in 1882 he was the idol of his students.

Of his medical essays among the best known are the two on "Homeopathy and Its Kindred Delusions," which he devoted to a trenchant analysis of the doctrines of that therapeutic fad and their refutation by the weight of his logic—a true *reductio ad absurdum*. Written with his usual vivacity, they are beautiful examples of the effectiveness of cold scientific reasoning in the demolition of vague and ill-founded principles, and illustrate admirably the application of the advice he himself received from Louis: "Formez toujours des idées nettes. Fuyez toujours les à peu près." The closing passage of the second essay is well worth quoting:

"As one humble member of a profession which for more than two thousand years has devoted itself to the pursuit of the best earthly interests of mankind, always assailed and insulted from without by such as are ignorant of its infinite perplexities and labors, always striving in unequal contest with the hundred-armed giant who walks in the noonday, and sleeps not in the midnight, yet still toiling, not merely for itself and the present moment, but for the race and the future. I have lifted my voice against this lifeless delusion, rolling its shapeless bulk into the path of a noble science it is too weak to strike, or to injure."

Of more importance, and representing a contribution to medical knowledge of such magnitude as to justify Holmes' enduring fame as a great physician as well as a great writer, is his memorable essay on "The Contagiousness of Puerperal Fever." Written at a time when obstetricians the world over were holding up their hands in helpless horror at the ravages of a pestilence which decimated the wards of lying-in hospitals, and spared the homes of the greatest as little as the hovels of the poor, its principles formulated with prophetic vision before the science of the bacteriologist had even been conceived, it is a monument more enduring than brass to its inspired propounder. Holmes relates how he was led to consider the question through the discussion at a medical meeting of the case of a physician dying of septicemia as the result of an autopsy wound received while examining the body of a patient who had succumbed to puerperal fever. The paper which was the fruit of his studies was read before the Boston Society for Medical Improvement, and printed in the *New England Quarterly Journal of Medicine and Surgery* for April, 1843—an ill-starred publication that perished within a year. The essay was separately reprinted twelve years later, under the title of "Puerperal Fever, a Private Pestilence," together with an introduction in which Holmes replied with complete absence of personalities, but with inflexible, deadly tenacity of conviction, to the storm of opposition his accusation that "The disease known as puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses" had aroused in many members of the profession who preferred to impute the deaths they had left in their wake to an inscrutable dispensation of Providence, rather than to their own negligence. Two of his most determined opponents were the Philadelphia professors Hodge and Meigs, who were loud in their denunciations of the revolutionary doctrine and inveighed against it, both in print and in their lectures. In his comments on these attacks, Holmes says that:

"To the medical students, into whose hands this Essay may fall, some words of introduction may be appropriate, and perhaps, to a small number of them, necessary. There are some among them who, from youth, or want of training, are easily bewildered and confused in any conflict of opinions into which their studies lead them. They are liable to lose sight of the main question in collateral issues, and to be run away with by suggestive speculations. They confound belief with evidence, often trusting the first because it is expressed with energy, and slighting the latter because it is calm and unimpassioned. They are not satisfied with proof; they cannot believe a point is settled so long as everybody is not silenced. They have not learned that error is got out of the minds that cherish it, as the tænia is removed from the body, one joint, or a few joints at a time, for the most part, rarely the whole evil at once. They naturally have faith in their instructors, turning to them for truth, and taking what they may choose to give them; babes in knowledge, not yet able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a Professor's shrivelled forefinger."

To the personal disparagement contained in Professor Meigs' vindictive onslaught he replies:

"I take no offense, and attempt no retort. No man makes a quarrel with me over the counterpane that covers a mother, with her new-born infant at her breast. There is no epithet in the vocabulary of slight and sarcasm that can reach my personal sensibilities in such a controversy. Only just so far as a disrespectful phrase may

turn the student aside from the examination of the evidence, by discrediting or dishonoring the witness, does it call for any word of notice."

There is no time at present to discuss the substance of this medical classic, nor even to do more than mention the later work of Semmelweiss, who in Vienna and Buda-Pesth furnished the experimental evidence which definitely proved the truth of Holmes' contentions, and himself encountered opposition of unparalleled animosity, so that he finally died a broken and disappointed man. As one writer has said, "If Semmelweiss could have written like Holmes, his doctrine would have conquered Europe in a year."

The collection of Holmes' writings entitled "Medical Essays" includes numerous other papers of the greatest interest to professional readers and especially to the student. He was always opposed to the then common practice of over-drugging, or as he termed it "the prevalent idea of poisoning out diseases as one smokes out vermin." In "Currents and Countercurrents in Medical Science" he refers to this when he says:

"How could a people which has a revolution once in four years, which has contrived the Bowie-knife and the revolver, which has chewed the juice out of all the superlatives in the language in Fourth of July orations, and so used up its epithets in the rhetoric of abuse that it takes two great quarto dictionaries to supply the demand; which insists in sending out yachts and horses and boys to out-sail, out-run, out-fight, and checkmate all the rest of creation; how could such a people be content with any but 'heroic' practice? What wonder that the Stars and Stripes wave over doses of ninety grains of sulphate of quinine, and that the American eagle screams with delight to see three drachms of calomel given at a single mouthful?"

"Border Lines in Medical Science" contains arguments in favor of the more extensive use of the microscope in medical investigation, which seem self-evident to us to-day, though of great weight a couple of generations ago, and which still have power to charm by their graceful felicity of expression. "Scholastic and Bedside Teaching" includes many a lesson which it would be well for us to ponder over in these days when we are too prone to let the laboratory problems crowd out of our minds the patient's immediate ills, forgetting Hufeland's aphorism, "the physician must generalize the disease and individualize the patient." Holmes says "the bedside is always the true center of medical teaching." "We are willing to give Liebig's artificial milk when we cannot do better, but we watch the child anxiously whose wet-nurse is a chemist's pipkin. A pair of substantial mammary glands has the advantage over the two hemispheres of the most learned Professor's brain, in the art of compounding a nutritious fluid for infants."

The collection contains four more essays: "The Medical Profession in Massachusetts"; "The Young Practitioner," "Medical Libraries," and "Some of My Early Teachers," whose titles indicate the interest of their contents.

Through all the years of his professional life Holmes' other activities were no less absorbing. His fame as a lecturer on non-medical subject was great, and the list of his poetical works and what he called his "medicated novels" steadily increased. When James Russell Lowell was offered the editorship of the *Atlantic Monthly* he accepted only on condition that Holmes should be engaged as the first contributor, and for the next twelve months the reading world was delighted by the successive papers of the "Autocrat of the Breakfast Table," followed in later years by the conversations of "The Professor" and "The Poet" at the same genial board.

So great was the worth of his contributions to medicine as author and educator, so compelling the charm of his writings as poet, novelist, and essayist, that posterity is still undecided in which field he deserves most honor. His own difficulty in determining which laurel wreath he prized more highly is shown by his reply to Sir William Osler who asked him from which he derived the greatest satisfaction, the essay on puerperal fever which had probably saved more lives than any individual gynecologist, or "The Chambered Nautilus," which had given pleasure to so many thousands. To this question he replied:

"I have rarely been more pleased than by your allusion to an old paper of mine. There was a time certainly in which I would have said that the best page of my record was that in which I had fought my battle for the poor poisoned women. I am reminded of that essay from time to time, but it was published in a periodical which died after one year's life, and therefore escaped the wider notice it would have found if printed in the *American Journal of the Medical Sciences*. A lecturer at one of the great London hospitals referred to it the other day and coupled it with some fine phrases about myself which made me blush, either with modesty or vanity, I forget which.

"I think I will not answer the question you put me. I think oftenest of the Chambered Nautilus, which is a favorite poem of mine, though I wrote it myself. The essay only comes up at long intervals. The poem repeats itself in my memory, and is very often spoken of by my correspondents in terms of more than ordinary praise. I had a savage pleasure, I confess, in handling those two professors—learned men both of them, skilful experts, but babies, as it seemed to me, in their capacity of reasoning and arguing. But in writing the poem I was filled with a better feeling—the highest state of mental exaltation and the most crystalline clairvoyance, as it seemed to me, that had ever been granted to me—I mean that lucid vision of one's thought and all forms of expression which will be at once precise and musical, which is the poet's special gift, however large or small in amount or value. There is more selfish pleasure to be had out of the poem—perhaps a nobler satisfaction from the life-saving labor."

All of this is old to many readers, yet I think that those who know Holmes' writings best are likely to be the ones who will be most pleased to have had his work and personality recalled to them. For the others who are not yet his disciples I most warmly urge speedy acquaintanceship with the pages of one who so often wrote especially for medical students, whose heart was so much in his

teaching that he once said "After every lecture you feel that something has gone from you," and of whom Osler said that he was "the most successful combination the world has ever seen of the physician and the man of letters."

680 Madison Avenue.

THE ANTITUBERCULOSIS MOVEMENT IN THE UNITED STATES PRIOR TO AND SINCE THE FORMATION OF THE NATIONAL TUBERCULOSIS ASSOCIATION.

WITH BRIEF TRIBUTES TO ITS DEPARTED LEADERS.*

By S. ADOLPHUS KNOPF, M.D.,

NEW YORK.

The following is a preliminary report on the history of the National Tuberculosis Association, comprising its fifteen years' activity from its first annual meeting in 1905 to that held April 22 to 24, 1920, at St. Louis, Mo.

In order fully to appreciate the fifteen years of activity of our association it is necessary to study the history of the antituberculosis movement in the United States not only since but also prior to the formation of the organization. The first systematic attempt to study the causes and prevention of tuberculosis in the United States was made by Dr. Henry Ingersoll Bowditch between the years 1850 and 1860. He was then busily engaged in correspondence with medical men throughout New England to determine if possible factors which favored the production of pulmonary diseases. Dr. Bowditch was particularly anxious to determine the relation of soil moisture to the prevalence of pulmonary tuberculosis.

The first authentic record of the use of the open-air treatment for tuberculosis in the United States dates back to about 1808, when Nathaniel Bowditch, the celebrated mathematician, father of the just mentioned physician, Henry Ingersoll Bowditch, and grandfather of Dr. Vincent Y. Bowditch of Boston, treated himself by that then unique method. Professor Nathaniel Bowditch, having had a hemorrhage with evident signs of tuberculosis at the age of thirty-five, succeeded in arresting the disease by a prolonged journey with horse and buggy, living and sleeping in the open air.

The first institution devoted to the exclusive treatment of the consumptive poor in all stages of the disease was established in Boston in 1857. It was called the Channing Home, named after the celebrated Unitarian divine. The first private sanatorium for the treatment of the tuberculous was established in Asheville, N. C., in 1875, by Dr. Joseph W. Gleitsmann. The first sanatorium for the poor and those of moderate means was founded by Dr. Edward L. Trudeau at Saranac Lake in 1884, under the name of "Adirondack Cottage Sanitarium." The first sanatorium established near a large city without regard to climatic advantages was the Sharon Sanatorium, near Boston. It was opened in 1890, and owes its existence to the enthusiasm and personal work of Dr. Vincent Y. Bowditch.

In 1893 a voluntary notification of private cases of tuberculosis was inaugurated by the New York City Health Department. The first State sanatorium for tuberculosis was established by an act of the State Legislature of Massachusetts in 1895; it is located at Rutland, Mass., and was opened for the reception of patients in October, 1898.

The first municipal hospital for the consumptive poor in the United States was established on Blackwell's Island, New York City, in 1902, by the Department of Charities, under the direction of Mr. Homer Folks, and is known as the Metropolitan Hospital. In 1903 the Stony Wold Sanatorium for tuberculous working women and tuberculous children was established at Lake Kushaqua, N. Y. This institution owes its inception to the thoughtful wives of two New York physicians —Mrs. James E. Newcomb and Mrs. George F. Shrady. The first seaside sanatorium for tuberculous and scrofulous children was established in 1904 at Coney Island by the A. I. C. P.

The first dispensary class in the United States devoted exclusively to the treatment of tuberculosis was inaugurated in 1894 by Dr. Edward J. Bermingham of New York City, at the New York Throat and Nose Hospital.

The first municipal dispensary for the treatment of the consumptive poor was established by the city of New York under the name of Clinic for Pulmonary Diseases of the Health Department. It was started mainly through the initiative of Professor Hermann M. Biggs, then General Medical Officer of the city, and was opened in March, 1904.

The first auxiliary to a tuberculosis dispensary was established in 1907 in connection with the tuberculosis clinic of the Presbyterian Hospital of New York City. It owes its existence to the enthusiasm and devotion of Mrs. J. Borden Harriman, Mrs. Straight, and Mrs. Rumsey.

The first exhibition on tuberculosis in this country was held in Baltimore in January, 1904, under the joint auspices of the Tuberculosis Commission of the Maryland State Board of Health and the Maryland Public Health Association.

The first periodical in America devoted entirely to tuberculosis was the *Journal of Tuberculosis*, which first appeared in June, 1899, under the editorship of Carl von Ruck, B.S., M.D., of Asheville, N. C. In 1903 the *Journal of the Outdoor Life* saw the light of day at Saranac Lake, N. Y., under the able leadership of Dr. Lawrason Brown. This journal has been productive of a great deal of good and has now no less than 6,500 readers.

The first endowed institution for the study, treatment, and prevention of tuberculosis was founded in Philadelphia, Pa., in 1903. It owes its existence to the well-known philanthropist, Mr. Henry Phipps of New York. This institute is now a part of the University of Pennsylvania.

The first tuberculosis society in the United States was formed by Dr. Lawrence F. Flick of Philadelphia in 1892, under the name of Pennsylvania Society for the Prevention of Tuberculosis.

The first day and night camp was established in Buffalo, N. Y., July 1, 1908, under the direction of Dr. John H. Pryor, who was also the founder of

*Read before the General Meeting of the National Tuberculosis Association in St. Louis, April 22, 1920.

the second antituberculosis association in the United States in 1892.

The first tuberculosis committee working under the auspices and in conjunction with a charity organization society was founded in New York in 1902.

In 1908, after a meeting at the tuberculosis exhibition in New York, to which all the employees of the Metropolitan Life Insurance Company had been invited, the officers of the company decided to establish a sanatorium for its consumptive employees. After some litigation concerning the right of such a company to do this, permission was granted by the courts and a magnificent institution was erected at Mount MacGregor, N. Y. It was inaugurated on June 20, 1914.

In 1908 the New York Post-Graduate Medical School created the first chair of phthisiotherapy, and in 1917 the Trudeau School of Tuberculosis, named in honor of Edward Livingston Trudeau, was founded at Saranac Lake, N. Y.

The formation of the National Tuberculosis Association had its beginning during a meeting in Baltimore on January 28, 1904, at the time of the first tuberculosis exhibit. The outcome of this meeting was a most happy one. An organization was founded under the name of "National Association for the Study and Prevention of Tuberculosis." This name, suggested by Dr. Lawrence F. Flick, was chosen so as to make it distinctive from the other organizations in the field. Only recently, after the passing away of Mr. Clark Bell and with him of all that was left of his former organization, was the much more simple name of "National Tuberculosis Association" adopted. A committee was appointed to draw up a constitution and by-laws. This constitution and by-laws were adopted on Monday, June 6, 1904, at Atlantic City. The objects of the new society are stated to be: (1) the study of tuberculosis in all its forms and relations; (2) the dissemination of knowledge about the causes, treatment, and prevention of tuberculosis; (3) the encouragement of the prevention and scientific treatment of tuberculosis. The first to hold office in the association were as follows: Dr. Edward L. Trudeau of Saranac Lake, N. Y., president; Dr. William Osler of Baltimore, and Dr. Hermann M. Biggs of New York, vice-presidents; Dr. George M. Sternberg of Washington, D. C., treasurer; Dr. Henry Barton Jacobs of Baltimore, secretary.

The gradual growth of the society, the biographies of all its officers, with their portraits and a list of their contributions on the subject of tuberculosis, the achievements of the society from year to year, and the papers read at each section, all will be enumerated in detail in chronological order in the history. In this summary I will briefly mention the most essential achievements and labors of the society.

In 1904 the association started with a membership of 26; to-day we have 25 life members and over 4,200 regular members. Prior to June, 1904, there were in the United States 23 tuberculosis associations and committees, to-day there are no less than 1,000 associations.

Prior to the organization of our association, there were in the United States 96 sanatoria and special hospitals, 24 tuberculosis dispensaries, n open-air schools, no preventoria. There are no 600 sanatoria, special hospitals and camps; 54 tuberculosis dispensaries; 3,000 open-air schoo and fresh-air classes, and 15 preventoria. In 190 there existed no tuberculosis nurses, to-day w have about 3,500 specially trained tuberculosi nurses.

Among the other outstanding features of th work of the association we may mention its organ izing and conducting the Sixth International Con gress on Tuberculosis in 1908. It started travelin tuberculosis exhibits; inaugurated the Tubercu losis Sunday, which has since developed int Tuberculosis Week; promoted the Red Cross Sea sale, which grew from a limited sale of less than 1 million in 1905 to over 400 million seals in 1919 During 1918 the National Association discon tinued its plans for Red Cross Christmas seals and in lieu of this campaign and in order to per petuate the work the Red Cross made a direc appropriation of $2,500,000 for distribution to it allied agencies. The association printed and dis tributed educational leaflets, posters, and booklet on tuberculosis, aggregating several millio copies; established the *American Review o Tuberculosis*, now having a circulation of 1,200 it published a number of research studies, such as "The Influence of Sanatoria on Surrounding Property," "Fresh Air and How to Use It," "Tuberculosis Hospital and Sanatorium Construction," etc.

Thanks to the magnificent gift of $100,000 from the Metropolitan Life Insurance Company, the association was able to establish in 1916 the Framingham Community Health and Tuberculosis Demonstration.

The National Tuberculosis Association conducted 15 annual meetings, at which no less than 560 papers on the medical and social phases of tuberculosis have been read and discussed and 15 presidential addresses delivered. In 1915 it started a series of sectional conferences which have since been conducted annually with most satisfactory results.

During the world war the association put into effect a program which had for its purpose the following up of every case of tuberculosis discharged from military camps, and a complete system of education in all of the large army camps and cantonments in the United States and France, including a special exhibit, motion pictures, lectures, and distribution of literature.

To whom are the medical profession and the people of the United States indebted for this enormous and wonderful work, amounting to the reduction of the death rate of tuberculosis from 200.7 per 100,000 population in 1904 to 140.0 in 1919? To our leaders in this work, of whom fortunately the majority are still with us. I mention first our only surviving honorary vice-president, Col. George E. Bushnell; then Hermann M. Biggs, who graced the presidential chair for two years; Frank Billings, Vincent Y. Bowditch, William H. Welch, Mazyck P. Ravenel, Homer Folks, George M. Kober, Edward R. Baldwin, Charles L. Minor, David R. Lyman, and our present honored president, Victor C. Vaughan. Our secretary, Henry

Barton Jacobs, has served the association from the beginning in 1904. William R. Baldwin, our retired treasurer; Mr. Henry B. Platt, our present treasurer; Livingston Farrand, our first executive secretary, who served the association so ably from 1905 to 1914; our present managing director, Charles J. Hatfield; Philip P. Jacobs, the assistant secretary since the year 1908; Donald B. Armstrong, the executive officer of the Community Health and Tuberculosis Demonstration, and their numerous assistants and clerical staff, comprising about 60 people.

I believe it to be apropos at this moment to recall in reverence and in gratitude the names of our departed leaders: Grover Cleveland, honorary vice-president from 1905 to 1908; Theodore Roosevelt, honorary vice-president from 1905 to 1919, and president of the International Tuberculosis Congress in 1908. Both of these men occupied, each for two terms, the highest office which can be conferred upon American citizens, and both of them left an imprint upon the history of the United States as ideal servants of an ideal republic, and showed us our duties to ideal citizenship. Both Mr. Cleveland and Mr. Roosevelt were deeply interested in all public health problems, and particularly in tuberculosis. Well may we be proud to count them among our numbers.

The first president of our association, our own Edward Livingston Trudeau, will always be gratefully remembered not only by us but by the American people at large for his pioneer work in the treatment of tuberculosis and his humanitarian efforts.

The next great loss our ranks sustained was in the death of Edward G. Janeway, the celebrated diagnostician, who never claimed to be a tuberculosis specialist, though there could hardly be anyone aspiring to this title who has done more for the antituberculosis cause in general, and particularly in the combat of phthisiophobia, for the individual patient or pupil as a teacher, physician, and friend.

Theodore B. Sachs, whom we may justly call the martyr president, gave up his life while in full vigor and strength because he could not endure the low attempts directed against his honor and reputation. For his memorial tablet at the Naperville Sanatorium, where his body was interred, the blind physician, Dr. Robert H. Babcock, wrote the following impressive words:

"In memory of Dr. Theodore B. Sachs, whose life was spent in disinterested efforts to relieve the condition of the unfortunate, never indifferent to the distress of others, he labored unselfishly and untiringly in their behalf, and this sanatorium, in which ground he sleeps, is a monument to his unusual greatness of heart and singleness of purpose. He loved his neighbor as himself, and was in truth a good Samaritan."

John Henry Lowman, gentle, kind, scholarly, and devoted to the highest ideals, served as sixth president of the National Tuberculosis Association from 1913 to 1914. His charming qualities and fine traits of mind and heart will long be remembered by the members of this association. Dr. Lowman's death was typical of his life. He made the supreme sacrifice as surely as any American soldier on the battlefields of Flanders and in France. When he was called to be chief of the American division of the antituberculosis work in Italy, under the auspices of the American Red Cross, already an invalid, he knew the great risk he was taking in crossing the sea, but he answered the call. He became sick on his voyage to Italy, and returned a very sick man and soon passed away. He died the soldier's death after living in the best sense of the word a physician's life.

Surgeon General George M. Sternberg served the National Tuberculosis Association as its faithful treasurer from the time of the formation of the society in 1904 to 1915. Distinguished as a soldier as well as a physician and scientist, after his retirement from the army he took the greatest interest in the betterment of the health of the capital of our country and in the housing problem of the poor. He died November 3, 1915, at the ripe old age of 78, and will long be remembered as a man of highest scientific attainments, an efficient officer, ideal citizen, and philanthropist.

On all the great souls thus far mentioned as having gone to their reward, appropriate eulogies were pronounced at the time of their passing beyond, and resolutions passed by the association which were placed on record in the transactions. Only for one have we not yet been able to do this; the great William Osler, the first physician to receive the distinction of unanimous election as honorary vice-president of the National Tuberculosis Association. He passed away only recently, and while I have no doubt that appropriate resolutions will be passed, may I be permitted to pay a brief tribute here to the man to whom our association and the medical profession of this and all civilized countries owe so much?

Sir William Osler was one of the prime movers in the formation of our society, and his interest in the tuberculosis problem in its social as well as its medical aspects has been unabated. He was closely identified with the antituberculosis movement in America as well as in England, and his counsel was sought as an expert in all that appertains to this most widespread of diseases. He added some fifty-odd important contributions to the modern tuberculosis literature. To Dr. Osler is due the formation of the Laennec Society for the Study of Tuberculosis, which is a part of Johns Hopkins Medical School, and in 1900 he established the first social service division in connection with the tuberculosis work of Johns Hopkins Hospital. The honors bestowed upon Sir William have been enumerated in the many eulogies already published, and I need not recount them here. I will only mention the two most important. Shortly after his arrival in England as regius professor at Oxford, he was created a baronet of the United Kingdom by King George V. In 1918 Sir William was made president of the British Classical Association, a rare honor indeed to be bestowed upon one whose training had been that of a physician purely and simply. Osler's interest in America, in its medical institutions, and in his countless friends and pupils was genuine and lasting until the end. His work in Oxford equalled his achievements in Montreal,

Philadelphia, and Baltimore. In answer to an inquiry prior to the publication of an article on "The Tuberculosis Situation After the World War," Sir William wrote me under date of May 26, 1919, "All goes well here and I hope we will get the tuberculosis problem settled ere long on national lines." During the war he worked for the health of the English and Allied armies. The death of his only son, Revere, who made the supreme sacrifice in the world war, was a terrible blow to this great and good man, but he bore up under it bravely. In reply to a letter of condolence from the author, after expressing his thanks with his usual warmheartedness, Sir William merely added, "It has of course been a pretty hard business." Then forgetful of his own sorrow he went on to speak of our duties as physicians in the world war. He kept on working for the soldiers and with the soldiers. He talked to them on subjects of hygiene, how to preserve their health and to prevent tuberculosis.

In November, 1919, Osler contracted pneumonia, but he himself hoped for an early recovery, and on Christmas day he sent a typically cheerful cablegram to Johns Hopkins Hospital, announcing that he was making a good fight; four days later he died. Perhaps he only sent that message to give Christmas cheer to his many friends on this side of the Atlantic. He must have realized the seriousness of his condition, for after his death the following note, dated December 23, 1919, was found among his effects: "Dear friends, the harbor is nearly reached, after a splendid voyage with such companions all the way, and my boy waiting for me." How the soul of this great man is revealed in these simple words!

Cheerfulness, an unbounded capacity for work, a devotion to the highest ideals of medicine and humanity, a marvelous scholarship, loyalty to his friends, and kindliness to the humblest of the humble, were the outstanding characteristics of Sir William Osler. His lifelong friend, Prof. William H. Welch, of Baltimore, well said of him: "To Osler nothing human was foreign. His home, both in Baltimore and Oxford, was a center of hospitality." Those who had the rare privilege to walk with Professor Osler through the medical wards or who had the good fortune to have been present at some of his receptions to students will never forget the human side of his character. Osler was devoted to his pupils, but he was also devoted to his teachers, and the veneration and enthusiasm he expressed when he spoke of his own masters and the masters of us all was an inspiration that not only stimulated the interest in historic medicine but aroused gratitude for the inheritance which the teachers of past generations have left us. On October 5, in 1905, he took the American delegation, which had attended the Fifth International Tuberculosis Congress in Paris, to the cemetery of Mont Parnasse to deposit a wreath on the tomb of Louis, the French physician, at whose feet so many American physicians of the past generation had sat. It was a touching tribute and gave the younger men a lesson in gratitude to our teachers.

Osler was one of our greatest physicians of the Anglo-Saxon race of the present day. He instructed thousands of students by word of mouth and by his writings on early diagnosis, practical prophylaxis, and rational treatment of tuberculosis. In a lecture delivered soon after his arrival in England, he said: "Probably 90 per cent. of mankind has latent tuberculosis, and if I had an instrument here with which I could look into the chest and abdomen of each of you I would probably find somewhere a small area of the disease. So widespread is the germ that practically all humans, by the time they become adult, harbor the bacillus of the disease. But we do not die, because we are not guinea-pigs and rabbits. We have attained a certain immunity. But the germ is in us, though negative, and with all of us there is the possibility of slipping into the dangerous state. But when workers have living wages, when the house becomes the home, and the nation spends on food what it now spends on drink, then there will be millions instead of thousands with practically continuous immunity. For the enemy has been tracked to its stronghold, which is defended by three allies—poverty, bad housing, and drink." He looked upon tuberculosis as a disease of the masses, and particularly of those of little or no means, and we know that he induced many of his wealthy friends and patients to consecrate some of their fortunes to the relief of the consumptive poor.

Characteristic of William Osler and his labors are the words which grace the photograph he presented to those who bade him farewell on May 2, 1905, when he was about to leave for Oxford. They were the immortal words of Abou ben Adhem, "Write me as one that loves his fellow man."

16 West Ninety-fifth Street.

CONCERNING RHEUMATIC AND SOME OTHER INFECTIONS,

WITH ILLUSTRATIVE CASES.

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PERHAPS there is an inclination to give credence to the general impression that the term rheumatism is a misnomer. There has been a tendency to blanket certain symptoms under this term because the etiology in many instances seems obscure and because there is pain in some joint or muscle. If it be the knee-joint, if the condition be characterized by swelling, pain, fever and the tendency to shift from one of the larger joints to another, with possibly some evidence of a history of recurrence, shall the diagnostician offer an apology for using the term rheumatism to express this train of symptoms? Our fault has been in a lack of detail work in making a study of our patients. If there is a swollen joint with pain it has been very easy indeed to use the term rheumatism as a mantle, as we formerly used the term malaria. To say that what we call rheumatism is simply the result of some infectious process is not sufficient excuse for the abandonment of the term rheumatism; on the contrary it adds to the complexity. We surely have

certain manifestations of disease, with an approach to identity but sometimes atypical, that will not permit a banishment of the term. We must not condemn those high in authority who still claim that rheumatism is an acute infectious disease. If this be accepted, with the help of the clinical laboratory, we can easily outline the etiology of at least six types. If we must abandon the term, then we must blue pencil the leaves of any modern text-book; and why do Osler, Anders and others make this necessary, simply because we know of no other term to describe certain manifestations of disease? Shall we abandon the views of the authors who furnish a text for the medical student—are such books obsolete? Shall we say that our observations at the bedside clinic are cloaked in ignorance? Are we poorly trained, and are we teaching others fallacious doctrine? Shall we put a negative on certain factors which are alleged to represent rheumatic fever? Among such factors are: probably due to *Micrococcus rheumaticus*, large joints affected with pain and swelling; sometimes muscles elsewhere affected; fever; tendency to leave one joint and seek another; sheaths inflamed; possibly heart lesions; certain etiology; predisposing causes; general symptomatology; condition of skin and renal symptoms; pulmonary, muscular, and nervous symptoms—it is needless to go further. Until these are abandoned we must still use the name rheumatism, even though we be a "doubting Thomas."

If we retain the term, let us first look carefully for some infectious process before making a diagnosis of rheumatic fever. If there be pain in the shoulder, is there a tuberculous lung, or is the oral cavity at fault? If in the hip, let us think of an infectious process in the appendix, kidney, bladder, ovary, uterine cavity, or rectum. These are but a few instances. It is not necessary that a joint infection be caused by a nearby organ. Any portion of the body, from the occipital region to the phalanx of the great toe, may be affected in consequence of pus, for example, in the appendiceal region.

It is very true that there is much for us to learn and it is also true that we have unlearned some things. The infectious field is a large one, and when at sea we are always in deep water. I will submit a few cases from my bedside clinic notebook, which contains a résumé of my work at the Indianapolis City Hospital. They will not be given in complete form, and I will omit many of the details:

Case I.—J. B. Male. White, Age 55. *Family History.*—Mother died of heart disease, one sister died of diphtheria and one of cerebral-spinal meningitis. No tuberculosis or cancer. *Past History.*—Occupation, clerk; drank alcoholics occasionally. Had infectious diseases of childhood, and tonsillitis. Has had gonorrhea several times. Had herpes or chancre 20 years ago, but no evidence in later years to confirm it. Patient states that he had rheumatism ten years ago. *Present Illness.*—Aching pain in both knees for three days before coming to hospital. Pain first sharp, then keen and severe; much swelling and redness. After a few days of treatment pain left knees, swelling reduced; right shoulder and small finger of left hand then became involved. Next the left shoulder and arm. *Physical Examination.*—Anemic. Skin muddy. Puffiness under eyes. Pupils dilated. Coordination poor. Teeth bad; evidence of pyorrhea. Some enlargement of the thyroid. Mouth-breather. Tonsils diseased. Rhomberg's sign negative. Argyll-Robertson pupil negative. Some edema of ankles. Inguinal hernia on right side. Chest negative. Temperature 100° F., sometimes subnormal. Pulse 100. Urine examination negative.

Here are the symptoms generally accepted as acute rheumatic fever. The patient left the hospital, had a relapse and returned. Recovered in three weeks. He was given 30 grains of sodium salicylate every three hours and 10 grains of acetyl-salicylic acid every 5 hours. Joints massaged with adeps and oil of wintergreen. Bowels kept free with Dorsey's magnesia mixture. No other treatment. Doses lessened as symptoms improved, and patient instructed after his return home to take 15 grains of salicylate of sodium and 5 grains of iodide of sodium for one month; to have tonsils removed, and teeth and gums treated. He refused to have this done while at the hospital. It should have been done.

Case II.—E. M. White. Female. Age 23. Married. *Family History.*—Mother had two strokes of paralysis; after last, dragged right foot. Wassermann positive. Was given salvarsan. Has had tonsillitis and rheumatism. Father a rheumatic and helpless from it. *Previous History.*—Good health during childhood. Menstruated at 10 years. Miscarried at age of 16 years. At 20 years gave birth to a child. Has had some vaginal discharge. Soreness and swelling in joints of legs and arms two years ago. Has been in skin clinic on account of eczema of hands, and gynecological clinic on account of vaginal discharge and painful urination. Tonsils removed six months ago. *Present Illness.*—For three weeks stiffness in left elbow joint, wrist and fingers. Pain later in right elbow; some swelling. Pain in right hip and knee during past few days. *Physical Examination.*—Weight, 175 pounds. Well nourished. Wears glasses. Teeth good but gums sore and bleed easily on pressure. Right arm semi-ankylosed, and left swollen and painful. Cervical and inguinal glands enlarged. Joints elsewhere tender on palpation. Chest and abdomen negative. Temperature 100° F. and pulse 88 to 90. Respiration 20. *Laboratory Findings.*—Smear from vagina reveals gonococcus. Wassermann negative. Blood Count.—Red, 6,130,000; white, 16,500; poly., 58 per cent.; small, 30.5 per cent.; large, 10 per cent.; eosin, 5 per cent.; bass, 1 per cent. A second Wassermann negative.

We have here presented almost a typical case of gonorrheal infection usually denominated gonorrheal rheumatism. It has no bearing, of course, upon the *Micrococcus rheumaticus* or other forms of infection. When even a few of these manifestations are present, if there is a complication of ankylosis, we are fairly sure that the type is gonococcal.

Case III.—L. T. White. Female. Age 55. *Past History.*—Had tonsillitis. Has been operated on for some rectal trouble; menstruates regularly every 30 days. Has had diseases of childhood. *Present Illness.*—Five weeks ago had swelling and pain in both thumbs, later the fingers, and still later knees and ankles. *Physical Examination.*—Features coarse and masculine, with considerable hair on upper lip and chin. Does not complain of vision but has cataract in right eye. Pulsation of veins of neck, very prominent during exertion, swelling in supra-sternal notch during pronounced exertion. Mouth and chest negative. Right knee and foot greatly swollen and very painful and red. Some edema of leg. Laboratory findings negative. Temperature 102° F. Pulse 100. Respiration 25. No evidence of any focal infection. It would seem that the micrococcus was responsible. There was an uneventful recovery following very large doses of bicarbonate and salicylate of sodium. When stomach was sensitive, resorted to the use of salicylate of magnesia. Bowels kept open. No meat in diet.

In such a patient if stomach does not accept sodium salicylate kindly, 40 to 60 grains may be given per rectum twice a day or intravenously in appropriate cases.

Case IV.—M. B. White. Age 20. Married. Weight, 156 pounds. *Family History.*—Negative except parents had some heart trouble. No tuberculosis nor cancer. *Past History.*—Mumps. Rheumatism since 8 years of age, lasting from six weeks to greater portion of each winter. Attacks were preceded by "colds," sore throat, and catarrh of nasal passages. Some years ago discharge from both ears. Says her rheumatism would pass from one large joint to another. Pain was keen and sharp when moving and when quiet dull and aching. Generally joints much swollen but very little redness at some of the times. Did not notice much fever. *Present Illness.*—When in the South was well. Came North and had child, cold in head, headache, and in a few days had pain in both shoulders. Complained of shortness of breath and pain in region of the heart. When admitted to hospital, temperature 101° F. Respiration 28, pulse 116. Pain in joints, dyspnea, systolic murmur at apex, and skin moist. Urine examination shows albumin and few pus cells. *Physical Examination.*—Well nourished. Dyspnea. Pain in shoulder on movement, skin moist, pulse rapid but well sustained, apex beat to left in sixth interspace. Heart hypertrophied, systolic mumur at apex and transmitted to mid-axillary line, pulmonary second sound accentuated. Some few mucous râles in left lung posterially which cleared after forced cough.

All things considered, this patient seems to have multiple secondary arthritis with cardiac complication. Pain and heart symptoms were relieved by hypodermatic injections of atropine sulphate and morphine sulphate. Both salicylate of magnesia and bicarbonate of soda were given. At times the heart needed medication and sparteine sulphate was given in one-grain doses. Bowels were kept open by saline. Light diet and avoidance of fluctuation of temperature to body. Sometimes protected by coverings, which is always a good plan. This patient made a fair recovery, there being only a faint mitral blow, which should require treatment for a long period. Care should be taken to guard against future attacks by adopting measures of prophylaxis.

We can eliminate arthritis deformans in this case on account of mildness of joint symptoms, there being no joint deformity, no Heberden's nodes, and on account of the character of the heart lesion. The fact that the disease yielded to the salicylate of sodium made a therapeutic test and was a negative for arthritis deformans. Gout rarely appears before patient is past 30 years old, and not so often in females. Generally attacks smaller joints, preferably the great toe, and quite early. The onset and absence of pain at night also makes a fair negative. We take into view acute rheumatic fever, multiple secondary arthritis, septic arthritis, etc. The symptoms may differ in only a few points. The specific etiology may be a little doubtful except in a few cases, such as gonorrhea and syphilis, and the sequelæ sometimes show a resemblance; we must then resort to laboratory help. Even though the specific organisms are found, there may be a question whether or not some local focus of infection, such as tonsillitis, otitis media, etc., may be doing the harm. The laboratory stands well in hand with us. We are now limited to acute rheumatic fever, and arthritis, acute and chronic. Recognition is here given an acute disease. The attacks in this patient have always been preceded by exposure, cold (wet feet in this instance) sore throat, irritability of the nasal passages, which are etiological factors and relate to both of the last mentioned types, if such they may be called. Between the ages of 10 and 20 years females are more prone to both than males, and yet the temperature, pulse, respiration and cardiac symptoms may be much the same. Some of the premonitory symptoms may be almost the same. The etiology may not differ much. In acute rheumatic fever, however, there is more of an abruptness in onset. In 24 hours there may be a temperature of 100° F., and one or more large joints may be swollen, red and painful. Pain may be intense. There may be inability to change posture without causing agonizing pain, drenching sweats, prostration, and other evidence of helplessness.

Multiple secondary arthritis is not so abrupt in onset, pain not so intense expect during motion of affected part, temperature not so high, and joint symptoms not so well marked as in acute rheumatic fever. Perhaps it is drawing a fine line to say the heart lesions are not quite the same. Both are prone to heart complications, but in acute rheumatic fever endocarditis quite frequently appears (in about 35 per cent.), pericarditis and myocarditis less frequently, but later on, such lesions may present in either case. Sometimes acute rheumatic fever leaves nodules attached to or a part of the tendons and fascia, which vary in size from a shot to a pea.

Case V.—L. B. Male. Colored. Age 19. Family and present history are of little moment. *Present Sickness.*—Pain below left nipple three weeks ago, then swelling of left knee; in a few days in the right knee, then in legs and ankles; especially painful tendons. Some shortness of breath during exertion. *Physical Examination.*—Head and mouth normal but some enlargement in region of thyroid. Cardiac hypertrophy; systolic murmur at apex which is transmitted to the left axilla and over left chest to left dorsal region along vertebral border of the scapula and below. At times there had been some cough and very slight expectoration, and sputum showed some streptococci. Urine negative. Temperature 100° F. to 103° F. Pulse 100. Respiration 25. The thyroid enlargement must be considered. Perhaps this shows a resemblance to acute rheumatic fever, but it is more likely to be a streptoccocic infection with the source in doubt, unless it be pulmonary, and more careful study in this case will be required.

Focal infection is far reaching in this connection, and covers a large and important field. I have had something to say recently concerning the useless extraction of teeth, because there are those who went beyond the limit of reason; but it must be recognized that periapical abscesses may be undiscovered and may be responsible for a pathologic lesion of the lung, heart, kidney, gastrointestinal tract, or in fact, any portion of the body. Earl (*Journal-Lancet*, February, 1919) sounds a keynote when he speaks of *x*-ray diagnosis, but it is most important to obtain an accurate interpretation, for I am convinced that this is one of the common sources of error. A small shadow may be deceptive as indicating a small abscess, and the antrum and nerve openings must be kept in mind. Furthermore one of the conclusions of Earl is timely—that upon those who would advise a departure from the generally accepted rule of "where there is pus evacuate," falls the burden of proof. In the light of proved bacteriological and microscopic examinations over the entire country it is a great responsibility to assume that periapical abscesses should not be removed by surgical means.

Sanford Blum (*American Journal of the Medical Sciences*, November, 1918) says we ascribe too many ailments to focal infection, and takes the position that when bacteria are injected into the cir-

ulation arthritis occurs as an incident of the induced septicemia. Pathogenic bacteria manifest a predilection for the serous and synovial membranes, morbid processes ensue and we may have a meningitis, pleuritis, endocarditis or synovitis and it is true that there may be different types. He thinks, which appears to me to be reasonable, that the power of attacking serous and synovial membranes is not limited to the streptococcus, and that the selective morbidity is due not to specified organisms but to the lowering of the power of resistance to bacterial aggression possessed by serous and synovial membranes as contrasted with muscles, bones, nervous and connective tissues.

I have always placed much stress upon the power of resistance of the individual, and this is lessened by age or otherwise we see evidence of a pathologic condition wherein an organism was present in some portion of the body waiting for the opportunity. Do we not frequently find the mouth of a doctor or of a nurse containing a large number of diphtheria organisms? No doubt each one of us has digested, if I may use this expression, many thousand tubercle bacilli, and yet that same protection which we possess gave us an individual immunity. I have very frequently quarantined nurses who had many organisms in the mouth but who never contracted the disease that these organisms represent.

So I might call attention to the influence of toxines or numerous other causes of the lowering of the bodily resistance, all of which invites certain diseases, and this simply implies that one of the most important factors for consideration in our work is preventive medicine.

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LOCALIZATION OF PULMONARY LOBES BY THE *X*-RAY.*

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It is not my purpose to tire you with a great deal of anatomy that you know. It is not my purpose even to go with you over the regional anatomy of the chest so important to thoracic surgery. But since it is never safe to depend upon our knowledge of anatomy as it should be, it is my purpose to show you how I think the *x*-ray chest plate can best help in thoracic surgery.

As the points that I wish to give you cannot be well expressed in a paper unless fully illustrated, I propose to point out from a few slides certain anatomical landmarks which can be seen upon the *x*-ray plate, and so show how lesions can be accurately located before operation. The value of this method of localization will be determined by the surgeon who uses it well; its accuracy I have fully established. These important landmarks, beside the bony structure of the chest, are the lung lobes and the trunks, the trachea and the aortic arch. In this case let the last be first and we will consider the trachea and arch.

Normally the trachea lies slightly nearer the right upper lobe than the left, and nearest the right upper lobe at its bifurcation. The aortic arch is decidedly to the left. The left bronchus passes under the aortic arch with a decided curve, while the right bronchus passes down as an almost direct continuation of the trachea. The corena leans toward the left bronchus, and it is this, with the direct fall of the right bronchus, that causes foreign bodies most often to lodge in the right lung.

Now let us consider the lobes of the lung, locating the three on the right side and the two on the left largely by the distribution of the bronchi and their branches.

The bronchus to the upper right lobe is the eparterial bronchus, so named because it lies above the right pulmonary artery. It comes off the right bronchus just below the trachea. The bronchus to the middle right is given off the main stem bronchus four or five centimeters below the eparterial bronchus. Thus it is possible to make out distinctly the upper right lobe and separate it from the middle right, and the pulmonary artery can thus be accurately located before operation.

To accomplish this stereoscopic plates must be made with the proper technique. The technique consists of fuller exposure and softer tube than is best for chest examination, and which I have fully described in the *Review of Tuberculosis*, November, 1918.

The lower right lobe, as well as the lower left, are often difficult to accurately localize in the normal chest. But if one takes good plates and carefully studies them, he will first notice that a greater number of branches are given off the main stem bronchus posteriorly, and if the trunks have been carefully charted in the upper lobes, it will be deduced that the rest of the chest cavity is occupied by the lower lobes.

When I speak of charting the trunks, it may be necessary to go into some detail. The trunks are the heavy lines extending from the hilum into the lung fields like a tree. They are the increased densities which are produced upon the *x*-ray plate by the bronchi and accompanying vessels, the lymphatics and their connective tissue.

If we divide the lung fields into three zones, the hilum or root zone, the trunk or middle zone and the periphery or pleural zone, we will find that the heavy masses at the root are the hilum; the trunks extend out in all directions from this but have a very definite location, and that beyond the trunks there are many fine branches which normally do not extend to the pleura. I have named these branches near the pleura the linear markings.

It must be remembered that these branches and trunks are not the bronchus alone, but the bronchus is within or immediately borders the trunk and can be located by it. Also remember that there is always an anterior and a posterior branch to each trunk. When we study the trunks carefully we find that they have exactly the distribution which Birch-Hirschfield gives his bronchial tree.

As an example of the locating of lesions and their limits by charting the trunks, let us consider the following: Coming off the very apex of the hilum there is a trunk passing (especially on the right side) upward, parallel to the vertebral column toward the apex. This I have named the vertebral trunk, and it is interesting to note that its branches, or the linear markings of the vertebral

*Read at the second annual meeting of the American Association for Thoracic Surgery, June 9, 1919.

trunk, all lie upon the plate within the circle of the first rib. Thus a lesion limited to the apex of the upper lobe involves this area. The anterior and posterior branches of this trunk are so close together that it is impossible to separate them unless there is a definite lesion in one or the other. Physical signs of this area are heard either in the supraclavicular or suprascapular fossæ.

The first interspace trunk comes off the hilum a little lower than the vertebral trunk, and passes up and out toward the shoulder. The anterior branch comes toward the chest wall below the clavicle. Its linear markings come near the pleura behind the first interspace and extend slightly above to the first and below to the second rib. Thus a lesion limited to the anterior branch of the first interspace trunk will come to the anterior chest wall directly below the clavicle. A lesion of the posterior branch will come to the pleura just below the spine of the scapula, mostly outside the mid-scapular line. This is a very common location for unrecognized tuberculous lesions and for light-weight aspirated foreign bodies. Usually pneumonic abscess following tonsillectomy is found in the lower right, but often it is overlooked in the posterior first interspace trunk of the upper right.

The second interspace trunks are much larger and cover a greater area than the first. The dependent branches spread out over the entire base of the upper right lobe. Remember we are speaking of the right side, the left side will be described later. These trunks come off the hilum below the first interspace trunk in a horizontal line. The usual anterior and posterior branches are given off but in addition to this there is one branch which passes upward directly below the second interspace, and another which passes out and behind the third interspace. The anterior branches give off their linear markings behind the second and third interspaces entirely across the chest and extend well to the outer edge of the pectoral muscle, while the posterior branches extend into the axilla and reach the pleura of the lower lobe posteriorly.

The middle lobe trunks, as I have said, come off four or five centimeters below those to the upper lobe (the eparterial bronchus). They leave the hilum behind the fourth rib and fourth interspace. The posterior branch passes up and back toward the base of the upper lobe, and the anterior branch passes forward and down to the anterior chest wall.

If one will think of the fifth rib as marking the upper border of the lower lobe, he will easily carry a practical line in his mind which will help to visualize the lobes. Thus one correctly thinks of the upper and middle lobes as anterior lobes and the lower lobe as the posterior lobe. Certainly for accuracy this rough line needs modification as first—the incisura above the lower lobe at the chest wall is a little higher on the left than upon the right side. Second—the apices of the lower lobes extend slightly above the fifth rib near the spine. Third—the incisura reaches the diaphragm so that in front it extends below the fifth rib.

Now this description and location of the lobes with respect to the chest wall is the usual case, and if it never changed a study of the trunks would not be necessary. But lobes are not constant. In one series of lungs which I studied there was abnormal location in twenty-five per cent. of the cases. This is probably unusual but anyone who will note his autopsies carefully will be struck with the great frequency with which abnormal lobation occurs. Then the lung is a very movable organ and contractile tissue frequently dislocates the normal position of the lobes. As you all know dislocation of the thoracic viscera is a common occurrence. What I am trying to show you is that we have a means by which we can usually determine thoracic dislocation prior to operation. But to do this it is necessary to know the various trunks and their relations to the chest wall. Necessarily there are many abnormalities of the chest wall which must be considered, and with which the trunks must be compared, but if one understands the usual bony framework of the thorax, or has a good skeleton in his closet, such deformities will be easily allowed for.

Now as to the left side. The left lower lobe is very much like the right, except that it is a little longer and less broad. Thus as we know it extends a little higher and the incisura reaches the diaphragm a little more anteriorly.

To the apex of each lower lobe there go two trunks which are given off the main stem bronchus posteriorly about the level of the middle lobe trunks. They are seen upon the *x*-ray plate to leave the hilum posteriorly and to pass back and up. They are not always seen and can never be made out except upon stereoscopic plates. The hilum otherwise obscures them.

The upper of these trunks can be followed toward the fifth interspace near the spine, while the other comes to the back about the angle of the scapula to the seventh interspace or the eighth rib. When seen they are a great help in localizing lesions within the apex of the lower lobe.

The upper left lobe is very like the upper right, but has several important differences. Its bronchus is called the hyparterial bronchus, because it passes under the left pulmonary artery as well as under the arch of the aorta. Upon the plate the left bronchus can be seen to sweep in a large curve toward the lung fields, and the vertebral trunks do not pass up so nearly parallel to the spine, but curve to the apex. Nevertheless, the linear markings come to the surface almost exactly as upon the right side. This applies to the first and second interspace trunks as well.

Next there is the linguala or lingual tip which has its own trunk and by some is compared to the middle right lobe. The bronchus to the lingual tip of the upper left comes off the hyparterial bronchus and not off the main stem bronchus as does that of the middle right lobe. The hyparterial bronchus comes off the left bronchus much nearer the branches of the right side. There is about three centimetres between them as against four or five centimetres on the right side. The lingual tip trunk is seen to leave the left hilum about the second interspace and to pass down anteriorly and to often curve in, and the linear marking comes nearer the anterior chest wall to the left of the heart.

It is not necessary for me to do more than to refer to the value of observing the movement of

the diaphragm upon the fluoroscopic screen, and to note whether or not it is adherent to the thoracic wall or drawn up by adhesions. Certainly you all know that diaphragmatic hernia can easily and accurately be diagnosed. But I do wish to emphasize that the posterior mediastinal space should be considered. It is simple to make this examination by oblique illumination upon the screen and a bolus of bismuth is so easily followed into the stomach that this observation should not be neglected.

But this is neither an x-ray paper nor a pathological study. It is an effort to call your attention to the fact that good x-ray chest plates are full of trunks and linear markings which can be studied stereoscopically; that each of these trunks contain bronchi and that when you can follow their distribution you can accurately locate your lobe or lesion before operation.

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AUTOSERUM-THERAPY (INTRASPINAL) IN ENCEPHALITIS LETHARGICA.

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There is at the present time a very active epidemic of lethargic encephalitis in the Pacific Northwest. During the past three months I have personally seen ten cases—all in Portland.

House[1] has recently reported thirteen cases. In the United States, the epidemic has existed since 1918. Numerous reports have been published in the past two years. Perhaps the most exhaustive clinical study of the disease was made by Barker[2] and his collaborators, report of which has just appeared while this paper was being prepared. Vaughan[3] has recently presented a complete review of the earlier literature on this subject. And though the clinical features of this disease are now clearly understood, no suggestion as to therapy has yet been offered. Economo[4] in his monograph on Encephalitis Lethargica states that: "No known measures of therapy have influenced the course of the disease."

For several years I have been actively interested in *intraspinal autoserum-therapy* in various nervous disorders, both acute and chronic. And when the problem of the present epidemic presented itself it occurred to me that the use of autogenous serum intraspinally might be of some value. I recalled the effects of this mode of treatment in acute chorea (probably also an infectious encephalomyelitis). Since I have never seen any ill effects from the operation and since no other therapy has as yet been offered, I felt justified in proceeding with this mode of treatment. I have treated five cases by this method. In four of these the improvement was definite, rapid, and marked. In the fifth case, the patient was in moribund condition with signs of rapidly developing pneumonia, when a single injection of autogenous serum was given intraspinally. The following day the patient's condition appeared to improve, but on the third day he died of pneumonia.

The technique is simple. It consists briefly of obtaining from the patients from 60 to 100 c.c. of blood. The blood may be received in a flask and allowed to stand over night and the serum separated the following morning. Or the blood may be received directly into centrifuge tubes and the serum separated for use the same day. A lumbar puncture is performed in the usual manner and 25 to 35 c.c. of spinal fluid is withdrawn and an equal amount of the patient's blood serum is injected into the subdural space. The foot of the bed is raised 6 to 8 in. for three to four hours. Strict asepsis must be observed in the preparation of the serum and in the operation.

In the beginning of my work I used to inactivate the serum in a water bath at 56° C. for thirty minutes. I have found, however, that this practice is unnecessary and probably even undesirable, since it no doubt destroys some antibodies during the process of inactivation.

Case I.—Male, age 27, salesman. Referred for diagnosis November 29, 1919. Complains of nervousness, and difficulty in walking. Family history unimportant, personal history: Grippe in 1912; no other illness. Denies venereal disease. Married one year, one healthy child, six weeks old. Present illness began seven weeks ago with a sharp pain in the back, a little fever, which lasted for about three or four days, then he became drowsy and sleepy, noticed that he would see double. Speech became thick and right side of face became paralyzed. Within two weeks, the eyes began to improve and pain in back left. There was no headache or vomiting. Lost thirteen pounds in seven weeks. After the first two weeks he began to improve, but is still nervous, shaky, and very stiff, making walking extremely difficult.

Examination.—Mask-like expression of face, typical Parkinsonian gait. Pupils reacting very sluggishly to light and accommodation, knee-jerks hyperactive, the left slightly more active than the right, no clonus or Babinsky. Spinal fluid was under considerable pressure; 7 cells to the cubic millimeter; globulin, positive; gold. sol. test $\pm + + \frac{+}{+} + 0\ 0\ 0\ 0\ 0$. Wassermann negative. Blood Wassermann negative.

A diagnosis of lethargic encephalitis was made. The patient was observed for a period of four weeks, during which time his condition became distinctly worse. When seen a second time, December 22, he showed a much more marked spasticity in his gait, of the Parkinsonian type. His knee-jerks were much more exaggerated, the left being distinctly greater than the right, marked clonus on the left, Babinsky positive on the left side. Twenty c.c. of autogenous serum was introduced intraspinally after a similar amount of fluid was withdrawn. The next day, after a mild reaction, the patient was much improved. Spasticity was nearly entirely gone, there was no longer clonus or Babinsky on the left side, and the difference in the knee-jerks was less marked. A week later a second injection was given, and in three days the patient was able to come down unaided to be presented before the Portland City and County Medical Society. He was practically completely recovered, aside from a little weakness.

Case II.—Female, age 21, housewife. Referred by an eye specialist for diagnosis on January 15, 1920. She complains of blurred vision and headache; family history is negative; personal history presents nothing of importance. Married ten months, no conception. Her present illness began between two and three weeks ago when she began to grow tired and sleepy. Ten days ago she noticed that her vision became blurred and she was unable to real. Did not see double. The headache was much worse the last two weeks. Has not been able to sleep the last four nights, but feels sluggish and drowsy mentally. Jaws have been quite stiff for several days, making it very difficult to take food.

Examination.—Pupils unequal; right larger than the left; no reaction to either light or accommodation;

jaws are stiff; can't open mouth beyond one c.m. Heart and lungs negative, knee-jerks hyperactive, but equal. Mentality sluggish, answers questions very slowly. There is a double facial paralysis, the right being more affected than the left. Spinal fluid examination: 36 cells per cu. mm.; Globulin, positive; Wassermann, negative; Blood Wassermann, negative.

On January 26, 30 c.c. of autogenous serum were given intraspinally, and a second injection a week later. Improvement was marked, though less rapid than in Case I. She left the hospital February 18, feeling perfectly well, with the facial paralysis completely gone and vision fully recovered though the pupils still react very sluggishly to light and accommodation.

CASE III.—Male, age 42. Referred for diagnosis January 19. Chief complaint sleepiness and headache. Family history unimportant; personal history, never been ill, denies venereal disease. His present illness began two months ago with weakness and sleepiness, nausea and vomiting. Vision was blurred, but no diplopia present.

Examination.—Marked pallor. Has stuporous expression, due apparently to a bilateral ptosis of the upper eyelids. Weakness of both facial nerves; knee-jerks active and equal; mentality sluggish, answers questions slowly, pupils do not react to light or accommodation. Spinal fluid under much pressure: 100 cells per c. mm.; Globulin, positive, Wassermann, negative; Gold sol. test, $\pm + + \overset{+}{+} + \pm$ 0 0 0 0. Blood Wassermann, negative.

A single injection of 35 c.c. autogenous serum was given February 11, 1920. Improvement was very marked and rapid. Patient left hospital two days later, feeling well enough to return to work. On February 19 he was seen again in the office. His ptosis was still fairly well marked, but pupils reacted to light and accommodation, though rather sluggishly. Facial paralysis entirely gone and mentality is perfectly clear and he insists upon returning to work.

CASE IV.—(By courtesy of Dr. C. G. Sabin.)—Male, age 37. First seen January 10. Complains of stiffness of jaws and headache. Never been seriously ill, excepting for appendicitis two years ago, for which he was operated upon. Denies venereal disease. Present illness began two days ago, with dizziness. Did not think it was necessary to consult a physician, but soon became delirious and after two days became drowsy. Came to hospital on the fourth day.

Examination.—Pupils fixed, bilateral ptosis of upper eyelids; right facial paralysis, both jaws stiff; distance between upper and lower teeth one cm. January 22, diplopia noted for the first time. Ptosis of the left eyelid more marked than that of the right. January 23, patient very drowsy, slept most of the day. January 25, 20 c.c. serum given intraspinally. Spinal fluid examination: 100 cells per c. mm.; Globulin, positive; Wassermann, negative.

January 28, general condition much better. January 29, patient up and about, very good day. January 30, a second injection of 20 c.c. given intraspinally. Improvement continued.

Conclusion: Intraspinal autoserum therapy appears favorably to influence the course of encephalitis lethargica, causing a rapid disappearance of motor disturbances and mental depression. Although the cases observed were few, the improvement was so marked and following so rapidly upon the use of autogenous serum that it appears justifiable to draw such conclusions.

In closing, I wish to express my thanks to Dr. C. G. Sabin for furnishing the data in Case IV, and for permitting me to follow with him the course of the case.

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JOURNAL BUILDING.

THE PREVENTION OF PERITONITIS IN A CASE OF INTRAPARTUM INFECTION SUBJECTED TO EXTRAPERITONEAL CESAREAN SECTION.

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THE following case has seemed to the writer worthy of reporting on account of the fact that this particular method of performing cesarean section was subjected to a most rigid test and was successful in the object sought, that of preventing peritonitis in a case undoubtedly very badly infected.

W. B. C., colored (Grady Hospital No. 1,378), aged 18, was admitted to the hospital at 7 A. M., December 6, 1919, at full term in her first labor. Her last period occurred March 1, 1919, and there had been no complications during the pregnancy. On the day preceding admission to the hospital the membranes ruptured prematurely at 4:30 A. M., while the patient was asleep, and labor pains began about five hours later. She was attended by two midwives, who made frequent vaginal examinations and tried to dilate the cervix manually. Failing in this and noting no progress, they sent the patient into the hospital the following morning.

On admission the temperature, pulse, and respiration were normal. She appeared to be of normal development and the heart, lungs, and blood pressure were normal. The fundus reached to the ensiform, and the child, apparently a rather large one, was in the R. O. A. position, the head being markedly flexed but not well engaged. The heart sounds were normal. The measurements were as follows: Interspinous 21 cm.; intercristal 23 cm.; external conjugate 18.25 cm.; external obliques 19.75 cm.; bitrochanteric 29.5 cm.; bisischial 9 cm. Contractions were occurring at three to four-minute intervals and there was a continual slight watery discharge. Rectal examination showed the cervix to be half dilated and an absence of a sac of waters.

On account of the previous exposure to infection the patient was allowed to continue the test of labor in the hope that the head would mold sufficiently to pass through the generally contracted pelvis or at least progress far enough to be delivered with forceps. The pains continued throughout the day with good frequency, duration, and severity and the fetal heart sounds continued normal, but there was no advance of the head.

At 4 P. M. the temperature, pulse, and respiration were found to be 100°, 118, 24; at 9.30 P. M., 101°, 120, 24, and at 11.30 P. M., 102°, 130, 26. With this evidence of intrapartum infection and being unable to find any other cause for the increase in temperature, pulse, and respiration, it was decided to attempt delivery with forceps and failing in this, to sacrifice the child, if necessary, by craniotomy, as the infection was considered to be too severe to avoid peritonitis by any form of cesarean section, extraperitoneal or otherwise.

Under ether, the dilatation of the cervix was completed manually and the head was found to be movable at the inlet and the membranes ruptured. Forceps was applied with great difficulty, but several test tractions accomplished nothing. Pubiotomy was considered almost, if not as much contraindicated as any form of cesarean section on account of infection. Hence,

although the fetal heart was still good, it was decided to do craniotomy and sacrifice the child, the pelvis being considered sufficiently large for this method of delivery.

The head was perforated with some difficulty, owing to its movability, and the Simpson cranioclast applied, crushing the head anteriorly and posteriorly in successive portions, expelling the brain substance and reducing the size of the head until the entire vault was destroyed down to the base. But even then it was found to be impossible to draw it through the inlet. By this time the patient was in a condition of marked shock with a pulse of 170 to 180, and efforts to deliver her were temporarily stopped to stimulate her hypodermically and with intravenous saline and adrenalin. Her pulse improved at once and cesarean section was decided on as a last resort.

A low abdominal incision was made and before entering the uterus the edges of the opening in the parietal peritoneum were sutured by a continuous locked stitch, to the uterus, outlining an area sufficiently large to permit delivery of the child according to the method described in DeLee's Text Book on Obstetrics and also by Cherry in the *American Journal of Obstetrics*, October, 1917. The uterus was then opened and an eight-pound female child easily extracted without injury to the peritoneum surrounding the incision. The placenta and membranes were removed and pituitrin was injected into the uterine muscle and iodoform gauze packed into the cavity to lessen bleeding. The incision in the uterus was then closed with interrupted and continuous catgut sutures. The parietal peritoneum fastened to the uterus was not disturbed. The muscle, fascia, and skin were closed except for an opening through which a piece of rubber tissue was left in place to drain down to the uterus.

The patient was then given further stimulation with pituitrin and ergotole hypodermically and saline under the breasts, and she reacted well. Five hours after operation her temperature, pulse, and respiration were 105°, 168, 36. Sodium carbonate and glucose retention enemas were given and the patient was kept well under the effect of morphine. There was marked distention for several days, but no nausea, constipation, abdominal pain, or tenderness to indicate peritonitis. The distention subsided and the patient gradually improved, the pulse coming down to 100, although the wound suppurated and broke down almost completely, with free purulent drainage and lochia.

On the twenty-first day after operation, the left leg became markedly swollen and the pulse and temperature increased. Vaginal examination showed evidence of cellulitis in the left parametrium. Delirium gradually developed and the condition steadily became worse, death occurring January 6, one month after operation.

At autopsy the principal findings were as follows: A number of small vegetation and ulcers were found on the mitral valve and there were several small infarcts in the lungs. The abdomen showed no evidence of peritonitis, there being no adhesions whatever in the pelvis surrounding the uterus; the uterus itself was quite firmly adherent to the abdominal incision and fairly well involuted, the cavity of the uterus communicating with the outside through a small suppurative tract. The veins in the left broad ligament were firmly thrombosed and this thrombosis could be followed into the left ovarian vein almost up to the renal vein; the left femoral, external iliac, and common iliac veins were almost occluded with partially organized thrombi extending into the inferior vena cava where the thrombus was broken down and liberating pus into the circulation. There was some retrograde thrombosis into the right common iliac vein. After removing the pelvic organs, the true conjugate of the pelvic inlet was found to measure 8 cm. and the transverse 10 cm., indicating a relatively greater contraction in the transverse than in the anteroposterior.

The significant feature of the case is the fact that, notwithstanding the severe degree of infection which must have been present, this particular method of performing the section was successful in preventing general peritonitis, which is the usual cause of death after cesarean section performed on infected cases. Thrombophlebitis is a relatively infrequent complication and had the patient not been so unfortunate as to develop this complication she would most probably have recovered.

This technique is much simpler and quicker than the true extraperitoneal method described by Latzko, whereby the lower segment of the uterus is reached through the space of Retzius by pushing the bladder aside and the peritoneal fold upward, but it has the possible disadvantage of leaving an abnormal peritoneal attachment of the lower segment of the uterus to the anterior abdominal wall. If, in such a case, a persistent fistula remained, it would seem quite possible to remove the scar of the abnominal incision, together with that of the uterus, repairing both and restoring the parts to their normal relation.

In conclusion, my only excuse for reporting an isolated case of extraperitoneal cesarian section is the fact that this method of operating, which, although simpler, is not supposed to be as certain in its protection against peritonitis as the true extraperitoneal method, was, nevertheless, successful in preventing peritonitis in a case undoubtedly severely infected and any method which will tend to do away with craniotomy on the living viable child, is indeed worthy of continued trial until its value can be finally settled.

746 Peachtree Street.

Medicolegal Notes.

Death by Disease, Accelerated by Accident, Does Not Warrant Recovery on Accident Policy.—In an accident against an insurance company for death under an accident policy, the utmost that could be found in favor of the plaintiff from the evidence was that the deceased, at the time of and prior to a fall which he sustained while returning to his chamber from the cellar of his home, was suffering from a seriously diseased condition of the heart or lungs, or both, which was precipitated to a fatal termination by the fall, but which probably would not have terminated thus on that day but for the fall. Such fall would not have been fatal except for the diseased condition of vital organs. These two causes, namely, the diseased condition and the fall, operated together, each contributing to the fatal result. It was held that, if the insured was suffering from a disease which was accelerated and aggravated by the accident so as to be a cause cooperating with it to produce the fatal end, then there could be no recovery. Manifestly, however, recovery is not barred merely because the insured is suffering from disease. One upon a bed of illness may meet death by an explosion or other accidental means. If there is no active disease, but merely a frail general condition, so that powers of resistance are easily overcome, or merely a tendency to disease which is started up and made operative, whereby death results, then there may be recovery even though the accident would not have caused that effect upon a healthy person in a normal state.

The inevitable result was that the plaintiff could not recover upon the facts of the case. The deceased confessedly was suffering from disease or diseases which actively co-operated with the fall in causing death. The disease and the fall were concurring, efficient and proximate causes in producing the death. Either alone without the other would not then have resulted fatally. It could not be held with any due regard to the meaning of words in the contract here sued upon that the death of the insured resulted from the accident "alone and independent of all other causes," as "the proximate, sole and only cause."—Leland v. Order of United Commercial Travelers, Massachusetts Supreme Court, 124 N. E. 517.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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CHRONIC APPENDICITIS.

A SCANNING of the operation lists of any large general hospital will reveal the presence of a large number of appendectomies performed for chronic appendicitis. The pathologist is apt to be sceptical of the correctness of this diagnosis in many instances for he is unable to find much more change in these appendices than he frequently finds in such organs removed at autopsy or for prophylactic purposes during the course of abdominal operations. The medical man is only too prone to smile at a diagnosis which he thinks may be made in the lack of something better. The obvious method for the correction of this situation is to make a careful study of the results of these operations and to determine, if possible, the causes of the failures. This has recently been done by Gibson (*Am. Jour. Med. Sci.*, 1920, clix, 654) who has reviewed the results of 555 operations performed during the past six and one-half years. In 102 of these cases (18.3 per cent.) the result was classed as unsatisfactory although in the majority of them a definitely pathological appendix had been removed, because the patient continued to complain of various symptoms, chiefly abdominal pain.

After a careful analysis of these cases, Gibson concludes that the chief causes of these unsatisfactory results are the formation of adhesions after operation and a failure to explore the peritoneal cavity thoroughly at the time of the operation. He notes a distinct improvement in his figures during the last six months of the period of his study and suggests that it may be due to the fact that he has substituted picric acid for iodine as a solution used in preparing the skin for operation. It has been suggested that iodine from the skin carried into the peritoneum on the surgeon's gloves may be a principal factor in the causation of adhesions because of its great irritating properties. In regard to the importance of exploration he discusses the fact that the diagnosis of chronic appendicitis is often very difficult to substantiate without operation and points out that it is not infrequently associated with lesions in the upper abdomen. He warns the surgeon not to be content when he finds a definitely pathological appendix but in any case to look further to see whether there be any other lesions that later may keep up the patient's symptoms. In addition he insists upon the importance of a careful and detailed history, a matter which cannot be emphasized too strongly. Unfortunately the student and the interne, those who take the histories in the hospital, rarely appreciate the importance of this, and the task of history-taking is considered to be much of a bore. Of course any experienced physician will immediately admit the importance of an accurate and detailed history but it has been difficult to impress this upon the beginners. Gibson also recommends the use of a "good-sized incision" through which it will be possible to inspect other parts of the abdomen.

This critical study should yield excellent results if others will take the author's admonitions to heart. He is frank to admit his own difficulties and proposes remedies which should have a broad and early trial in order to determine their value. Early report of the results of others will contribute to clear up a situation that is annoying to all surgeons and to a certain extent an injustice to these patients.

THE POSTOPERATIVE COMPLICATIONS FOLLOWING EXCISION OF VARICOSE VEINS.

THE postoperative complications which may occur after excision of varicose veins arise either immediately after the operation or during convalescence. Immediately after the operation hematoma, local suppurative processes, sloughing of the skin incisions, and temporary loss of sensibility in the cutaneous areas surrounding the incisions have all been recorded. Therefore, great attention should be given to hemostasis, because of the very large number of veins divided during the interference, as well as their size. The perforating veins are to be particularly attended to as their ligation is often a delicate matter on account of their brevity, as well as their intra- and subaponeurotic situation. Often they do not bleed at all, or very little, at the time they are divided, on account of the position and inertia of the limb during the operation, and begin to bleed only when the patient commences to move the member. A moderately compressive dressing should be applied, the compression extending especially over the calf of the leg, as this is the most extensive subcutaneous raw area. When a hematoma occurs it will have no other effect than to delay union, but it should be opened and drained in order to hasten cicatrization. It is most essential to wait until the ulcer or ulcers have become cicatrized before attempting excision of the varicose veins, otherwise asepsis will be imperfect and the result will be suppuration of the wound; and the removal of the underlying veins cannot be accomplished unless the ulcer has healed. If cicatrization of the ulcer has not taken place the operation should be done in two successive stages, the first being excision of the veins far removed from the ulcer with suture of the incision, and secondly excision of the veins surrounding the ulcer. When

suppuration does occur it is usually mild and will not compromise the operative result.

Necrosis of the borders of the incisions is not uncommon. It is not the result of extensive operative detachment of the integument, for when the skin is of good quality and aseptic it can be detached to the extent of eight or ten centimeters on each side without giving rise to necrosis. Necrosis may occur in those areas of skin which have been the site of eczematous or ulcerative lesions, for the territory on which an ulcer has previously existed remains septic for quite a long time after repair has taken place. In these circumstances the sloughing will occur in small areas measuring a few millimeters in diameter, although, occasionally, they may be more extensive; but speaking in a general way, the necrotic process will not interfere with a good ultimate operative result. To avoid the occurrence of sloughing supplementary incisions should be made when the quality of the skin is doubtful.

A loss of sensibility has been noted sometimes in the cutaneous flaps, but this phenomenon is only temporary, and usually the sensibility progressively returns, becoming normal in a few weeks. It is evident that pains should be taken to avoid division of the nerve fibers during operation as far as possible.

During convalescence, when walking is begun, pain in the ankle and instep may be complained of; likewise stiffness of the limb and edema of the leg are usually present. These phenomena are the result of temporary disturbance of the return circulation and immobilization; daily massage and hot douching will hasten their retrogression. Edema of the limb is particularly prone to occur on standing, in subjects who have had a deep-seated phlebitis—posttyphoidal, for example—before the varicose veins developed, and in these circumstances it is apt to persist for some time. In some cases cheloid has been observed at that part of the incision passing over the internal condyle of the femur, and is due to friction from the clothes; therefore the complication can be avoided by ordering a bandage to be worn over this region.

MEDICAL LITERATURE.

THERE are several "legitimate" ways by which a doctor can make his existence known. One of these is by contributing to "the literature." One who has occasion to look up the literature on any subject will sooner or later—usually sooner—encounter articles which tend more to get the writers into print than to get the problems at issue any nearer to solution. One writer, as have many before him, comes out vigorously in favor of a ductless gland or two as explaining this or that symptom, quoting many a foreign and domestic observer to support his contention. Concerning the same symptom, another writer holds forth as stoutly, citing as many observers for focal infection. There are many debatable points which may serve to bring one out of the darkness into the light.

Some laboratory man finds an organism where no one else has found it, or catches an old organism doing something which has escaped other observers foreign and domestic, and behold, those who would keep up with the literature find themselves reading about it forthwith. Thus editors are constantly confronted with their ancient task of distinguishing gems from paste, real contributions from legitimate advertisements. And how much do editors positively know about the endocrinopathies, the viruses, the germs, which call forth so many observations? The profession is doing a great deal of work which is bound to vary in value. Editors are naturally loath to reject articles which might later prove to be of immense value. "Scooping" is by no means peculiar to the lay press. Moreover, original work should be encouraged and brought to general notice.

No matter how careful editorial boards may be, it looks as though readers of medical journals must expect to find occasionally something that is of value to the writer rather than to the reader, and must do their own selecting as they go along. They should bear in mind, too, that many really great scientists have made carefully considered observations which have not stood the tests of time and further research, while others with less science but more acute reasoning faculties have offered contributions, seemingly trivial, which eventually proved to be the foundation of a discovery of great value. These two tests of time and experience are far superior to any which an editorial board can apply. Meantime let the readers remember that it is through the medical journals that the profession keeps track of current medical effort; that however well the editors may do, the profession itself must eventually decide whether or not the article is a real contribution to science.

LAENNEC AS A POET.

THAT Laennec was a many-sided man becomes more and more apparent as the French medical journals continue to publish hitherto unsuspected facts concerning the great man's accomplishments and preferences. In the *Bulletin Médical* for May 22, 1920, xxxiv, 27, a contributor gives a poem, written when the author was 22, on the subject of love. Laennec read fluently almost everything that was worth reading, for he knew Latin, Greek, Italian, and English, in addition, of course, to French and Celtic—his native Bas-Breton. It is highly probable that he read German. While there is no mention of the Iberian languages these should also have been easy for him. His career as a poet began at the age of 17, when he wrote in Bas-Breton in verse a "letter to farmers." The MS. of the poem on love is extant and written in a beautiful, fine hand which recalls that of Poe. It almost appears as if the poet felt that he was writing for posterity, for the fine quality of the paper, stamped, and with gilt border, and the calligraphic writing cause the document to look fresh even after 122 years. The poem on love was ad-

dressed to two cousins. The lady, "Nisa," who really inspired the poem, is believed to have lived in Nantes when Laennec was pursuing his medical studies, and it is supposed that he expected to wed her. The two families are known to have approved of the match, but the fate of the young woman, as well as her identity, remains unknown. It is known that Laennec developed a profound streak of melancholy about this time, which is not explained by his poor health, for he would have been more likely to have shown the characteristic optimism of the consumptive.

PSYCHOTHERAPY AND MORPHINE ADDICTION.

CAMINO reports the case of a young woman, married and markedly hysterical, who became secretly addicted to morphine (*La Medicina Ibera*, 1920, xi, 129). For 4 years she had injected the drug daily, the amount having reached 2½ grams in 24 hours. Denutrition was intense and the patient suffered from nocturnal hallucinations of terrifying character. The picture was an extreme one, yet the author succeeded in effecting a cure in the patient's own home. He first told the woman that he would wean her gradually from the habit, incidentally substituting for muriate of morphine an amount of opium extract equal to the decrement in the former. The fraction of decrease was to be three centigrams daily. The only attendant was the husband. All went well until the daily dose was reduced to one gram. Here the patient's will succumbed and the author began to resort to hypnosis. The notably hysterical make-up of the patient made the outlook somewhat favorable. Considerable time was required to produce full hypnosis and there were numerous preliminary sessions. Once the state was induced, the patient responded without fail to post-hypnotic suggestion. The author sought to produce a horror of and repugnance to the drug, at the same time injecting plain water, which he told her was the drug and which would produce nausea and other disagreeable symptoms. These she actually developed, and when given a syringe and morphine to use at pleasure actually threw them away. The period of cure required four months. The author is not entirely clear as to the method by which the irreducible minimum of morphine was suppressed, but apparently this was effected through the aid of suggestion and was fully accomplished before the experiment of inspiring disgust for the drug was made.

News of the Week.

Bubonic Plague in Mexico.—The first fatal case of bubonic plague has been reported at Tampico, the oil center of the east coast of Mexico. The American Consul at Tampico has been appealed to for aid, including the immediate dispatch of vaccines and serum. Out of the twenty-four cases of bubonic plague at Vera Cruz twenty-three have been fatal. The Consul at Vera Cruz has acknowledged receipt of vaccine and other medical supplies from the United States. The Mexican authorities have destroyed railroad tracks for five miles on all lines leading out of the city of Vera Cruz, in order to stop traffic with the interior, and thus prevent the spread of the plague. A death from bubonic plague was reported in Galveston, Texas, on June 17.

Salute the "Greatest Mother."—The army reorganization bill recently passed by both branches of Congress confers "assimilated rank" on members of the Army Nurse Corps. The superintendent is to have the rank of Major, the Assistant Superintendent, Director and Assistant Directors the rank of Captain; the chief nurses the rank of First Lieutenant, and other nurses are to be Second Lieutenants. "Assimilated rank" carries with it limited authority, but not the power of command incident to a line of officers of similar grade. The only incidents of absolute rank, according to the interpretation of the *American Legion Weekly*, are: The dignity incident to the name of the rank; the right to wear the insignia thereof; the eligibility to exercise authority within the limits set forth in the law, which are as follows: As regards medical and sanitary matters and all work in the line of their duties, they shall have and be regarded as having authority in and about military hospitals next after the medical officers of the army.

Tuberculosis Research Fellowship.—To encourage study of the means for the prevention and cure of tuberculosis, the Hennepin County Tuberculosis Association of Minneapolis, Minn., announces that it has set aside a fund for the support of a tuberculosis research fellowship in the Graduate School of the University of Minnesota. The candidate for the fellowship must be a graduate of a Class A medical college. He will be expected to devote himself to research in some problem concerned with the causes, prevention, or cure of tuberculosis. No teaching or other service will be required. The fellowship yields $750 the first year and progressively increasing amounts to be appropriated for the second and third years as conditions warrant. Inquiries and requests for application blanks should be addressed to the Dean of the Graduate College, University of Minnesota, Minneapolis, Minn.

Another Vivisection Investigation.—The Allied Medical Association, of which Dr. Ignaz Mayer is president, will appoint a committee of three to investigate cruelty in connection with vivisection, the committee to report to the association at the meeting next year.

Decrease in Infant Mortality.—Statistics compiled by the census bureau on infant mortality record that the death rate of infants under one year of age in New York city has decreased 11 per cent. as compared with 1918 and 18 per cent. as compared with 1915. The greatest decrease for the entire country is found in Lackawanna, N. Y., which records an improvement of seventy-four for every thousand births. Seven of the largest cities show decreases of from 8.5 to 23.4 per cent., with the highest increase at only 3.6. Percentage decreases over the year 1918 are recorded in other cities as follows: Philadelphia, 33; Cleveland, 3; Baltimore, 51; Detroit, 4; Pittsburgh, 25; Buffalo, 11; Milwaukee, 5; Washington, 37; Cincinnati, 16; Minneapolis, 8.

"Walking Doctors" Becoming Extinct Species?—According to a recent investigation by the

National Chamber of Commerce, it has been estimated that two-thirds of the doctors of the United States own automobiles. More than ninety per cent of country doctors are said to own passenger cars.

New Professional Building Proposed.—A building for physicians and dentists is being planned for the Yorkville section of New York City, according to real estate news.

General Gorgas Seriously Ill.—According to advices from London under date of June 17, Major General William C. Gorgas is seriously ill in a London hospital. The stroke of paralysis from which he was thought to have rallied has proved more serious than at first was thought. His mission to the West Coast of Africa for the purposes of investigating sanitary conditions for the Rockefeller Foundation has been abandoned, and General Gorgas will probably return to this country as soon as his condition permits. Other members of the party, headed by Brigadier-General Robert E. Noble, Medical Department, U. S. Army, will proceed on the tour of investigation.

Fiske Prize Awarded.—Dr. ALLEN G. RICE of Springfield, Mass., has been awarded the two-hundred dollar prize offered under the provisions of the will of the late Dr. Caleb Fiske of Providence, R. I., for the best essay on a given subject relating to medicine and surgery. The subject for this year was "Surgical lessons of the great war." Dr. Rice won the same prize in 1912 and again in 1916.

Dr. Gustav Zander, the Swedish physician who originated the Zander system of medico-mechanic gymnastics, died June 17 at Stockholm, at the age of eighty-five.

Dr. S. Griffith Davis, of the Research Committee of the National Anæsthesia Research Society, has been made professor of anesthesia in the University of Maryland. Several years ago this institution created a separate department of anesthesia, placing Dr. Davis in charge with the title of associate professor. So far as records are available, this is the first professorship of anesthesia to be created in the United States.

War Losses of France.—Captain Andre Tardieu, former French High Commissioner in the United States, has issued a comprehensive statement of the losses sustained by France during the world war. According to this report 8,000,000 men were mobilized by France during the five years of the war, 1,400,000 of whom were killed, 800,000 maimed, and 300,000 wounded. The country thus lost 57 per cent. of her men under thirty-two years of age. It is further stated that 600,000 houses were destroyed, 75,000,000 acres of arable land laid waste, and 3000 miles of railroad and 25,000 miles of highways destroyed. Mines which produced 55 per cent. of France's total coal output were damaged or destroyed; 11,500 factories, which before the war produced 95 per cent. of the woollen goods, 90 per cent. of the linen material, 70 per cent. of the sugar and 60 per cent. of the cotton goods, were crippled. One-third of France's ships were sunk by German submarines. To defray the cost of munitions of war and food supplies, France had to raise more than 8,000,000,000 frances, of which sum she was forced to lend 1,320,000,000 to foreign countries.

Medical Society Elections.—THE WESTERN ELECTRO-THERAPEUTIC ASSOCIATION, at its annual meeting in Kansas City, May 27-28, elected the following officers for the ensuing year: *President*, Dr. B. B. Grover, Colorado Springs (re-elected); *First Vice-President*, Dr. S. Grover Burnett, Kansas City; *Second Vice-President*, Dr. H. W. Nye, Osborne, Kansas; *Treasurer*, Dr. Charles Keown, Independence, Mo. (re-elected); *Secretary*, Dr. Charles Wood Fassett, Kansas City; *Registrar*, Dr. E. A. Nelson, Phillipsburg, Kansas (re-elected); *Trustees* (two years), Dr. W. P. Paterson, Springfield, Mo., and Dr. O. U. Need, Oak Hill, Kansas (re-elected). The next meeting will be held in Kansas City in May, 1921.

The CITY MEDICAL SOCIETY of Hartford, Conn., at its meeting on June 3, elected the following officers to serve for the coming year: *President*, Dr. William E. Hendry; *Vice-President*, Dr. Michael D. Riordan; *Secretary-Treasurer*, Dr. Clarence E. Simmonds.

THE AMERICAN PEDIATRIC SOCIETY, at its thirty-second annual meeting held in Highland Park, Ill., May 31 and June 1 and 2, 1920, elected the following officers for the ensuing year: *President*, Dr. John Howland, Baltimore; *Vice-President*, Dr. Charles Fife, Philadelphia, Pa.; *Secretary*, Dr. Howard Childs Carpenter, Philadelphia; *Treasurer*, Dr. Charles Hunter Dunn, Boston; *Recorder and Editor*, Dr. Oscar M. Schloss, New York.

Obituary Notes.—Dr. A. L. R. Avant, city physician, Savannah, Ga., died June 7, at the age of sixty-three. He was graduated from the Atlanta Medical College in 1893, and specialized in gynecology.

Dr. JOHN WARREN LITTLE of Minneapolis, Minn., died in Hill Crest Hospital in that city June 5, at the age of sixty-one. He was graduated from Jefferson Medical College in 1883, specializing in surgery. He was one of the founders of and was surgeon in the institution in which he died. Dr. Little was also professor of clinical surgery at the University of Minnesota for twelve years, chief of staff at Asbury Hospital, surgeon to the Minneapolis General Hospital, and official surgeon to the Chicago Great Western Railroad. He was a former president of the Minnesota Academy of Medicine; the Hennepin County Medical Society; the Minnesota State Medical Association; was a member of the American Medical Association and was a fellow in the American College of Surgeons, of which organization Dr. Little was a charter member.

Dr. CHARLES JORDAN, one of the oldest physicians in the state, died June 6, at his home in Wakefield, Mass. He was born in Saco, Me., in 1828, was graduated from Dartmouth Medical School in 1859, and entered practice in Wakefield immediately after his graduation. He had been a member of the Middlesex East District Medical Society since 1859, outliving all members who were in the Society at that time.

Dr. JOHN THELBERG of New York City died June 7. He was graduated from New York University Medical College in 1887. He was a member of the American Medical Association and of local and state organizations.

Dr. WILLIAM H. FALLS of Cleveland, Ohio, formerly of Cincinnati, died June 7, at the age of seventy. He was graduated from Miami Medical

College, Cincinnati, in 1873. He was a member of the American Medical Association.

Dr. CHARLES SARAPHIN RODIER, who had practised medicine for twenty-seven years in Manchester, N. H., died June 8, at the age of fifty-five. Dr. Rodier was born in Montreal, Canada, and was graduated from Victoria College in that city.

Dr. HERBERT TETLOW of Stonington, Conn., and Westerly, R. I., a retired physician, was shot and killed in his home June 11. Mrs. Alfred Kenyon of Westerly admitted having committed the deed. Dr. Tetlow, who was fifty years of age, was graduated from Western Reserve University School of Medicine in 1899.

Correspondence.

WILLIAM T. G. MORTON, THE DISCOVERER AND REVEALER OF ANESTHESIA, AND HIS PLACE IN THE HALL OF FAME.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—On April 10 you were good enough to publish my open letter, entitled, "No Physician or Surgeon as Yet in the Hall of Fame." As you will recall, I deplored the fact that no physician or surgeon had as yet been found worthy to be named among the great American immortals. I ventured to suggest as the three most worthy names, William T. G. Morton, the discoverer of ether anesthesia; Ephraim McDowell, the first surgeon to perform a rational, deliberate, and successful ovariotomy, and J. Marion Sims, a great gynecologist, who perfected the plastic operation in the vagina for the relief of vesical fistulæ and invented the speculum. I stated that the nominations should be sent to the Senate of the New York University, University Heights, New York City, and that this should be done by every American physician who feels the great injustice done to the American medical profession by the apparent neglect or oversight of the previous electors.

I received many letters of approval of my humble efforts, and of my choice of the three names mentioned. A few of my correspondents, however, objected to the name of William T. G. Morton as not being the discoverer of surgical anesthesia, and in the *Journal of the American Medical Association* of April 24 there appeared a strong letter, signed by Dr. S. J. Lewis, according to which the priority of the discovery of sulphuric ether as an anesthetic belongs to Dr. Crawford W. Long. It would lead to no result to recall here all the details of the old controversy between Morton, Long, and Jackson of half a century ago; the fact remains that before any one of these three men thought of the subject of anesthesia, means to subdue pain by all sorts of physical agents, such as various vapors, lotions, etc., were employed, and even hypnosis was resorted to by Esdaile and Elliotson (1790-1868), who operated upon hundreds of patients in the hynotic state. Granted that Crawford W. Long discovered the anesthetic properties of sulphuric ether before Morton, he did not make known this method of producing sleep. Long did not prove to the medical profession that surgical anesthesia with the aid of sulphuric ether was "certain, safe and complete." These words were used by Dr. Henry J. Bigelow, a member of the staff which was present during the operation on that memorable day of October 16, 1846.

Concerning the priority claims of Long and Jackson, Dr. J. Collins Warren, Moseley Professor of Surgery, Emeritus, Harvard University, who wrote me only recently in reference to this matter, very pertinently says: "It is probable that Long performed three or four minor operations with primary anesthetic and then abandoned his claims. As Dr. Keen says, he is deserving of nothing but censure for not having appreciated the value of the agent." Regarding the claims of Jackson and his heirs, it may be briefly stated that the consensus of medical opinions in Boston at the time was and still is that his claim was not accepted.

The question resolves itself into what is meant by priority in the case of a great discovery. In Owen's "Homologies of the Skeleton" we read the following definition of priority: "He becomes the true discoverer who established the truth, and the sign of the truth is the general acceptance. Whoever, therefore, resumes the investigation of neglected or repudiated doctrine, elicits its true demonstration, and discovers and explains the nature of the errors which have led to its tacit or declared rejection, may certainly and confidently await the acknowledgments of his right in its discovery."

Francis Darwin, in *Eugenics Review*, 1914, makes it still clearer when he says: "In science the credit goes to the man who convinces the world, not the man to whom the idea first occurs." Morton convinced the world; the credit is his.

The late Sir William Osler, our greatest modern medical historian, to whom I referred in my first communication, considers Morton the inventor and revealer of anesthesia by sulphuric ether, and he speaks of him as a new "Prometheus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." He pertinently asks in one of his latest essays on the subject ("Annals of Medical History," Vol. I, No. 4):

> Why do we not give the credit to Dioscorides, who described both general and local anesthesia, or to Pliny, or Apuleius, or to Hiotho, the Chinaman, who seems to be next in order, or to the inventor of the spongia somifera, or to Master Mazzeo Montagna, in Boccaccio, or to any one of the score or more of men in the Middle Ages who are known to have operated on patients made insensible by drugs or vapors?

In addition to the testimony of Osler, that to Morton and to no one else should be given the credit, I may quote the following paragraph from a personal letter sent to Mr. E. L. Snell by Oliver Wendell Holmes on April 2, 1893 (*Century Illustrated Magazine*, August, 1894):

> Few persons have or had better reason than myself to assert the claim of Morton to the introduction of artificial anesthesia into surgical practice. . . . This priceless gift to humanity went forth from the operating theater of the Massachusetts General Hospital, and the man to whom the world owes it is Dr. William Thomas Green Morton.

A further evidence that to Morton should be given the credit, I will cite a paragraph from an address by Prof. William H. Welch of Baltimore,

delivered on October 16, 1908 (the 62nd anniversary of Ether Day), as follows:

The attendant circumstances were such as to make the operation performed on October 16, 1846, in the surgical amphitheater of this hospital, by John Collins Warren, upon the patient, Gilbert Abbott, placed in the sleep of ether anesthesia by William Morton, the decisive event from which date the first convincing public demonstration of surgical anesthesia, the continuous, orderly, historical development of the subject, and the promulgation to the world of the glad tidings of this conquest of pain. Had this demonstration or any subsequent one of like nature failed of success it is improbable that we should have heard much of claims to the prior discovery of surgical anesthesia.

I hope this will suffice to settle the controversy for good and that this letter may be as widely published in the medical press as was my first one on this subject.

Dr. Charles H. Mayo, one of the electors of this year, writes me as follows: "It is a sad commentary that no medical man's work has been considered of sufficient importance to warrant a tablet in the Hall of Fame." Let there be no longer a division as to the nomination of Morton for the Hall of Fame. All those who are willing to be helpful in this matter may write to the Senate of the New York University, or to any one of the 102 electors.

The final election will take place July 1. Fortunately we have this year among the electors no less than four medical representatives—Major General Leonard Wood, Prof. William H. Welch, and Drs. William J. and Charles H. Mayo. I hope the good and great general will forgive me for still claiming him as one of ours. A list of the 102 electors will be sent to any one addressing his request to the Secretary of the Senate of the New York University.

We should have not only William T. G. Morton, but also the two other great Americans already mentioned who belong to our profession in the Hall of Fame—Ephraim McDowell and J. Marion Sims. However, William T. G. Morton should be the first to be placed among America's great immortals.

It may not be universally known that Morton died virtually in poverty and heartbroken because he had received no recognition for his epoch-making discovery and daring experiment. I feel that I cannot close this ardent appeal for justice to "the inventor and revealer of anesthetic inhalation before whom in all time surgery was agony" better than by quoting one verse from "The Birth and Death of Pain," a poem by S. Weir Mitchell, M.D., read on October 16, 1896, at the Commemoration of the Fiftieth Anniversary of the First Public Demonstration of Surgical Anesthesia:

"How did we thank him? Ah! no joy-bells rang,
No paeans greeted, and no poets sang,
No cannon thundered, from the guarded strand,
This mighty victory to a grateful land!
We took the gift, so humbly, simply given,
And coldly selfish—left our debt to Heaven.
How shall we thank him? Hush! A gladder hour
Has struck for him, a wiser, juster power
Shall know full well how fitly to reward
The generous soul that found the world so hard."

S. ADOLPHUS KNOPF, M.D.

16 WEST NINETY-FIFTH STREET.

THE TWO CLASSES OF PHYSICIANS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In a letter by Dr. Beverley Robinson on "Some So-called Advances in the Practice of Medicine," in the MEDICAL RECORD of June 5, efficient hospital staff organization and attempts at accurate diagnosis are rather severely criticised, and we are advised that what the physician really does is to treat symptoms. The older men are characterized as busy men who advise and treat patients without laboratory aid, while the younger ones are supposed to harm their patients and poison their minds by means of misinterpreted laboratory reports of questionable value.

I had thought that physicians were classified differently—that some physicians, old and young, make sincere efforts to find the origin of their patients' trouble, using all means which they may have at their disposal so that, with the cause in mind, they may be able to relieve it. Others do not care to make accurate diagnoses, but by their presence at the bedside give patients a false sense of security, thereby depriving them of efficient medical aid and often deferring it until the patient's life is endangered or lost as a result of the delay. Such men may treat suppurative pleurisy as typhoid, pyonephrosis as malaria, and syphilitic arthritis as rheumatism. However, it would hardly seem just to put the older men "who have borne the burden and heat of the day" in this category. It could hardly be said that Sir William Osler contented himself with symptomatic treatment or that he did not try to make accurate diagnoses.

AUGUSTUS STREET, M.D.

VICKSBURG, MISS.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, May 28, 1920.

The Rising Birth Rate.—A rift in the cloud of gloomy prognostications, justified, to some extent, by the situation, is perceptible in the mounting birth rate of England and Wales. A striking rise in the English birth rate is recorded for the first quarter of the year. The number of births registered during the three months was 271,082, or 47,513 more than in the December quarter, and 126,162 above the total for the corresponding period of last year. As a matter of fact, it is the highest number recorded in any quarter since civil registration was established, and reaches the satisfactory annual rate of 29 per thousand of the population. It will be gathered from the table below, giving the rates for the calendar years 1910-1919, that the figure for the first quarter of the current year is greatly in advance of any attained during the past decennium. Rate per thousand for 1910, 25.1; for 1911, 24.3; for 1912, 23.9; for 1913, 24.1; for 1914, 23.8; for 1915, 21.9; for 1916, 20.9; for 1917, 17.8; for 1918, 17.7; for 1919, 18.5. The natural increase of population in England and Wales last quarter by excess of births over deaths was 133,445, against 14,810 and 24,303 in the first quarters of 1917 and 1918 respectively, and a natural decrease of 47,002 in the first quarter of 1919. Of the 271,082 births, 12,054, or 2,087 more than the number in the corresponding

quarter of 1919, were illegitimate. The births of males numbered 139,118 and those of females 131,964. Male births were in proportion to female births as 1,054 to 1,000, the average proportion in the ten preceding first quarters being 1,042. Deaths registered in January, February, and March numbered 137,637—22,877 more than in the December quarter, but 54,285 fewer than in the first three months of last year, when there was an exceptionally heavy mortality from influenza. It may be noted that only 4,037, or 2.9 per cent., of the deaths in the first three months of 1920 were attributable to this disease. Infant mortality, measured by the proportion of deaths under one year of age to registered births, was equal to 88 per thousand, being 32 per thousand below the average in the ten preceding first quarters, and the lowest recorded rate for any first quarter of the year. Statistics of the marriages which have taken place in this year are not yet available, but in the last three months of 1919 the number of persons who entered wedlock was 203,202, a figure equivalent to an annual rate of 21.5 per thousand of the population. This total shows a decrease of 9,192 on that for the September quarter, but is 53,094 higher than the number for the corresponding period of 1918. In the last ten years the rate of 21.5 was exceeded only in the June and September quarters of 1919 and the September and December quarters of 1915.

Nurses and Health Service.—According to the *Daily Telegraph*, May 20, 1920, the report which the Medical Consultative Council has presented to the Minister of Health is likely to be published at the end of May, and if its recommendations are translated into legislative action a great extension of the nursing service throughout Great Britain will be inevitable. The Consultative Council, it is understood, proposes to throw upon local authorities the obligation to provide a nurse for every patient who is certified by a doctor to require one. It is common knowledge that a large number of sufferers would not require indoor hospital treatment if they could obtain the assistance of nurses at home, but, owing to the impossibility of procuring skilled nurses, a medical man has no option but to recommend the transference of patients to hospital. It is claimed that, although this new obligation on local authorities would, at the outset, entail a considerable outlay of public money, it would, in the long run, effect a big economy in hospital accommodation, which is relatively far more expensive than accommodation at home. It is obvious that the adoption of the Council's recommendation would involve increase in the supply of skilled nurses.

New Medical Appointments by the Minister of Health.—The Minister of Health expressed his decision, some little time ago, to enlarge the scope of the Ministry so far as the medical side is concerned, and particularly as regards tuberculosis, general sanitation and epidemiology, venereal disease, international health work, and the administration generally with respect to infectious disease and the work of port sanitary authorities. In keeping with this decision, Dr. Addison has made several additional appointments to the medical staff of the Ministry.

The Association of Surgeons of Great Britain.—Sir John Bland-Sutton, who a few months ago was made president of the newly formed Association of Surgeons of Great Britain and Ireland, gave, during the week ended on May 15, last, a presidential address at the Royal College of Surgeons of England. Sir John is a good speaker and likewise a humorous one, and in his address he gave a clear exposition of why the new organization was established and the work that lay before it. In a previous letter it was explained that the prime mover in the project was Sir Berkeley Moynihan, who suggested its formation to the then president of the Royal College of Surgeons, Sir Rickman Godlee, in 1914. The war put an end for the time to the realization of the project, but since the armistice the matter was taken up again, with the result that the association is now an established fact. Sir John Bland-Sutton celebrated its inauguration by a dinner which he gave at Claridge's Hotel on the evening of May 13. At the dinner more than one hundred guests were present and some of the proceedings thereat are whimsically and graphically described in a special article contributed to the medical press of May 19. From this description it is plainly evident that the association has had a splendid "send off" and has begun under extremely favorable auspices.

National Health Insurance Bill: Removal from the Panel.—Capt. Elliott, the medical man who is now a member of Parliament and who has shown himself particularly energetic in the service of the medical profession, that is, so far as medical legislation is concerned, on May 11, ult., in the House of Commons moved that a new clause be inserted in the National Health Insurance Bill providing that: 1. Any medical practitioner aggrieved by a decision of the Minister, or of any special body through which the powers and duties of the Minister under the National Insurance Act are exercised, to remove his name from any list of medical practitioners may appeal against the decision of the High Court within the time and in the manner and on the conditions directed by the rules of the Court. The contention of Capt. Elliott was that by terms of the act the medical practitioner lost to a very large extent his independence, and was made subservient to the Minister of Health and the officials of the Ministry. In fact, that a bureaucracy had been established whereby the panel practitioner was no longer a free agent. Dr. Addison, the Minister of Health, said that the bill did not extend the power of the bureaucracy, but Capt. Elliott pointed out that the Minister was a new Ministry and here was a new bureaucracy. Dr. Addison went on to say that there was no word in the bill at all which related to the conditions of the removal of the medical man from the panel. The statement, therefore, that there was in the bill an extension of the power of the bureaucracy was inaccurate *in toto*. This instance is cited to show the distaste to, or, rather, aversion from, bureaucratic methods in Great Britain and to emphasize the distrust that is evinced by members of the profession to the probable extension of such methods. The profession is aware that its position is weak po-

litically and naturally dreads being under the thumb of one or other of the political parties.

Discontinuance of Sanatorium Benefits Under the National Health Insurance Act, Except in Ireland.—As mentioned in a letter some little time ago, the Minister of Health inserted a clause in the new National Health Insurance Bill whereby tuberculosis was to be removed from the authority of that body and placed under one authority. Lieut. Commander Kenworthy in the House of Commons on May 11, 1920, moved to omit this clause. Dr. Addison, in opposing the amendment, said that in future cases of tuberculosis were to be dealt with by one authority and claimed that the new arrangement would benefit workingmen. It was desired that the treatment of tuberculosis should be extended where necessary. The whole scheme, of which this was designed to be a part, was to secure that one authority was competent to deal with all stages of tuberculosis. It was only proposed to transfer the service from one set of people to another, but it was also proposed that the authorities should have added powers and added funds to perform the service for the benefit of the insured person.

Professor Aldo Castellani Honored.—The President of the French Republic has conferred the title of Officer of the Legion of Honor on Professor Aldo Castellani, C. M. G., of the London School of Tropical Medicine, for his work on combined typhoid-paratyphoid and enteric-cholera vaccination and other scientific investigations which have been found of utility to the Allied Armies during the war.

National Council for Combating Venereal Diseases: Appointment of Traveling Commissions.—The British Colonial Office has invited the National Council for Combating Venereal Diseases to dispatch two commissions, one traveling east and the other west, in order that the benefit of recent eperience gained in Great Britain may be made available in the colonies and dependencies. The commissions will each consist of one medical and one lay member, the former to give postgraduate courses to the local medical faculties under the auspices of the Colonial Medical Services.

Care of the Teeth.—There was held in Manchester, from May 13 to 15, last, an important Congress on Prevention of Diseases of the Teeth, promoted by the Food Education Society. Sir William Milligan, the president, said, in part, that the teeth of Jewish children were superior to those of the Gentiles and suggested that differences of diet might be the cause. Professor Adami compared the teeth of the inhabitants of Great Britain unfavorably with those of Canada, and laid stress on the need for such revision of the Dental Act of 1878 as would ensure that only fully qualified persons should be allowed to practise dentistry. He stated that in his opinion 10,000 additional qualified dentists were required to care properly for the teeth of the country. Dr. Harry Campbell, who is always interesting on the subject of teeth and diet, said that the state of the teeth of the British people, which were the worst of any nation, should excite a feeling of shame and humiliation. At least nine-tenths of this dental disease was preventable. Mr. F. M. Holborn classed pyorrhea aleolaris as the most frequent disease of this country next to dental caries. Tooth-brushing, as generally practised, especially if tooth powders and paste so much in use, were driven under the free margin of the gum, tended to injure the gum at its junction with the teeth. Used in moderation a tooth-brush was harmless, but it should be drawn from the gum towards the teeth to avoid forcing particles beneath the gum. Salt and soap were the safest cleansers. He was in favor of the practice of certain African natives who used a small piece of thin wood to polish the teeth and remove adherent particles. The blind brushing of the teeth from side to side and up and down should be condemned. It may be said that Dr. Campbell was perfectly correct when he said of all the civilized nations, the British possess the unenviable notoriety of having the worst teeth. Professor Adami was also right when he said that Great Britain was lamentably lacking in dentists, and especially in qualified dentists. There are not only an inadequate supply of dentists, but something like two-thirds of the number are unqualified. Although registration of dentists is now law, it will take a considerable time to weed out the incompetent ones. Of course, not all the unqualified men are incompetent, many of them are remarkably skilful mechanically, but the majority of them are ignorant scientifically. On the other hand, some of the qualified dentists are wanting in mechanical skill. The ideal dentist should have both scientific knowledge and mechanical skill. The dentists who should be obliterated are those who advertise blatantly and inveigle the ignorant and gullible. There is somewhat of a reaction, however, against the wholesale extraction of teeth when pyorrhea is present even to a limited extent. As a speaker at the Congress said: "Toothless gums are not natural even to age."

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 10, 1920, clxxxii, 24.

1. Compulsory Health Insurance. State Medicine, or What? Hugh Cabot.
2. An Exploit in Control of Influenza. J. Madison Taylor.
3. Differential Diagnosis of Diseases of the Hip-Joint in Children. Arthur T. Legg.
4. Dr. Jacque Belhomme—Prince of Profiteers. J. W. Courtney.
5. Psychical Research and the Physician. J. Danforth Taylor.
6. Perforation of the Cecum. A Case Report. Edward H. Risley.
7. Congenital Cystic Kidney. Report of a Case. H. Green.

3. Differential Diagnosis of Diseases of the Hip-Joint in Children.—Arthur T. Legg classifies the final diagnosis of 1000 consecutive cases entered at the Children's Hospital out-patient department with a diagnosis of hip-joint trouble, or where the chief complaint has been referred to this joint by the patient. The essential points in the diagnosis of these conditions is brought out by comparison with the symptoms of hip-joint affections, and the difficulties in reaching a correct diagnosis of both. The various conditions with origin remote from the hip-joint which may refer their primary symptoms, accompanied by physical signs, to an affection of this joint, are classified as: Congenital, including dislocation and shortening; nutritional, including scorbutus, rickets, coxa vara and valga, and osteomalacia; nervous, including hysteria, chorea, pseudomuscular hypertrophy; traumatic, including strain,

synovitis, separation of the femoral epiphyses and flattening of the upper femoral epiphysis; extra-articular affections, including bursæ, glands, appendicitis. Pott's disease, infantile paralysis, osteomyelitis, cellulitis, bone abscess, bone cyst, malignant bone tumors, and syphilis, may give rise to symptoms referable to the hip-joint. Affections of the joint itself which the writer discusses include hemophilia, acute infections, and chronic infections. He emphasizes the importance of obtaining a careful history, of making a complete physical examination, of taking a roentgenogram in every case of suspected bone or joint disease, and of utilizing every laboratory method at one's disposal before making a positive diagnosis.

New York Medical Journal.

June 12, 1920, cxi, 24.

1. The Lethal Dose of Radium in Malignancy. Russell H. Boggs.
2. The Standardization of Operations for Internal Hemorrhoids. Louis J. Hirschman.
3. The Sodium Carbonates. William H. Porter.
4. The Physiology of Carbonated Brine Baths. N. Philip Norman.
5. The Dental Hygienist as a Factor in Dental Progress. Albert Henry Stevenson.
6. The Physician and the Social Hygiene Problem. William Bierman.
7. Importance of Fundus Examinations as Clinical Evidence of General Disease. Samuel Morse.
8. The Tuberculosis Complement Deviation Test. B. Stivelman.

2. The Standardization of Operations for Internal Hemorrhoids.—Louis J. Hirschman, in making a plea for the standardization of operative procedures in the treatment of internal hemorrhoids, reminds the reader that all operative methods are modifications of one of the following types of operation: (1) The ligature; (2) the clamp and cautery; (3) excision with or without ligature; (4) crushing; (5) amputation or so-called Whitehead operation. There are almost as many modifications of these methods as there are operators. All may be performed with either local, general, or spinal anesthesia. In the selection of any operation the following considerations must be taken into account: (1) Safety; (2) removal of all diseased tissue; (3) preservation or restoration of function; (4) minimum traumatization; (5) prevention of hemorrhage; (6) preservation of sphincteric continence; (7) insurance against recurrence; (8) freedom from infection; (9) prevention of pain during and following operation; (10) minimum hospital confinement and detention from ordinary occupation. Hirschman recommends for the standard anesthetic some one of the proved local anesthetics now so commonly used. While the difficulties encountered in an individual case will always govern the variations of technique demanded, the use of the ligature before making an incision is recommended as a standard procedure. Tying before cutting is a principle which not only saves the patient's blood, but presents a much cleaner field for the operation. The general type of operative procedure recommended for a standard operation is excision. A straight elliptical, oval, kite-shaped or dumb-bell wound may be employed, depending upon the amount of diseased tissue to be removed. One should always figure on preserving as much mucous membrane as would normally line the anorectal canal in the region operated upon. The use of sutures as a general rule is not advocated in a standard operation because of the fact that infective material may be imprisoned in the wound with disastrous results. With the proper application of local anesthesia the sphincter relaxes of its own accord to a sufficient extent to allow the removal of the hemorrhoids, and is not insulted by any attempts at manual dilatation or divulsion. If one has been careful to remove all of the diseased tissue below the mucosa and to remove only redundant mucosa, the agglutination of the wounds would be complete in two or three days, if this healing is not prevented by the injudicious use of sutures. For a standard operation the writer recommends the abstinence from the employment of any form of rectal splint, tampon, or packing. There is no indication for the administration of drugs given with a view to inhibit peristalsis. The administration of mineral oil the day following the operation, and daily thereafter, is of much service. With the technique outlined the patient can be on his feet and out of doors as early as the second day, certainly by the fourth or fifth.

4. The Physiology of the Carbonated Brine Baths.—N. Philip Norman sums up the physiological action of the carbonated brine bath in part as follows: There are two thermic stimuli produced at the same time in a carbonated brine bath—a stimulus of warmth to the areas of the skin protected by the gas bubbles and a stimulus of cold to the skin which is in fluid contact with the brine water of the bath. It is possible to give a heart patient a stimulating, cold, carbonated brine bath that will not force the blood out of the skin blood lake. Because of this, the danger of overfilling the abdominal and pulmonary blood lakes is reduced to a minimum. When this overfilling of the abdominal and pulmonary blood lakes occurs, there is a loss of circulatory balance and decompensation is imminent, or in other words, cardiac reserve has been annihilated. The two salts necessary for the brine water are sodium and calcium chloride. When in solution they tend to prevent rapid radiation of heat and aid materially in keeping the water of the bath at a uniform temperature. In addition to this, the chlorides, especially calcium chloride, are irritant in property, to the extent that a permeation of the salts through the epidermal layers of the skin will produce rubifacient action, which persists for some time after the bath and helps to keep open the great skin blood lake. This lessens the resistance to the heart, as there is an equalization of the amount of blood contained in the skin, abdominal, and pulmonary blood lakes. The carbonated brine bath is not complete in its essentials unless the combination of the right proportions of carbonic acid gas, calcium, and sodium chloride is present. A carbonated plain bath does not produce the same effect as a carbonated brine bath. A noncarbonated brine bath is less than useless. The direct action of the carbonated brine bath on the heart is to slow its rate. Since the heart is nourished during diastole or its rest period, anything that slows the heart rate will necessarily increase the rest period, and also increase its nourishment. With increased nourishment and increased removal of waste products and increased rest period the heart is given an opportunity to recuperate and store up a latent force, called cardiac reserve strength, which is of vital necessity to the heart for its proper functioning. With a diminution of peripheral resistance there is a corresponding diminution of cardiac effort which brings about a decrease in the amount of cardiac hypertrophy. Pulmonary circulation is toned up, breathing becomes less difficult, and cyanosis disappears; indeed, in rare instances, according to Norman, a murmur sometimes disappears. Fluoroscopic examinations and orthodiagrams have proved to his satisfaction that cardiac size is actually diminished by a course of carbonated brine baths combined with the resistive exercises.

Journal of the American Medical Association.

June 12, 1920, lxvii, 24.

1. Deficiencies in Our Methods for the Treatment of Chronic Nephritis: Need for Investigation. Henry A. Christian.
2. Arterial Hypertension Associated with Endocrine Dyscrasia. William Engelbach.
3. Gout: A Clinical Study of One Hundred and Sixteen Cases. Charles Spencer Williamson.
4. A Clinical Study of the End-Results of Some Focal Infections. Bryce W. Fontaine.
5. Virulence of Diphtheria Bacilli from Diphtheria Patients and from Carriers: The Results of Five Hundred and Forty-eight Tests. Augustus B. Wadsworth.
6. Abnormal Lactation: A Careful Study of the Literature, with the Report of a Case. M. J. Seifert.
7. Prolapse of the Female Urethra. Richard R. Smith.
8. Typhoid Reduction in South Carolina: Comparative Results in Counties With and Without Health Organizations. L. A. Riser.
9. The Training of Industrial Physicians. J. A. Watkins.
10. Paraplegic Multiple Sclerosis. Archibald Church.
11. The Toxicity of Nitrobenzene With Report of a Fatal Case. William M. Donovan.

1. Deficiencies in Our Methods for the Treatment of Chronic Nephritis: Need for Investigation.—Henry A. Christian considers that the treatment of chronic nephritis and associated vascular lesions is handicapped by deficiencies in knowledge as to the etiology and

pathology of these conditions. The treatment, based on such knowledge as is possessed, is largely symptomatic. Preventive treatment is very unsatisfactory. In treating chronic nephritis one aims: (1) To stay the progress of the lesion; (2) to remove edema; (3) to prevent the formation and combat the effects of toxic substances. To stay the progress, one seeks to prevent infections, and by dietary restrictions to decrease renal work and so afford physiologic rest and opportunity for repair. The latter seems a rational procedure, but much knowledge is needed for a basis of determining the optimum for a prolonged intake of water, salt, and protein. To remove edema, the salt and fluid intake is restricted and elimination is increased. Lack of knowledge as to the cause of edema is a handicap in the treatment. Increased elimination by diuretics rarely succeeds when a renal lesion causes edema. Elimination by sweating and catharsis is slow, but may succeed. Mechanical removal is effectual, but temporary. To prevent toxic manifestations, the protein intake is reduced; to combat them, elimination is increased by diuresis, diaphoresis, catharsis, and bleeding. Bleeding is the promptest and most effectual method of elimination of toxic substances.

2. **Arterial Hypertension Associated with Endocrine Dyscrasia.**—William Engelbach. See MEDICAL RECORD, May 8, p. 812.

3. **Gout: A Clinical Study of One Hundred and Sixteen Cases.**—Charles Spencer Williamson. See MEDICAL RECORD, May 8, p. 809.

4. **A Clinical Study of the End-Results of Some Focal Infections.**—Bryce W. Fontaine. See MEDICAL RECORD, May 8, p. 805.

6. **Abnormal Lactation: A Careful Study of the Literature, with the Report of a Case.**—M. J. Seifert. See MEDICAL RECORD, May 22, p. 890.

7. **Prolapse of the Urethra in the Female.**—Richard R. Smith. See MEDICAL RECORD, May 22, p. 892.

The Lancet.

May 22, 1920, cxcviii, 21.

1. Address on Neo-Natal Mortality. Being the Frederick A. Packard Lecture of the Philadelphia Pediatric Society, Delivered on February 10, 1920, by Sir Arthur Newsholme.
2. Scurvy: With Special Reference to Prophylaxis in the Royal Navy. P. W. Bassett-Smith.
3. A Short Account of an Outbreak of Smallpox in Occupied Germany. G. G. Johnstone.
4. A Review of Recent Work on the Morbid Anatomy of Chronic Arthritis. G. L. Kerr Pringle.
5. Dr. Albert Abram's Method of Percussion to Delineate the Solid Organs in the Chest and Abdomen. Sir James Barr.
6. A Note on the Erythrocytes in Malaria. Robert Craik.
7. On the Choice of Individuals for Colliery Rescue Work. G. Arbour Stephens.

1. **Neonatal Mortality.**—Sir Arthur Newsholme holds that among the outstanding events in the medico-sociological history of the last fifty years a foremost position must be given to the steady decline of the birth rate, which has occurred in most civilized countries, and to the increased attention devoted to the welfare of infants and their mothers. In view of the commonly entertained error that infant mortality may, on the balance, be selective in character, securing survival of the more robust, it is noteworthy that the parts of England which have the highest infant mortality continue at higher ages to experience a higher death rate than more favored districts. Any possible elimination of the weakest by natural selection which may have occurred is accompanied to a preponderant extent by the manufacture of weaklings and by an excessive death rate at older ages, due to continuance throughout the whole of life of the evil conditions which caused the excessive infant mortality. From the economic standpoint attack on infant mortality offers abundant scope for action. Here is a period representing about one-eightieth part of the whole life; but in this period one out of nine or ten total deaths occur; furthermore, the state of health in infancy in large measure determines the health standard of the whole of life. From the same standpoint the mortality under one month, first described by Ballantyne as neonatal mortality, also is especially important. At least one-tenth of the total deaths at all ages occur in infancy; one-half of these infantile deaths occur within the first three months, one-third within the first month, and one-fifth within the first week after live birth. If, therefore, it were practicable to halve these early or neonatal deaths a greater saving of life could be obtained than by halving the death rate at any other period of life of equal length. This early infant mortality is in large measure preventable. Accepting the view that infants do not "start fair" at birth, and giving the reasons for this inequality, Sir Arthur proceeds to discuss the prevention of neo-natal mortality along the following lines: (1) Need for continuity of supervision; (2) ante- and post-natal clinics; (3) skilled care during parturition; (4) provision of maternity homes and hospitals; (5) raised standard of midwifery practice throughout the country; (6) the need for further research in ante-natal pathology.

British Medical Journal.

May 22, 1920, i, 3099.

1. A Clinical Lecture on Chronic Paroxysmal Trigeminal Neuralgia and Its Treatment. Wilfred Harris.
2. The Significance of Acidosis in Certain Nervous Disorders. B. H. Shaw.
3. The Care of Crippled Children. G. R. Girdlestone.
4. The *X*-ray Treatment of Acne Vulgaris. H. C. Semon.
5. Treatment of Sleeping Sickness by Salvarsanized Serum. Claude H. Marshall.

1. **A Clinical Lecture on Chronic Paroxysmal Trigeminal Neuralgia and Its Treatment.**—Wilfred Harris, discussing the treatment of this condition, states that only a comparatively small number of sufferers get relief from drugs. In a few gelsemium gives relief, though with the majority even morphine in large doses fails. Practically the only two methods are gasserectomy and alcohol injection. In the writer's opinion the former operation should never be undertaken until alcohol injection has been thoroughly tried. During the last ten years he has injected the Gasserian ganglion with alcohol through the foramen ovale in sixty-three cases. In thirty-one the anesthesia has remained total and no recurrence of pain has taken place. In the remainder partial ganglion anesthesia has persisted, though pressure could be felt, yet the relief from pain appears to be equally good. In many cases, though total ganglion anesthesia is produced at the time of the injection, yet the anesthesia of the first and second divisions wears off, perhaps completely, in from ten minutes to an hour, though the third division remains totally anesthetic. This, it is held, is no doubt due to the ganglion cells having been shocked, and not destroyed, by a partial infiltration only. In such a case pain is liable to recur after twelve months or two years, as in a case of ordinary injection of the nerve. With total destruction of the ganglion there is the same liability to keratitis as with the operation of gasserectomy, but if the lids are kept carefully closed by strapping for the first week and the conjunctival sac washed out with boracic lotion twice a day, little or no trouble will be experienced. The lids, however, should be kept closed from the beginning, and it is unwise to wait and see whether keratitis develops, as then it will be necessary to keep them closed for a much longer time. Hutchinson's partial gasserectomy avoids the danger of keratitis, but it is not a certain permanent cure. Harris emphasizes the importance, in connection with the injection of alcohol, of using the method of trial and test. That is to say, when the needle is thought to have struck the nerve inject a few drops of 2 per cent. novocain, and, after waiting half a minute, test the skin distribution of the nerve for anesthesia. If none has developed do not inject alcohol, but try again to find the nerve. As soon as anesthesia appears to novocain injection, then complete by injecting about one cubic centimeter of 90 per cent. alcohol, when total anesthesia to touch, pin, and pressure will develop almost instantaneously if the nerve at the foramen ovale or foramen rotundum has been correctly hit. In almost every case, as soon as anesthesia develops from the injection the neuralgic spasms cease, and they can no longer be started by any chewing movements or rubbing the face. The duration of the cure rarely lasts less than twelve months, if good anesthesia has been obtained, and in the majority the relief from pain lasts from two to three years. Many of the writer's cases have been quite

free for four or five years, one six and a half years, another seven years, another nine years after nerve injection only, while he expects his cases of ganglion injection to be permanent cures, just as if gasserectomy had been done. No trophic effects on the skin are ever seen. Keratitis is a risk if the cornea is anesthetic after injection of the ganglion, but this may always be avoided by proper precautions.

Schweizerische medizinische Wochenschrift.

April 8, 1920, i, 15.

Influenza in Switzerland in 1920.—Professor Eichhorst describes the epidemic of grippe which has prevailed in Zürich during the present winter. In his opinion it can only be an echo of the pandemic of 1918-19. In the first place the history of influenza epidemics is full of these recrudescences. Second, there is no evidence that it has been imported from any point outside of Switzerland—although with the great movement of people in and out of the country such a contingency has favored importation. But there is nothing really to explain in the recrudescence. At the beginning of January there was a sudden increase in the preceding number of grippe cases. The weather was characterized by cold and fog—a fact of no apparent significance, for the great pandemic began in hot, dry weather. In detail, during the second week in January a woman with grippe bronchitis entered the medical clinic and was quickly followed by two other cases. By February 4 the total number was 150, and up to February 22 another 309 were added, making a total of 459 cases in 46 days, or almost exactly ten a day. The summit of the wave had, however, been passed, the disease rapidly abated, and the further incidence is not important. Women predominated, as in the great pandemic, but not to such an extent. There seemed to be an unusual incidence in working girls who came much in contact with travelers—shop girls and hotel servants. As during the pandemic, there was a tendency for the adults to suffer rather than the children and old people, although the line was not so closely drawn as in the former episode. Of the 459 cases there were 236 of bronchitis, 148 of grippe pneumonia, and 53 of grippe sepsis. The total number of deaths was 40, with a mortality of 8.7 per cent. Under grippe sepsis the author includes cases with rashes, joint pains, etc. Of special interest were 14 cases of grippe encephalitis with 11 deaths. There was one stuporous case, not included under lethargic encephalitis. Other cases showed a variety of motor disorders—jactitation, choreatic movements, epileptiform attacks, etc. There were also delirium and maniacal behavior and actual meningitis. At the same time there were cases of encephalitis lethargica in the clinic, and the author makes no attempt to discriminate radically between these and the grippe cases. But one case of ocular paralysis is mentioned.

Lo Sperimentale.

March 31, 1920, lxxiii, 5-6.

New Developments of Our Knowledge of Typhus.—Ferrari believes in the great antiquity of typhus—it was the "pest" of the classic epoch and was the malady described by Cyprian, Bishop of Carthage, in 253 A. D. Its first magistral description was by Fracastor of Verona. Diffused everywhere, it became endemic in certain countries, as Ireland, Russia, and the Balkans. It was responsible for Napoleon's overthrow and for the defeat of Russia in the Crimean War. We have gradually learned the part played by the clothes louse in its transmission, and recently it has been shown that the pediculus capitis and pediculus pubis are able to transmit it, although they play but a small part here. No other insect or sensible parasite has been successfully accused of transmission thus far. In regard to the actual cause of the malady, the author devotes the greater part of his space to the Rickettsia, other organisms being summed up briefly in fine print with the exception of the proteus vulgaris, and this, on account of the importance of the Weil-Felix reaction, receives a full discussion. Naturally, its specificity is not admitted. The anatomical vascular changes described in the skin by Fraenkel are also said to be present elsewhere in the body, not only in man, but in infected laboratory animals. Aside from the anti-louse measures, the most pressing need at present is a vaccine to protect nurses and other attendants if the former measures fall short. The use by several Turkish physicians of the defibrinated blood of victims for this purpose to secure immunity has been followed by the similar use of blood serum, and in the hands of Nicolle this has given good results, while whole blood used as control proved negative. This resource is therefore our principal hope for the future.

Norsk Magazin for Laegevidenskaben.

April, 1920, lxxxi, 4.

Diabetes and Influenza.—Motzfeldt states that during the pandemic of 1889-90 diabetes was a not infrequent association. The recent pandemic, however, does not thus far appear to have shown the latter, but this may be due to the neglect of reporters. The author saw four cases of diabetes which were first apparent during the influenza. The patients were all young, ranging from fourteen to thirty-five years, two being practically children—under the age of sixteen. Despite this fact, the type of diabetes was very mild. In three of the cases carbohydrate tolerance increased under treatment. The case in the man of thirty-five was of special interest. During the progress of the influenza this patient felt a deep epigastric pain, which was followed by thirst and polyuria after the fever had ceased or during convalescence. He was not interned for a month afterward, when the urine gave a positive ferric chloride reaction. The sugar disappeared after five days of treatment. Eighteen months later the carbohydrate tolerance was tested and 500 gms. bread could be ingested without glycosuria. But after the ingestion of fifty gms. pure glucose glycosuria appeared and lasted three hours. The case was thought to have been an influenzal pancreatitis.

Blindness After Ingestion of Methyl Alcohol.—Harboe relates the case of a postman who on a certain day in August, 1919, drank ten gms. of methyl alcohol mixed with water. Soon afterward acute poisoning set in. Visual troubles which appeared at this time culminated in complete blindness three days later. Seven days after this episode he entered the hospital and the right eye could only count fingers at half a meter off, while the left eye beheld the screening of a light 20 cm. off. Externally and to the mirror the eyes were intact. During a prolonged sojourn in the hospital he had regained vision to some extent, without having reached the normal standard. Some optic nerve atrophy was apparent. Vision of the right eye was 5/7.5, and that of the left 5/20, corrected with lenses.

Nursing in Poland.—Learning a lesson from war experience, Poland, along with other European countries, is beginning to follow the lead of England and America in the matter of developing a trained nursing personnel. There are now in Poland more than fifty Polish Nurses' Aides who are studying in various hospitals under American direction. When Lieutenant-Colonel Chesley, American Red Cross Commissioner to Poland, called for thirty volunteers for a beginner's class, over a hundred and fifty applicants responded, and these beginners are now receiving preliminary training from the chief nurse. It is in this eastern field of the war, where fighting still goes on, and where thousands of sick and hungry refugees are making their way back home from their exile in Russia, that the need of nurses and modern nursing methods in most felt at the present time. "The suffering and deaths that have occurred in this locality have emphasized the great shortage of nurses," says Mrs. Jokaitis, chief nurse of the Red Cross. "But the Polish doctors have no foolish ideas about women. They are all for modern ideas." Indeed, the enthusiasm of the Poles over American ideas is unbounded, and the speed with which Polish girls of the best type are being recruited for the work is extremely encouraging. "I wouldn't be surprised to see Poland become the center of woman's activity in Europe," commented Mrs. Jokaitis. "This country gives promise, in many ways, of being a 'second America' once she gets on her feet. And the women of Poland will have a big share in getting her there."

Book Reviews.

THE PRINCIPLES OF ANATOMY AS SEEN IN THE HAND. By FREDERIC WOOD JONES, D.Sc., M.B., B.S. Lond. Professor of Anatomy in the University of Adelaide; Sometime Professor of Anatomy in the University of London, at the School of Medicine for Women; Examiner in Anatomy to the University of London, the Conjoint Board of the Royal College of Physicians and Surgeons, and to the Society of Apothecaries. With two plates and 123 Text figures. Philadelphia: P. Blakiston's Son & Co., 1920.

THIS is a most interesting book and it should strongly appeal to all practitioners of medicine and surgery. It is about as far removed from the ordinary textbook on anatomy as one can imagine. The author does not omit any necessary anatomical details, but he presents his facts in such a way that he makes an interesting and connected whole, and he carefully refrains from haggling over unnecessary trivialities. The work has a philosophical trend; the reader's attention is held from the first page to the last; and, just now, the chapters dealing with the muscles of the hand and their action are of special value, and should be studied by those who are interested in re-educational work. As a textbook and for examination purposes the book is valueless, but for creating a real interest in anatomical study this work ranks with such classics as Holden's Osteology and Treves' Surgical Applied Anatomy.

FESTSTELLUNG UND BEHANDLUNG DER TUBERKULÖSEN INFEKTION MITTELS ANTITOXISCHER HEILKÖRPER. By Dr. EMANUEL WEIN. Berlin and Vienna: Urban & Schwarzenberg, 1918.

THIS work, which appears in three parts, comprising altogether 608 pages, discusses the determination and treatment of tuberculous infection with the aid of antitoxic substances and has a rather tragic history. It was begun by Dr. Emanuel Wein in 1909, and was ready for publication at the outbreak of the war in 1914. According to the preface by Dr. Zoltan Wein, who has now succeeded in having the book published as the posthumous work of his father, it was out of the question to have it appear at the time when it was completed; times were too hard, too unsettled.

Emanuel Wein was an enthusiast and a strong believer in the possibility of treating tuberculosis by specific antitoxic remedies. In this volume he describes in detail the effect of the isopathic remedies, that is to say, the various tuberculins and the effects of the antitoxic products, such as Marmorek's serum and Spengler's I.K. (Immune Körper). It would not be possible here to enter at length into a discussion of the author's views and results of experiments with tuberculin and antitoxic remedies. He comes to the conclusion that the diagnostic value of tuberculins is much greater than generally recognized, that wrong etiological deduction is the reason that the specific remedies do not receive sufficient consideration, that the specific curative qualities of the antitoxic means, such as Marmorek's serum and Spengler's I.K., can no longer be doubted, that a few doses of Marmorek's serum or Spengler's I.K., carefully administered, will remove all doubts whether the disease has been caused by or was simply influenced by a tuberculous infection. He claims that Marmorek's serum and Spengler's I.K. only affect diseases due to Koch's bacillus of tuberculosis. Careful instructions are given for the administration and indication of the two remedies referred to. Wein believes that many diseases concerning whose etiology we are still in doubt, such as digestive disturbances in infants, obscure fevers and nervous manifestations in childhood, skin affections, migraine, incontinence of urine, dysmenorrhea, and many other affections, in the vast majority of cases are due to tuberculous infection and are amenable to treatment by specific medication.

Even if one is not an enthusiast about the use of culture products as a means for diagnosis or as remedial agents in tuberculosis, one cannot help admiring the author's painstaking experiments and clinical researches. He admits that immunization has, up to this time, been a failure, but maintains that with tuberculin and Marmorek's serum we are in the possession of agents of great help for an absolute diagnosis and that with Marmorek's serum as well as Spengler's I.K. we have remedial agents at our disposal with which tuberculosis can be cured. While in the reviewer's opinion many of Wein's claims need further substantiation, the author's statements, borne out by the citation of 100 cases, that many diseases not diagnosed as tuberculous are due to or influenced by a tuberculous infection, merit our study and consideration. The volume as a whole is well worth the most careful persual of all interested in tuberculous research work.

DISEASES OF WOMEN, Including Abnormalities of Pregnancy, Labor, and Puerperium. A Clinical Study of Pathological Conditions Characteristic of the Five Periods of Woman's Life, Presented in One Hundred and Seventy-three Case Histories. By CHARLES M. GREEN, A.B., M.D., Professor of Obstetrics and Gynecology, Emeritus, in Harvard University; Senior Surgeon for Diseases of Women, Boston City Hospital; Formerly Visiting Physician, Boston Lying-in Hospital; Fellow of the American College of Surgeons; Fellow of the American Gynecological Society. With 12 full-page Plates, one Cut, and 25 Charts in the Text. Boston: W. M. Leonard, 1920.

ALTHOUGH not so stated in the title-page, this is the second edition of this work, the first having been published five years ago. The changes made in this edition are not very numerous, yet are important and add to the value of the work. The book is one of the "Case History Series," in which the method of teaching is purely clinical and therefore most interesting and instructive for a reader who is already familiar with the general principles of the subject. Dr. Green divides the life of women into five stages, viz., infancy and childhood, puberty and adolescence, maturity, the climacteric, and old age, and illustrates the diseases and morbid states peculiar to these stages with a number of well told histories followed by explanatory comments. Any recent graduate with a bent toward gynecology, or even aiming only for general practice, will be amply repaid by a careful reading and study of this book.

MEDIZINISCHE TERMINOLOGIE, Ableitung und Esklärung der gebraüchlichsten Fachausdrücke aller Zweize der Medizin und ihrer Hilfswissenschaften. Von WALTER GUTTMANN, Oberstabsanzt z.D. an der Kaiser-Wilhelm-Akademie für das militärärztliche Bildungswesen in Berlin. Zehrite und elfte vollkommen ungearbeitete Auflage, mit 309 Abbildungen. Berlin and Wien: Urban & Schwarzenberg, 1919.

THIS is the combined tenth and eleventh revisions of Guttmann's medical dictionary, the standard and best work of the kind in the German language, a separate tenth edition having probably been prevented by war conditions. That the present revision is up to date is shown by the inclusion of a number of terms created by war conditions, such as the Carrel-Dakin method, hunger disease, etc. For all who read much German medical literature, this capital dictionary will be found of the greatest service.

APHASIA AND ASSOCIATED SPEECH PROBLEMS. By MICHAEL OSNATO, M.D., Associate in Neurology, Columbia University; Consulting Physician, Manhattan State Hospital and Central Islip State Hospital; Neurologist, Italian Hospital; Assistant Visiting Physician, Kings County Hospital; Assistant Chief of Clinic, Vanderbilt Clinic Department of Neurology. Preface by FREDERICK TILNEY, M.D., Ph.D., Professor of Neurology, Columbia University. New York: Paul B. Hoeber, 1920.

THIS is a valuable little volume in that it is a vigorous and not wholly unsuccessful attempt to present clearly the essentials of an intricate and highly controversial subject. The usual tendency of the student of aphasia is either to become confused among the available theories or to become too partisan. Dr. Osnato has presented the various viewpoints clearly and simply, indicating their virtues and faults. His own presentation of the subject might be called a psychological one, *i.e.* he considers aphasia as largely symptomatic of or dependent upon intellectual defects. From his wide experience Dr. Osnato has selected a number of apposite cases; and at the end of the book he quotes most of the recent worth-while literature.

Society Reports.

AMERICAN ASSOCIATION FOR THORACIC SURGERY.

Second Annual Meeting Held in Atlantic City, N. J., June 9, 1919.

(*Concluded from page* 1062.)

THE PRESIDENT, DR. WILLY MEYER OF NEW YORK, IN THE CHAIR.

IV. Anterior Mediastinum: The Treatment of Malignant Tumors of the Thymus by Radium.—Dr. HENRY H. JANEWAY of New York based this paper upon a report of 9 cases in which a diagnosis was confirmed by microscopic examination in 6 of the 9 cases. In the 3 remaining cases favorable cures, lasting for a period of over two years, had followed the radium treatment.

Dr. EMIL G. BECK of Chicago, Ill., referring to Dr. Janeway's pictures, said these shadows were often misleading; the arch of the aorta might be mistaken for a tumor. One could select many of the plates which showed that in a series of cases. However, one relied upon the symptoms which pointed to the tumors. Radium had a great place in the treatment of these intrathoracic tumors. The tumors might be four or five times this size and would disappear, not alone by radium treatment, but also by *x*-ray. Hodgkin's disease also would disappear. There were tumors which on proper treatment by deep therapy would disappear and as soon as the treatment was discontinued would reappear. The patients invariably died ultimately of the disease. He had had three such cases. In these cases good stereoscopic pictures should be taken, for they would give a great deal more information. In that way one could see whether the tumor was anterior or posterior, or whether connected with the aorta. Sometimes aneurysm would give such a picture. In the last three years he had used *x*-ray in such tumors, recurrent carcinoma of the breast, neck and other places. The recurrence had taken place after two or three operations. After three radical operations had been performed in one of the cases the patient was subjected to a fourth operation, and in that case the skin and fat was removed and the entire area was exposed for *x*-ray directly on the open wound. The skin filtered as much as three-fifths of a mm. of aluminum. He had proved that by electrocopic measurements the skin absorbed nearly all of the beta rays. The beta rays were very important in the radium as well as the hard rays of the *x*-ray treatment.

Dr. Janeway, in closing the discussion, said he had stereoscopic pictures made, and the shadows of the tumor were anterior to the arch.

V. Diaphragm: Roentgenographic Study of the Diaphragm After Intraabdominal Inflation with Oxygen. Preliminary Report. (Lantern Slides.)—Dr. WILLIAM H. STEWART, in conjunction with Dr. ARTHUR STEIN of New York, presented this paper. They had been stimulated to make this investigation by an experience with a case of gunshot wound of the chest. In localizing the bullet, great difficulty was encountered in ascertaining whether the projectile was in the diaphragm, beneath the diaphragm or in the lower lobe of the lung. The case was reported by Dr. Meyer before the New York Society for Thoracic Surgery, and in the discussion Dr. Howard Lilienthal suggested that they could rule out the question of the bullet being in the lower lobe of the lung by producing an artificial pneumothorax; if in the lung it would recede from the diaphragm with the pulmonary collapse. If this could be done, they saw no reason why a pneumoperitoneum would not produce a separation of the liver from the diaphragm, thus enabling one to decide whether the bullet was in the diaphragm or beneath, embedded in the liver. Dr. Arthur Stein had called their attention to an article by Dr. C. Goetze, published in the *Münch. med. Wochenschift* for November. 1918, suggesting roentgenographic examination after the inflation of the peritoneal cavity with oxygen to bring out the detail of the abdominal soft parts. They were familiar with the fact that in the presence of air or gas much more roentgenographic detail of the soft parts could be obtained than under ordinary conditions, and had taken advantage of this phenomena in cases of soft growths of the bladder by inflating the viscus with air. Artificial pneumothorax had been used to obtain pleural detail where there was a question of malignancy of the pleura, and the ventricles had been clearly demonstrated in a case of fracture of the skull, where the brain cavities had become inflated with air through an opening in the soft structures at the site of the fracture. With these experiences in mind, and with the support of Dr. Stein, who had inflated all of the cases in the series, he had begun the investigations. The results, as shown by the lantern slides, were somewhat startling. They had been able to obtain clear detail of the liver and spleen, and had found that these organs were distinctly separated from the diaphragm, thus proving the value of the method in localizing projectiles or inflammatory conditions beneath the diaphragm. In addition they had learned that clear shadows of the other abdominal organs could be obtained such as the kidneys and pelvic organs. Intraperitoneal adhesions were easily shown, and in one case a chain of enlarged mesenteric glands were demonstrated. It was evident that a new field for investigation had been opened, especially in obscure abdominal cases, where the pathology involved the parenchymatous organs. The technique employed was most simple. After the patient had been prepared for roentgen examination by a cleansing out of the bowels and emptying of the bladder, he was put upon his back, and the abdomen was inflated with three to four liters of oxygen. The whole outfit required for this precedure consisted of an oxygen tank to which was attached a rubber bag, such as was used with gas-oxygen apparatus for anesthesia, with a capacity of about one gallon or four liters. To this bag was attached a small rubber tube which could be easily connected with a regular lumbar puncture needle. The spot where the needle was to be inserted was sterilized with iodine, and the skin was rendered insensate by an injection of novocain-adrenalin solution. The spot from which, in their judgment, it was easiest to inflate the abdomen was two or three fingers to the left of the umbilicus, and about one and a half inches below it. One who has had surgical experience can easily gauge the thickness of the abdominal wall. Their practice had been to push the needle to a point where it touched the fascia, then to stop for one or two seconds. After that the necdle was pushed gently through the fascia, muscle and peritoneum. The plug was then removed from the needle, and the needle connected with the rubber tube. A slight pressure on the bag would now inflate the abdomen with oxygen. As a rule, this required between four and five minutes. The amount of oxygen to be introduced varied with the condition of the abdominal walls; a fair amount of distention should be obtained, enough so that the abdominal wall was put somewhat on a tension, and had more or less of a dome shape. When the peritoneal cavity was fully distended the patient usually complained of a sensation of fulness and slight pains in the shoulders, particularly the right, apparently due to pressure against the diaphragm. If there was a possibility of abdominal adhesion being present as shown by an abdominal scar one should select his point of entrance for the needle as far from the operative site as possible. The oxygen, as a rule, was absorbed within 24 to 48 hours, So far they had had absolutely no ill effects, the danger of puncturing the intestines was nil. Experience had shown that the elasticity of the intestines permitted them to recede before a sharp introducing body, such as a needle, providing caution were used and the needle advanced slowly. It was best to allow the patient to become accustomed to the distention before attempting the roentgenographic examination, usually an interval of two to three hours being advisable, at which time it was possible to place the patient in almost any position without distress. The main point to bear in mind in the roentgen technique was that the organ to be investigated should be elevated as much as possible. The spleen and left kidney were best brought out with the patient lying

on the right side, the liver and right kidney the reverse. The pelvic organs with a lateral Trendelenburg position, and intraperitoneal adhesions with the patient lying on his back.

Dr. CHARLES G. HEYD of New York had been in the habit of introducing a needle a little to the left of the ensiform cartilage and at its lower level with the patient in the sitting position. The needle entered readily and there was practically no danger of injuring any of the viscera.

Dr. NATHAN W. GREEN of New York referred to certain animal experimentation at the College of Physicians and Surgeon. Dr. William C. Clarke was speaking of the danger of perforating the intestines when doing an abdominal puncture. He took a rabbit and placing it under anesthesia, put in a fine needle. While the rabbit was alive the intestines were pushed away by the needle. The rabbit was then given a lethal dose of ether. When it was dead the needle would go right into the intestines.

Dr. WILLY MEYER of New York cited briefly the case referred to by Dr. Stewart of a male, shot in the sixth intercostal space on the right side. No special symptoms; brought to a hospital; some bloody expectoration; cured. Bullet found by *x*-rays. After some time the patient was sent to him to determine whether the bullet should be removed or not. As it seemed to be in the right lower lung lobe it was decided to attempt its removal. Dr. Stewart repeatedly examined the patient with *x*-rays and the fluoroscope. It was impossible to say whether the missile was surely in the lower portion of the right lung, or in the diaphragm, or in the liver! Direction and point of entrance of the bullet as well as location was such that they had to go through the thoracic cavity. If the method of examination just presented had been employed, a definite localization would have been possible. They would not have been annoyed by sudden developments during the operation. They would have known that the bullet was in the convexity of the liver. The method seemed to mean a great step forward in the refinement of diagnosis with reference to the intra-abdominal organs.

VI. Lungs: **1. The Integrity of the Vagus Nerves as a Factor in Pneumonia.**—Dr. SAMUEL J. MELTZER of New York said that since Galen's time many experiments had been made on the effect of cutting both vagus nerves upon the animal. In the eighteenth century it had been recognized for the first time by Valsalva and Morgagni that the lungs become affected after both vagi are cut. They had simply stated that there was an alteration in the lungs. But this alteration had soon been recognized as being an inflammation. Numerous experiments followed. In the middle of the nineteenth century the question seemed to have been settled by the experiments of Traube, who was the first to establish that the cutting of both vague nerves caused aspiration pneumonia. According to Traube the pneumonic lesions of the lung, which appeared one of two days after section of both vagi were brought about by a paralysis of the esophagus and of the muscles which control the movements of the glottis; these paralyses facilitated the entrance into the trachea and the lungs of the contents of the esophagus and of saliva. Schiff looked upon the ensuing pneumonia as neuroparalytic in its origin. According to Traube the states of the blood vessels and of the tissues of the lung were not primary causes of the pulmonary lesions. Traube's view was one which prevailed to this date. All investigators had agreed that cutting of one vagus produced no affect at all. In the course of the last eight years Dr. Woolstein and the speaker had studied extensively the causation of pneumonia by intrabronchial insufflation of cultures of different organisms of various degrees of virulence. Since August, 1918, they had studied a new problems by the same method. Virulent cultures of pneumococcus Type I were insufflated several days after a single vagus was cut. Their main results were very briefly stated. If the injection of the culture was made only four days after the section of the vagus the course of the development of a pneumonia was the same as in normal animals. But if the injection was made ten or twelve days after the vagus was sectioned most animals died in less than twenty-four hours, the nature of the pulmonary lesion being that of red hepatization. He would not enter into an extensive discussion of their possible significance, but would recall some physiological facts. Vasomotor fibres consisted of vasoconstrictors and vasodilators. If vasomotor nerves were cut the vasoconstrictors degenerated four days after cutting, while the vasodilators degenerated only ten or twelve days after cutting. Putting together the new facts regarding the rapid development of experimental pneumonia instituted ten or twelve days after the cutting of one vagus nerve (but not when instituted earlier) with the known facts regarding the rate of the degeneration of the two sets of vasomotor fibres, hypothesis seemed to be plausible that resistance of the lung tissue to infection depended, among others, upon the integrity of the vasodilator nerves of the lungs. But one must keep in mind that it was still a moot question whether the pulmonary circulation was altogether under vasomotor nerve control. Dr. Meltzer added that he had reported some facts and offered an hypothesis for their explanation. He wished to emphasize that he was mostly interested in the facts; they were fundamental, and he thought they would stand the test. As to the hypothesis, he was aware that what he had said was not the last word. He himself could offer other explanations; but he did not intend to enter into a lengthy theoretical discussion.

Dr. WILLY MEYER of New York asked Dr. Meltzer whether he thought mechanical interference with the nervi vagi during operation, as stretching, tearing branches, etc., as one often could not help doing, might also have the effect of making the lung more inclined to inflammation. He ventured to put this question, because anyone who did surgery on the esophagus would observe that if one were fortunate enough to pull these patients through the operation and the first days of the after treatment, they were very liable to be stricken with pneumonia further on. His question was, whether Dr. Meltzer thought the mechanical interference with the pneumogastrics, according to his opinion, was just as much inclined to produce pneumonia as the resection of their main trunk.

Dr. MELTZER replying, said the president had spoken of the dangers of the handling or tearing of a vagus nerve. They had tested that problem in the laboratory. Under efficient artificial respiration even rough handling of the vagus nerve had no evil consequences. The heart might be manipulated practically with impunity. It was different when insufficient artificial respiration was employed. The heart might fall into fibrillary contractions at the slightest provocation and stimulation of a vagus nerve was indeed not an innocent procedure. These facts had been frequently demonstrated to the hundreds of military officers who were commanded during the war period to the Rockefeller Institute. Differential pressure offered only an inefficient artificial respiration. The animal or the patient might stand even a long operation under its protection; but heart and nerves must be handled with great care. Auer and the speaker had reported these facts some eight years ago. Quite recently Giertz of the physiological laboratory in Stockholm had arrived at the same conclusion.

Dr. MEYER said if one went over the literature and also turned back the leaves in one's own memory, the fact would stand out that sometimes cases that one believed would recover, had died of pneumonia in the second week after the operation. And it was further a fact that one could not operate on a case of advanced cancer of the esophagus without being obliged to tear one or more larger branches and later on often cut the entire trunk of the pneumogastric, or of both. Only recently he again made the observation in such a case, a female, that pneumonia took her away on the thirteenth day. He knew definitely that one pneumogastric had been much interfered with. He had attributed the cause of the fatal issue to the interference with the pneumogastric. It certainly seemed to be a clinical fact that the partial or complete resection of one pneumogastric made the patients prone to catch pneumonia.

2. Localization of Pulmonary Lobes by the X-Ray.—MAJOR KENNON DUNHAM of Cincinnati, Ohio, read this paper. (See page 1077.)

3. Lung Abscess.—Dr. NATHAN W. GREEN of New York, in writing of the diagnosis of lung abscesses, stated that the presence of a subacute abscess might be suspected when, after pneumonia or empyema, the temperature came to normal and then rose and was accompanied by a hacking cough and a fresh appearance of pus in the sputum. In chronic lung abscess the patient might appear chronically ill or in fairly good condition except for local symptoms. The chief symptom was a profuse and characteristically foul expectoration, the amount of which varied with change of posture and at different periods of the day. The *x*-ray was an aid to the diagnosis. There was always a cough, generally a slight evening temperature, and a certain amount of anorexia. The physical signs were often obscure and of themselves might not lead to a diagnosis of abscess. Generally they were those of localized consolidation with occasionally cavernous breathing. Clubbing of the fingers was a constant concomitant as in bronchiectasis. The sputum was greenish yellow. The treatment was medical and surgical. Medicines might be given to decrease and deodorize the sputum. Posture might improve the condition. In ambulatory cases, standing on the hands might me beneficial. The surgical treatment consisted of thoracotomy with resection of one or more ribs and evacuation and drainage of the abscess. The author did not believe that artificial pneumothorax could be of benefit uniformly because the spot which it was desired to collapse was kept out, being fastened by adhesions to the parietal pleura. Certain lung abscesses with thickened walls might require more extensive surgical treatment than simple drainage. Resection of a lobe might be necessary. When an operation was performed to drain the lung abscess it might be done in one, two or more stages. The first stage would indicate the patient's power of resistance.

4. Pulmonary Suppurations.—Dr. CARL A. HEDBLOM of Rochester, Minn., presented this paper. (See MEDICAL RECORD, September 13, 1919, xcvi, 11.)

5. Resection of the Lung for Post-Tonsillectomy Abscess.—Dr. HOWARD LILIENTHAL of New York presented a patient in whom extirpation of the lower lobe, the middle lobe, and part of the upper lobe of the right lung was followed by atrophy which left no lung in the right chest. Fifteen months after a tonsillectomy the patient had first shown chest symptoms, cough, hemorrhages, and foul expectoration, which had been followed by intermittent periods of fever, coughing, and the discharge of large quantities of fetid pus. *X*-ray examination of the chest had demonstrated a cavity of the right lung in the midclavicular line and an area of infiltration from the seventh to the ninth rib. There was much infiltration into the lung tissue outside the zone of inflammatory reaction. Under intrapharyngeal gas and ether anesthesia, a long incision was made in the seventh interspace, the greater part of the seventh rib resected, and the sixth rib sectioned posteriorly. Adhesions were then separated and all fluid was removed. A large abscess was found between the upper and middle lobes. The lower and middle lobes and part of the upper were then ablated beyond mass ligatures of chromic gut and heavy silk. During this procedure pus appeared at the patient's mouth. After the removal of the major portion of the lung the stump was carbolized and the transfixing ligatures were fixed outside the chest to prevent mediastinal motility. A large quantity of fluff gauze was packed about the stump and the wound closed without drainage, the packing and ligatures being buried beneath the skin so that at the end of the operation the chest was completely sealed. Before the last suture was tied more than a pint of paraffin oil was poured into the chest and left there. Later the wound was reopened, a drainage tube inserted and about a quart of foul fluid evacuated. The wound was then opened wide because of infection and sloughing, but due to the open bronchi it was impossible to use Dakin's solution. The case now showing all the evidence of gangrenous pleurisy, the entire chest cavity was packed with gauze, a procedure which was followed by improvement in the local condition. Later the right phrenic nerve was resected to paralyze the diaphragm but the subsequent *x*-ray showed that this muscle was already held down by adhesions. The eighth, ninth and tenth ribs were then resected to aid in collapsing the lower chest. At the end of four months the patient returned to work. Complete closure of the chest took place after a year. At that time *x*-ray showed no evidence of lung tissue in the periphery of the entire right side, but a partially aerated lung field was observed at the hilus.

6. The Operative Treatment of Advanced Pulmonary Tuberculosis.—Dr. WILLY MEYER of New York pointed out the great progress made in the treament of this chronic disease by the application of the artificial (therapeutic) pneumothorax. However, he asked, what was to be done if the lung was fixed to the chest wall by adhesions. If medicinal and hygienic treatment did not improve these patients, they were doomed. It was here that active surgery had stepped in since the last ten years. By means of extrapleural thoracoplasty one was able to completely collapse the respective lung. The effect was easy to understand. As soon as the parts of the thoracic skeleton to which the adherent lung was attached, were removed, it would collapse. The operation could be nicely done under regional and local anesthesia by nerve blocking, best with Sauerbruch's hook incision, which represented the posterior half of the original Schede incision. Other operative measures were: the one first used by the late Friedrich, Schede's incision and immediate removal of the tenth to the second rib in one stage, and Wilms' socalled columnar-resection, consisting in removal of a portion of the ribs, anteriorly and posteriorly, the middle part being used for collapse and compression. Sauerbruch feared aspiration from a cavity in the upper lobe, if the entire work was done in one stage and, therefore, proposed a two-stage operation, resecting the tenth to sixth rib in the first stage, and a few weeks later, the fifth to second or first. Wilms did not share this fear. Further investigations were required to determine whether it was justified or not. The results in the series of cases published by Friedrich, Sauerbruch and Wilms independently of one another, were almost the same, and very encouraging. Two-thirds of these otherwise entirely hopeless cases, were either improved, greatly improved or cured by operation. Unilateral tuberculous lung disease, particularly *with cavity formation*, represented the most favorable lesion for this operation. Still, it had proved useful also in cases in which the opposite lung was also somewhat involved. The speaker presented a patient of 31 years, in whom he had done extrapleural thoracoplasty in two stages, under local anesthesia. The trouble was bilateral, particularly pronounced on the left side. At the present time, six months after the operation, the patient was very greatly improved; his sputum was markedly reduced and free from bacilli; the cough had almost completely disappeared; he had considerably gained in weight.

Dr. EMIL BECK of Chicago, Ill., considered these last two cases so instructive that they would encourage a great many to enter into this work, because the material was plentiful. The question arose as to which of the two operations would be preferable. Excision of the lung seemed to him a formidable operation. It was probable that both of these patients would have been better if they had not been operated upon. The diagnosis of lung abscess was very easy, but it was more difficult to cure than to diagnose. The abscess was usually centrally located and much smaller than empyema. In his opinion every lung abscess that was diagnosed should not be operated upon. He had refused to operate in three cases for the reason that the abscess was rather inaccessible. Sometimes the patient was much better off after the abscess had ruptured into the bronchus. He might be inconvenienced by cough but be otherwise in good health. The work of Dr. Lilienthal showed skill in one of these most miserable conditions of the lung. In the picture which the speaker had presented he had amputated the lung; could not show the patient because he was dead, having died on the tenth day after the operation. The hilus was ligated en masse. It was a big mass of tissues but the ligatures gave way on the tenth day. Dr. Meyer had spoken of a case in which bismuth poisoning resulted. Dr. Beck had published in the *Journal of the American Medical Association* that a mixture of oil and bismuth was a very dangerous mixture, the

oil separating from the bismuth. Adding acacia to the oil produced solidification of the metal. He warned against substituting oil for vaseline. The bronchial openings in lung abscess could be closed by cauterization. He had shown last year a case in which seven bronchi had been opened and could be inspected ocularly. He had used an ordinary cautery, such as the rhinologists used when cauterizing the nasal mucous membrane, and had cauterized the mucous lining for about half an inch and in every instance the bronchus will close.

Dr. SYDNEY YANKAUER of New York considered the diagnosis of lung abscess by means of the roentgenogram subject to certain errors to which attention had been called by Major Dunham. In diseased lungs the abscess cavity distorted the lung itself, disturbed the findings, and made it difficult to recognize the location of the lung abscess by this method. Furthermore, the different lobes overlapped each other, the incisures between the lobes differed considerably even in the normal chest. Now there was one method of recognizing the location of a lung abscess which had not been mentioned here and of which the thoracic surgeons had not hitherto made sufficient use, namely, the endoscopic examination of the lung itself. The procedure of bronchoscopy was certainly well known, and universally practised, but its use in lung abscess cases was one to which he wished to call special attention. One could recognize with the bronchoscope whether the pus came from one side or both; and whether the pus came from one lobe or another by recognizing branches from which the pus was seen to exude. In bronchiectasis one could estimate the size of the bronchus; by evacuating the pus from the bronchiectatic cavity it remained clean, whereas in lung abscess, the pus continually reappeared from the bronchus leading to the affected lobe. It was an error to suppose, in doing bronchoscopy on a lung abscess, that one would see a pool of pus, a wide horizon, and an empty space above. When the bronchoscope entered a cavity which contained pus, the pus was immediately coughed out. The bronchiectatic cavity bore a close resemblance to a dilated bronchus. Of course, it was true that such diagnosis required experience and the bronchoscopist who had difficulty in entering the trachea with the bronchoscope would find a great deal more difficulty in recognizing the changes in the bronchial tree. A small number of these cases had come under his observation by means of the bronchoscope. These cases had been in the hands of internists, and had been refused operation by the surgeon, so that they were not particularly favorable cases. The treatment he had employed was irrigation of the bronchus by means of a return flow catheter whereby he was able to wash about a pint of solution through the affected lung. In about 15 cases in which he had been able to continue treatment for a sufficiently long time, three of them had been practically cured. When one considered that they were hopeless cases, and that 20 per cent. have been practically cured by pulmonary irrigation, the method was one that deserved to be continued. The most striking of these cases was a young girl referred to the speaker by Dr. Willy Meyer with well marked fluid level following tonsillectomy. The lung was irrigated twice a week, first with normal saline solution, later with a solution containing carbolic acid and iodine. In six months time the girl was cured and she had been well now for two years. The second case was a young man with bronchiectasis following pneumonia in childhood. At first he could turn the patient over at almost any hour of the day and evacuate foul smelling fluid. He had increased six inches in height, and was able to go back to his work. Those not cured had been freed of foul odor and were able to resume their occupation, coming to the hospital for irrigation once a week. He was sure that most of these cases would have been under the sod if not treated in this way.

Dr. HOWARD LILIENTHAL of New York said he could not have done any more to this man without killing him. The question of the collapse operations brought up the subject of the proper selection of cases for operation. He did not think that every lung abscess could be cured by operation. Probably not every bronchiectatic abscess needed to be operated upon. Dr. Yankauer was treating a case referred to him by the speaker by bronchoscopic lavage. The abscess was enormous and looked like an empyema, yet there had been so much improvement that it almost amounted to a cure. Cases in which there was a thin abscess wall might not require extirpation. In these cases there might be a chance for recovery by means of pneumothorax therapy. Ordinarily the gas collapsed the healthy part of the lung and not the abscess. But there was an extrapleural method of compression which, in the hands of Tuffier, had given good results, especially in apical disease. An incision was made in the second space down to the endothoracic fascia but not through the pleura. The pleura was pushed away, collapsing the abscess so that there was a large cavity which might be packed with gauze which was replaced from time to time until the extrapleural cavity gradually had filled with granulation tissue. The speaker's two first cases had died, the first of a general septic bronchitis (wrong diagnosis) and the second from the accidental opening of the pleura. In the third case he had had no trouble in pushing away the pleura and making a cavity to hold gauze the bulk of his fist. He had tried to make fat implantation, but the fat necrosed, not being from the same patient. He had finally used gauze and after three months thought he would take out the gauze and see if cicatricial changes had not taken place which would prevent the abscess from refilling. And indeed there was a lot of cicatrix around the abscess that held it down to a certain extent. The man, however, began spitting and coughing again and subjectively he was just about as bad as ever, though the cavity was much smaller. Then he had turned him over to Dr. Yankauer, and after a series of lavages he had become well enough to be about and do his work. The case was now pretty nearly cured. The cases that had to be operated upon were the progressive ones with indurated walls, with large abscess inside. Here nothing short of extirpation would suffice. But the death rate was high, probably not less than 60 per cent. These were cases for surgery because the patients would never get well by any other means, so far as his experience went.

Dr. CARL A. HEDBLOM of Rochester, Minn., said in the series of cases he had just reported there was one instance of complete spontaneous cure of pulmonary abscess following tonsillectomy, and one of spontaneous drainage through the chest wall. In the latter the patient had refused operation. He was still draining at the last report. He had tried pneumothorax therapy in two cases and it had been attempted elsewhere in two. One of his patients was cured, the other one had to be drained. One of the two treated elsewhere developed an extensive cellulitis of the chest wall. This patient had come to him with a large chronic abscess. He was one of the patients who finally died of hemorrhage. In his opinion expectant treatment in the hope of spontaneous cure was justifiable only for a few weeks and only in those cases that were progressively on the mend. Deferring operation in other cases seemed in some measure analogous to waiting for abscess to develop in case of appendicitis. The mortality was greatly increased by chronicity. Pneumothorax therapy seemed promising especially in acute centrally placed abscess that had perforated a bronchus. The method would always be limited in its applicability because of the frequency of adhesions preventing collapse of the lung.

Dr. WILLY MEYER agreed with Dr. Hedblom that there could not be drawn at the present time a proper border-line between lung abscess and bronchiectasis. He had once seen what he did not think possible before, a spontaneous cure of a lung abscess. In a case of lung abscess he had urged operation; but the patient and his family were not particularly inclined to follow this advice. While still in the ward, the patient slowly improved; later on he went home, where, according to report, he got entirely well without operation. In addition to the clinical examination for establishing the diagnosis, the steroscopic radiography and bronchoscopy were important. The latter should be done by one who would not do harm and who knew how to interpret correctly what he saw. With regard to aspiration, in former years he had never hesitated to push the needle into the lung when suspecting an

abscess, and had never seen harm. After the discussion of this question before the New York Society for Thoracic Surgery he had been doubtful, but the more he had seen since then, the more he had been inclined to aspirate *before* the time set for the operation. To stand before one's patient and not know exactly where and how deep to go in, and then to be obliged to find the pus with the patient on the operating table, was rather annoying. He believed this could be determined beforehand with safety in the great majority of cases. The treatment, as of any other surgical inflammation, was conservative and radical. The conservative treatment was what Dr. Yankauer had brought out, the method of bronchial irrigation as he had practised it. The girl to whom Dr. Yankauer had referred came from the Golden Gate and was almost dying on her way to New York. She had improved at the hospital here. He had called Dr. Yankauer to find out which lobe or lobes the pus was coming from, and had found all three lobes of the right lung affected. The girl was sixteen years old, and the parents did not want to take any chances. The girl was cured by irrigation. Concerning insufflation of nitrogen, one must differentiate between early and late cases.

Dr. TEWKSBURY of Washington had proved by his statistics that in early cases the establishment of an artificial pneumothorax was the operation of choice. Better still, of course, was prophylaxis, to avoid the occurrence of the disease. Since these cases had been discussed before many medical societies, specialists had taken great care in their tonsillectomies. They practised continuous aspiration of the blood with the help of the electric current. In late cases when the bronchial walls were harder and those of cavities often calcified, persistent collapse of the lung, even for several years, was frequently of no avail; as soon as the treatment was stopped the old trouble returned. He had had experience with all the conservative methods of operation. Following Professor Friedrich's advice, given the speaker ten years ago, he did not practise lobectomy in the majority of cases, and had come to the conclusion, that, with very few exceptions, the "*cure*" of advanced cases could be accomplished by lobectomy only, as Dr. Lilienthal's case here presented had again shown. However, one often could first tide over some of these patients with the help of a less severe operation, particularly those who had this offensive expectoration which made them outcasts from human society, so that they had to be isolated for months. By ventilating these cavities thoroughly, making a big hole in the chest wall and lung, and letting the air from outside pass through the cavities, often with the addition of pure oxygen insufflation, that odor disappeared, not to return again. The patient might retain a large pneumonic fistula, but that did not harm. One of his patients had such a large fistula, but was ready to get married. A few of these rather advanced cases could also be cured by incision of the lung and prolonged drainage. Much would depend, with reference to prognosis, upon *how long* the patient had been sick, before he came to operation. When presenting his patient with a persistent cavity; Dr. Lilienthal had said he did not know what it contained. The speaker would have put in a needle and determined whether it was air or fluid.

Dr. LILIENTHAL said it was air. He would not put in a needle.

Dr. MEYER, continuing, said he, too, was convinced it was air. In doing lobectomy experimentally in dogs, they had extirpated the lung at one sitting. There was usually primary union. Seventeen out of twenty-one dogs had recovered. Animals as well as human beings had by far too much lung. A few days later the dogs had jumped around at the Rockefeller Institute as if nothing had happened. Of course there had to be a cavity in the chest, and it was a question whether it was filled with air or with fluid. Just at that time a paper by Dr. Samuel Robinson had appeared from the Marburg Clinic, written in conjunction with Sauerbruch wherein it was stated that after lobectomy fluid was found in the chest. The speaker aspirated the dogs and found air, regularly. To prove how nature would get along with the artificial pneumothorax, Dr. Francis Carter Wood then very kindly and courteously had come to his help. At various intervals after the operation the dogs were bled to death by him under general anesthesia, formalin solution first having been injected into their vascular system, and the cadavers were frozen stiff. Then with a large saw transverse sections of the chest were made at various levels. It was seen that with advancing absorption of the air, the mediastinal contents gradually moved over to the costal pleura of the side operated on. But they would not adhere to that costal pleura. Nature formed a sort of new pleural cavity, the visceral portion being represented by the mediastinal tissues. In the case presented, and in similar ones, in which the organs and tissues could not move, the air enclosed, he believed, did not become absorbed. There remained a permanent pneumothorax filled with the nitrogen part of the air. The speaker believed that we were only at the threshold of this important and fascinating chapter. The point of greatest interest at the present moment was the finding of the correct indication, *how* to proceed in the given case, which patient should be treated with conservative operative methods, and which should submit to lobectomy. Certain it was, that a "cure" in advanced cases could be obtained only by means of lobectomy.

Dr. LILIENTHAL, in closing the discussion, said Dr. Brown had examined that man and he believed it was a pneumothorax. The title of his paper should have been "Lung Abscess, Multiple, Following Tonsillectomy, Report of a Case of Extirpation of the Right Lower, Middle and Part of the Upper Lobes, with Subsequent Atrophy Leaving No Lung in the Right Chest."

VII. Heart: The Aviator's Heart. Roentgen Ray Studies Under Conditions Simulating High Altitudes.—Dr. LEON T. LE WALD of New York presented these observations, which were made during the examination of U. S. Army aviators at the Medical Research Laboratory at Mineola, L. I. During the examination of aviators under reduced atmospheric pressure, in the low pressure chamber at this laboratory, Whitney (Medical Studies in Aviation, *Jour. Am. Med. Assoc.*, October 26, 1918) and his co-workers, had observed at pressures corresponding to altitudes of 18,000 to 20,000 feet an increase in the area of cardiac dullness in the case of certain aviators. Later a similar increase in the cardiac dullness was occasionally observed during the course of the low oxygen test conducted at the laboratory for the purpose of classifying aviators according to their ability to withstand the effects of high altitudes. The enlargement as observed by Whitney, was principally to the left, but occasionally right-sided enlargement was encountered in addition. Whitney ascribed the increased area of dullness in these cases to dilatation of the heart, and thought it was due partly to lowered tonus of the cardiac muscle because of the lowered oxygen content of the inspired air and of the blood and partly to fatigue such as occurred after excessive exertion, as in Marathon runners. The present studies had been undertaken to determine whether enlargement actually occurred under these circumstances, and if it did, what was its amount, whether its onset was sudden or gradual, what was its relation to the blood pressures and to the psycho-motor reactions of the aviator, and whether it was a conservative process designed to increase the output of blood by the heart or whether it was a true dilatation due to fatigue or exhaustion of the heart muscle. Two series of studies had been undertaken, one with the Henderson "rebreather," and the other in the low pressure chamber. The rebreathing experiments had been undertaken first because any changes observed would almost surely be due to diminished oxygen alone; whereas in the low pressure chamber they might be influenced by the change in pressure or by the expansion of abdominal gases, causing an upward displacement of the diaphragm. The Henderson rebreather consisted of an iron tank of at least 52 liters capacity provided with a water sealed spirometer and connected through tubing with a mouthpiece through which the subject breathed, the nose being clamped with a spring "clothes-pin." An arrangement of two mica check valves caused the inspired air to flow through one tube and the expired air through the other back into the tank. As the

experiment continued the supply of oxygen was reduced, which had the same physiological effect as rarefying the air in a low pressure chamber or ascending to a high altitude. In the first series, roentgenograms were made of aviators every five minutes while the subjects were on the rebreathing apparatus. The length of the run varied from 15 to 38 minutes. With the controls taken before and after the run there were thus obtained from six to thirteen roentgenograms of each heart. The greatest care was taken on the alignment of the tube, the patient and the plate, so as to make the roentgenograms properly comparable with one another, not only those of the same but also of different subjects. Teleroentgenegrams were made at a 2 meter distance, and were taken in both inspiration and expiration. Serial roentgenograms were made at 75 cm. in both expiration and inspiration, and in certain instances double exposures on one plate to show both inspiration and expiration. The exposures varied from 1/20 to 3/20 of a second at the 75 cm. distance and from 1/10 to 3/5 of a second at the 2 meter distance. Because of the shortness of the exposures it was thought necessary to time them for a definite period of the cardiac cycle in order to avoid variations in size due to systole and diastole. The timer was therefore actuated by a special mechanism set off by the pulse wave. By exactly superimposing a silhouette taken in expiration upon one of the same subjects taken in inspiration, the changes taking place in the shape and position of the heart could readily be seen—the excursion of the diaphragm upward in expiration and lowering of the apex of the thoracic cavity. Their results showed in many cases a decided broadening of the heart shadow to the right as well as to the left during expiration. The apparent broadening of the aortic arch, especially its displacement to the left, was very noticeable in such plates. This was perhaps best shown by making two exposures of a thorax on one plate, one during expiration and one during inspiration. They had divided the 86 men into three classes: (1) In 66 men no enlargement of the heart occurred under lowered oxygen pressure. The variations that occurred were so irregular they could not be attributed to oxygen want or to the progress of the test. (2) Nine men showed a more or less consistent increase in the transverse diameter toward the end of the test, with an average of 0.75 cm. increase. (3) In the remaining 11 there was a decrease in the transverse diameter.

Dr. WILLIAM H. STEWART of New York said cardiac dilatation at altitudes had been recognized for some time. He asked if Dr. Le Wald would tell just how reliable his mechanical devices were in recording on an *x*-ray plate or film the image of the heart at the same point in systole or diastole, and whether he took the combined images. Those familiar with fluroscopic examinations knew that there was considerable variation in the size of the heart during inspiration and expiration. It would seem difficult to obtain an image of the heart for comparative study at the same phase and at the same point in either inspiration or expiration. It would be interesting to know how Dr. Le Wald mastered these problems.

Dr. LE WALD, in closing the discussion, said they had given up trying to get the heart in systole, and after careful consideration of the whole subject had decided that with exposures of such length as they had they never did get systole. The point was very well taken, and personally he would like to be able to show a heart definitely taken in systole. He presumed from the technique that the hearts were all in diastole.

VIII. Posterior Mediastinum; Esophagus: 1. The Treatment of Cicatricial Stenosis of the Esophagus.—Dr. HENRY S. PLUMMER of Rochester, Minn., read this paper.

2. X-ray Findings wtih the Delineator in Cardiospasm.—Dr. MAX EINHORN, in conjunction with Dr. THOMAS SCHOLZ of New York, presented this paper. (See MEDICAL RECORD, November 1, 1919, xcvi, 18.)

3. Superior Esophagoplasty for Inoperable Cancer of the Lower Portion of the Esophagus and of the Cardia.—Dr. WILLY MEYER of New York said the greatest desire of all patients suffering from stricture of the esophagus naturally was to regain the power of swallowing. In operable cases this could be accomplished if the patient survived; but not in inoperable malignant complete stricture of the esophagus and cardia, unless nature favored these unfortunates by an ulcerative process with breaking down of the tumor, and consequent reopening of the tube, or radium treatment produced a superficial slough. In patients with malignant stricture, too far advanced to allow radical operation, the end could be attained only by the procedure outlined. In order to do for these patients what the present status of thoracic surgery offered, it was proposed, after determining the inoperability of a cancer of the esophagus by means of a thoracotomy, to divide the esophagus above the tumor, invert the distal portion and bring out the proximal stump through the external esophagotomy wound at the neck and place it subcutaneously, as was done nowadays in the typical radical operation for an operable malignant growth of the esophagus. The same procedure was advocated in patients in whom on gastrostomy for cardiac malignancy far reaching glandular involvement was found in the lesser omentum, making an ultimate cure by operation extremely doubtful. He considered this interference indicated particularly from a humane point of view and placed it on the same level as gastroenterostomy for an inoperable carcinoma of the pylorus. A patient thus operated upon was shown in lantern slides. Although greatly reduced in weight (88 pounds) she stood the operation as such very nicely, air-tight thoracic drainage being made use of for after treatment. Through a rubber tube, connecting the lower end of the transposed proximal stump with the gastrostomy fistula the patient could swallow nicely. On the fourth day after the operation symptoms of pneumonia developed, to which she succumbed on the thirteenth day after operation, retaining up to the end perfect power of swallowing.

Major LEON T. LE WALD of New York said Dr. Plummer's record of six cases occurring in pregnancy reminded him of a case of pyelitis with cortical abscesses in the kidney. In the lower third of the esophagus there was an ulceration process which was either metastatic or came on at the same time as lesions in the kidney. That fitted in very well with his observation.

Dr. MAX EINHORN of New York was very much interested in Dr. Plummer's paper and congratulated him upon his results. He had often used a thread with a tiny olive at the end and thought it went better. He had had a patient who had by mistake swallowed some poison, caustic soda, if he remembered correctly, and had come to the hospital vomiting blood. A duodenal tube was introduced and the patient was fed and for two weeks kept in good condition, but after a while it was necessary to dilate the stricture. He got along pretty well. With another patient, sent by Dr. Dickinson, they had had no trouble in stretching the benign strictured esophagus, Dr. Willy Meyer having previously established a gastric fistula.

Dr. NATHAN W. GREEN of New York, had been very much interested in Dr. Plummer's presentation of this rather avoided subject. He had had a few cases, not anywhere near the series Dr. Plummer had mentioned. He had had a few by himself and two in conjunction with Dr. Abbe. In one he was able to pass a filiform by the aid of an esophagoscope, which was impossible to do in any other way. That was the case of a little girl who came from Massachusetts. In another case, a little boy, from the South, the same thing was done, and in both these cases Dr. Abbe did his string sawing operation. Two others were also treated by dilatation by direct vision with the aid of the esophagoscope, without Dr. Plummer's sound, but putting an ordinary sound down through the esophagoscope and gradually stretching the stricture. He used his own esophagoscope made by Wappler. One patient, operated on by Dr. Abbe's method several years ago, went along well for a while, but did not come back regularly for bougies and four or five years ago she was sent to him. He dilated her through the esophagoscope at first and later with a larger bougie than could be so used, but could not get sufficient dilatation until he did another string sawing operation after another gastrostomy. He went right alongside of the old gastrostomy and found it firmly adherent to the anterior ab-

dominal wall. That patient returned to him now for bougies about every four to six weeks. Another patient swallowed sulphuric acid, thinking it was whiskey. He did a string-sawing operation on him. The cicatricial tissue did not go through such a long wait before he came to me and for that reason the stricture stayed open for as much as two months. It was a year or so since he had dilated. These cases were very satisfactory.

Dr. MEYER asked Dr. Plummer whether he started his operation with a gastrostomy.

Dr. PLUMMER replied that he had never made a gastrostomy, except under two conditions: provided at the time the patient came with inanition, a chance that he did not dare to take; second, patients whom he must send home and of whom he thought the local doctor could not take proper care.

Dr. MEYER had always taken a great deal of pleasure in treating this class of cases. It was of the keenest interest to him to see how well patients, even young ones, could stand the Abbe string method. That big silk string being pulled to and fro never did any harm, and right afterward the sounds could be introduced. He agreed with Dr. Green that if such cases came under his care he would do as Dr. Plummer had suggested. This procedure certainly greatly simplified the whole plan of treatment.

Dr. GREEN asked Dr. Plummer if he was familiar with Gossett's article written earlier than 1906, in which he did an open thoracotomy on two of these cases and passed a bougie from the mouth down. As he remembered it Gossett had said that the whole stenosis was due to periesophageal adhesions rather than to cicatricial tissue in the esophagus itself. That had made an impression on him, but he had never followed out this procedure.

Dr. PLUMMER said a patient could not be induced to swallow a braided silk; it must be a twisted silk. It must be the finest obtainable. A sound must be passed and then the contracture stretched. He had never seen a case of cicatricial stenosis that he did not have eating beefsteak within six weeks.

Dr. LILIENTHAL had dilated to the size of his little finger and feared it would cause ulceration if solid food were taken. He was interested to know from Dr. Plummer that this fear was unfounded.

Dr. PLUMMER had seen three or four hundred cases, and had never encountered one in which there were either fissures or ulcers. He allowed the patients beef steak when he thought them in condition for it. In case meat got stuck in the esophagus he pulled it out with the esophagoscope. In the hands of a trained man the dangers were relatively little.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

PRACTICAL DIETETICS By ALIDA FRANCES PATTEE. 543 pages. Published by A. F. Pattee, Mt. Vernon, N. Y.

MANUAL OF PSYCHIATRY. Fifth Edition. By A. J. ROSANOFF. 684 pages, with illustrations. Published by John Wiley & Sons, Inc., New York.

THE SURGICAL CLINICS OF CHICAGO. Vol. 4, No. 2. 222 pages, with 60 illustrations. Published by W. B. Saunders Company, Philadelphia, Pa.

DIATETIK DER MAGER- UND DARMKRANKHEITEN. By Prof. Dr. I. BOAS. 216 pages. Published by George Thieme, Leipzig.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Edited by SIMON FLEXNER, M.D. 609 pages, with illustrations. Published by the Rockefeller Institute for Medical Research, New York.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITOURINARY SURGEONS, Volume XII. 415 pages, with illustrations. Published by Williams & Wilkins Company, Baltimore.

Miscellany.

Artificial Eyes in Antiquity.—Ebers, the celebrated Egyptologist, said that a mummy with an artificial eye had never come to light and that the papyrus Ebers made no mention of such objects. However, the guidebook of Elliot Smith to the collection of mummies in the Cairo Museum speaks of mummies with false eyes, although no details are given. In the *Musée du Cinquantenaire* at Brussels are eyes of marble, terra cotta, enamel, glass, etc., such eyes being called "mummies' eyes." These eyes are found in masks of mummies so-called and are made of marble with glass inserts to represent the cornea. This is the most familiar construction, but there is much detail in the workmanship in which other materials are used. In some there is a sort of mounting in bronze. An eye of a later cultural period is constructed of terra cotta and enamel. The latter is dead white and serves to denote the sclerotic while the part which corresponds to the cornea and iris is greyish blue. The margin which roughly imitates the palpebral border is also of terra cotta. The Egyptian excelled in this kind of work, but while such eyes were suitable for effigies of all kinds there is no evidence adduced to show that they were ever worn during life. Idols and statues of rulers, etc., were alike provided with eyes which were often of superior workmanship containing precious stones. The first mention of a prosthetic artifical eye worn by a living subject is by Paul of Egina, seventh century after Christ, unless a mention in the Talmud is authentic, in which case the period would be moved back to somewhere between the second and fifth centuries of our era. Professor Hirschberg, the distinguished Jewish ophthalmologist, however, does not uphold the correctness of the interpretation that a true prosthetic eye is meant in this Talmudic passage.—Professor Van Duyse in *Archives Médicales Belges*, September 1919, lxxii, 9.

Hydatid Disease in Uruguay.—According to reference works Iceland and Australia are the two countries or areas of the world most scourged by the dog tape worm, but according to Zerbino, Uruguay cannot be very far behind them. Cranwell has shown the extent of the scourge in Argentina, as well, and the disease exists throughout the entire South American continent. In Uruguay the child is attacked and the youth as a result are decimated. During the five-year period, 1913-1917 inclusive, the personal statistics of Zerbino cover respectively 105, 139, 165, 157, and 152 cases, and from a fourth to a third were under the age of 15. In the same years in one of the Uruguay hospitals 718 cases were treated, of which 216 were in children. Apparently the disease is increasing in frequency, but this alleged increase is probably only improved diagnosis. The most frequent location is the liver, with 60 per cent., after which comes the lung with 21 per cent. Multiple location is especially common in childhood. Uruguay must soon take up this problem seriously, for it is a veritable national plague.—*La Presse Médicale.*

Alcoholism in Spain.—The director of an insane asylum in the province of Gerona sent a question-

naire to all the physicians of the province in order to make a survey of alcoholism. Not more than a quarter of the number made replies so that a complete survey is out of the question. Data were obtained from 59 communities out of 247, from whence it appeared that there was alcoholism in 47 and no alcoholism in 12. In 10 of the 47 it was present in marked degree. Intoxication was common in 34 places and the principal drinks were wine and aguardiente. Most of the alcohol was drunk in taverns, next came the home, then the restaurant, and finally some men drank while at their work, presumably wine, taken along with them. Since most men in the province are laborers this is the occupation most frequently mentioned. The work done by drinkers was mostly hard labor with exposure. Factory workers apparently do not indulge immoderately.

Replies concerning the nature of the morbidity set up by chronic alcoholism seem vague and there is no mention of control figures. The number of cases of alcoholism in women and children is not alarming, it being quite exceptional (9 children and 44 women in a large population). Replies do not show that alcohol has caused alienation in the descendants of drinkers. The abuse of alcohol is ascribed to three factors acting on a morbid predisposition—imitation, belief that alcohol invigorates, and defective nourishment of men exposed to hard labor.—*Revista Espnañola de Medicina y Cirugia.*

Bahia Graduation Thesis for 1919.—In South America the graduation thesis is still an important feature of undergraduate life and the Bahia correspondent of the *Brazil-Medico* in the issue of March 13, 1920, xxxiv, 11, selects four of these as of special merit. The first deals with the intravenous injection of sodium iodine in nervous maladies. The author is Barretto de Almeida. The technique used is the modification of Klemperer's original method by Professor Pinto de Carvalho. Twenty case histories are given which illustrate the advantages of the resource, but the reviewer omits details. The second thesis is by Peixotto de Magalhaes Netto and is devoted to the etiopathogeny of the Morel-Kraepelin disease, by which term the author indicates dementia precox. The author accepts the views of Professor Austregesilo of Buenos Ayres in which autointoxication of endocrinic motivation is regarded as the chief casual factor. The third contribution is by Guerra and is devoted to the early Röntgen diagnosis of pulmonary tuberculosis in which the technique and personal observations are alike well represented. The remaining thesis by da Silva deals with infantile scorbutus, a field in which South America has been well represented in literature by Figueira of Rio, Gesteira of Bahia, and Werneck, who studied the malady in Santos. The correspondent does not refer to any section dealing with the symptomatology. In treating of the cause of infantile scurvy the author of the thesis holds, in agreement with many authorities, that this is multiple and that various single factors and nexuses may give rise to a common syndrome.

Historical Notes on the Enema.—While certain primitive peoples practised an equivalent to the civilized clyster, others showed a horror of it when the first European visitors sought to employ it for medical purposes. The subject is outlined by Albinana in *El Siglo Médico* for March 27, 1920, lxvii, 3459. The occasion was furnished by a recent statement that the rectal syringe is an apparatus foreign to Spanish culture and was a shameful and proscribed article of furniture in old Madrid. Sprengel notes the horror shown towards it by the "Indians," while on the contrary certain primitive African mothers squirted water into the infant rectum by means of a bamboo pipe. In Nigricia a certain kind of calabash naturally adapted for the purpose has been described and photographed by Kermogaut. Both the apparatus and technique of use seem fairly complex. The ordinary syringe used in antiquity and the Middle Ages seems too simple in design to have been the invention of any one man, but various medical men have received the credit for it. Thus, according to some, no description of a syringe is found prior to the works of Albucasis. Late in the XV century one Gatenaria, an Italian physician, seems to have at least invented an improved model.

The first illustration of a syringe is found in a work published by Brundiswig (?) in 1497 at Strassburg. The ancient use of the clyster was a function of the apothecary who appears to have been empowered by custom or law to give injections when it was deemed necessary. In 1329, for example, a French apothecary is known to have charged a fee of 32 sous for giving an enema to a lady. Apparently he was a profiteer of those days, for there is other evidence to show that the regular fee was 10 or 12 sous. The rectal use of the syringes said to have been discovered among the relics of ancient peoples, as the Etruscans, is naturally more or less speculative.

The First Bordeaux Medical College.—As early as 1411 there was a so-called College of Physicians in Bordeaux which functioned only as an examining board for candidates in medicine. In 1441 Pope Eugene IV founded the University of Bordeaux. In the original college the candidate must have practised for two years in the jurisdiction of the Parliament of Bordeaux and must have been a Catholic and of good moral character. During the two years which followed his going before the board he was to pass six examinations, two of which were to be held in the City Hall in the presence of the justice of the peace, a jury and the public. The candidate was required to present a thesis which should especially demonstrate his general culture outside of medical subjects. The first faculty to examine candidates in this manner was originally limited, at least for a time, to a single examiner who was frequently a Spaniard or converted Jew. When the University was formed the study courses comprised theology, law, medicine and the "arts." In 1573 the medical college was required by law to have at least four teachers. In 1414 a German medical man named Ram was authorized to practice by the examining board and a letter is preserved in the municipal archives from which it appears that in 1414 the medical practitioners of Bordeaux had for some reason which the writer of the letter does not state become extinct for the time being.—*El Siglo Médico.*

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